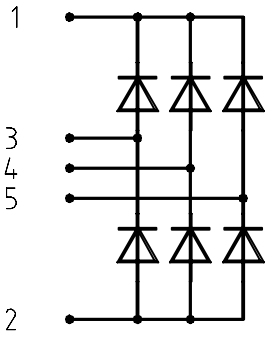
Contents

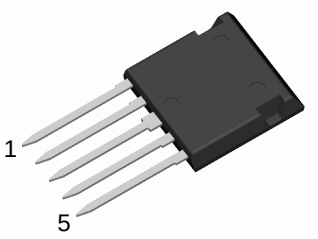
Three Phase Rectifier Bridge

in ISOPLUS i4-PAC™

FUO 22-08N

V_{RRM} = 800 V
$I_{D(AV)M}$ = 27 A
I_{FSM} = 100 A





Rectifier Bridge

Symbol	Conditions	Maximum Ratings	
V_{RRM}		800	V
I_{FAV}	T_C = 90°C; sine 180° (per diode)	10	A
$I_{D(AV)M}$	T_C = 90°C	27	A
I_{FSM}	T_{VJ} = 25°C; t = 10 ms; sine 50 Hz	100	A
P_{tot}	T_C = 25°C (per diode)	30	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 15 A; T_{VJ} = 25°C		1.2	1.3	V
	T_{VJ} = 125°C		1.2		V
I_R	$V_R = V_{RRM}$; T_{VJ} = 25°C			5	µA
	T_{VJ} = 125°C		0.2		mA
R_{thJC}	(per diode)			4	K/W

Features

- rectifier diodes for line frequency
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - enlarged creepage towards heatsink
  - application friendly pinout
  - high reliability
  - industry standard outline

Applications

- three phase mains rectifiers

Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

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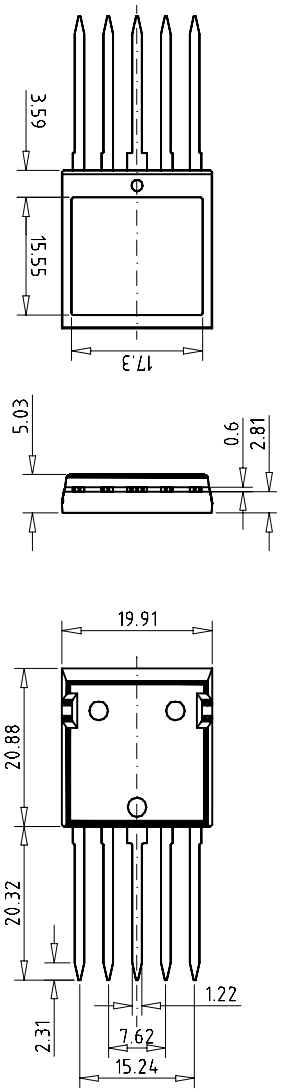
Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz	2500	V~
F_C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d_S,d_A	pin - pin	1.7		mm
d_S,d_A	pin - backside metal	5.5		mm
R_{thCH}	with heatsink compound		0.15	K/W
Weight			9	g

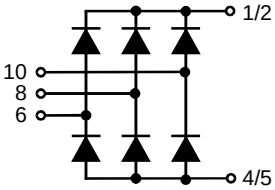
Dimensions in mm (1 mm = 0.0394")

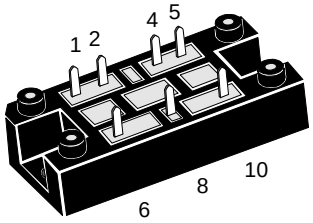


Three Phase Rectifier Bridge

I_{dAVM} = 20 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 16-08NO1
1300	1200	VUO 16-12NO1
1500	1400	VUO 16-14NO1
1700	1600	VUO 16-16NO1
1900	1800	VUO 16-18NO1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 90°C, module		15	A
I_{dAV}	T_A = 45°C (R_{thKA} = 0.5 K/W), module		20	A
I_{dAVM}	module		20	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	106	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	85	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	90	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	47	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	33	A^2s
T_{VJ}			-40...+130	°C
T_{VJM}			130	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2 - 2.5	Nm
		(10-32UNF)	18-22	lb.in.
Weight	typ.		35	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM}	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM}	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 7 A;	T_{VJ} = 25°C	≤	1.15	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				50	mΩ
R_{thJH}	per diode,	120° rect.		4.5	K/W
	per module,	120° rect.		0.75	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

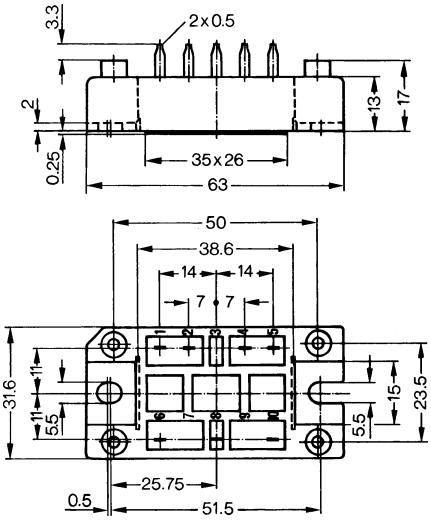
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



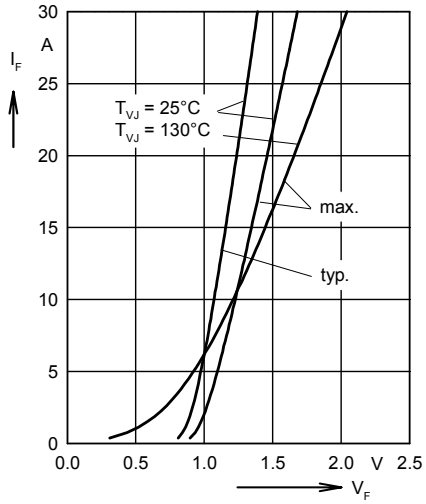


Fig. 1 Forward current versus voltage drop per diode

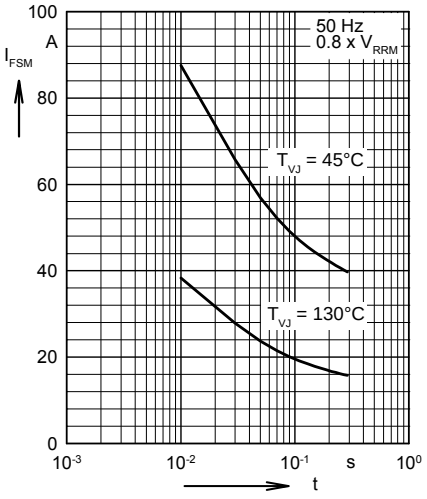


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t:duration

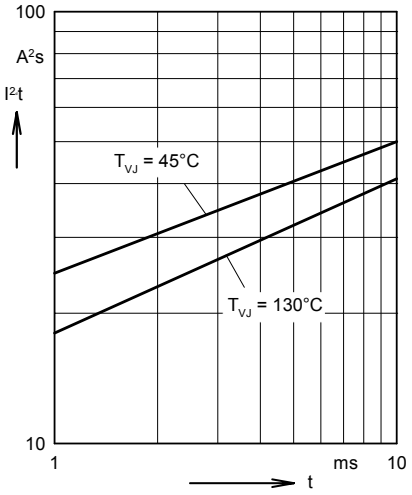


Fig. 3 I^2t versus time (1-10 ms) per diode

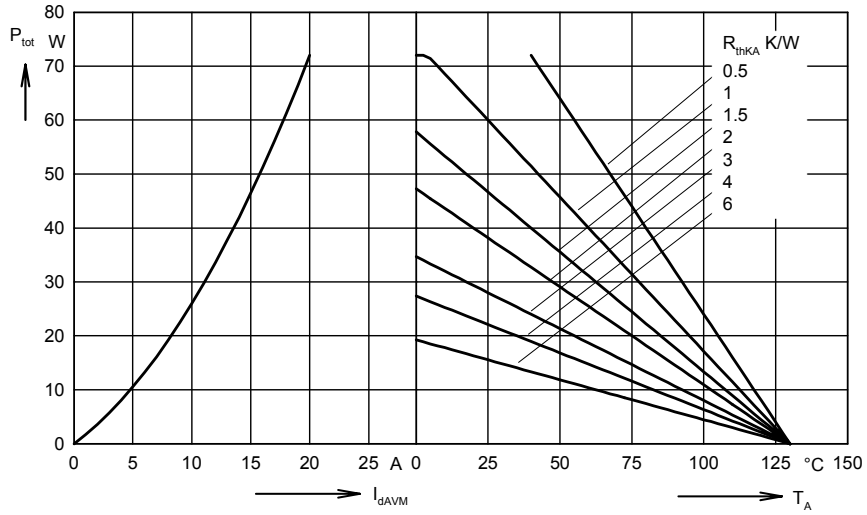


Fig. 4 Power dissipation versus direct output current and ambient temperature

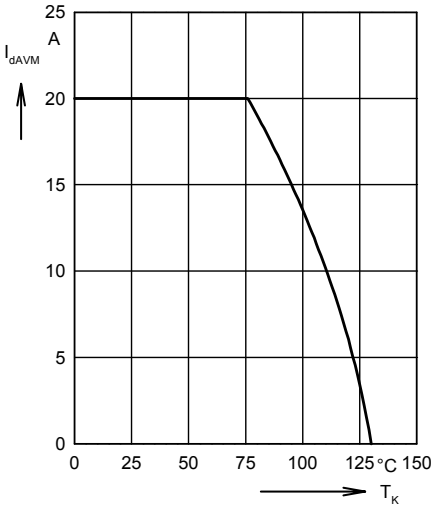


Fig. 5 Maximum forward current at heatsink temperature T_K

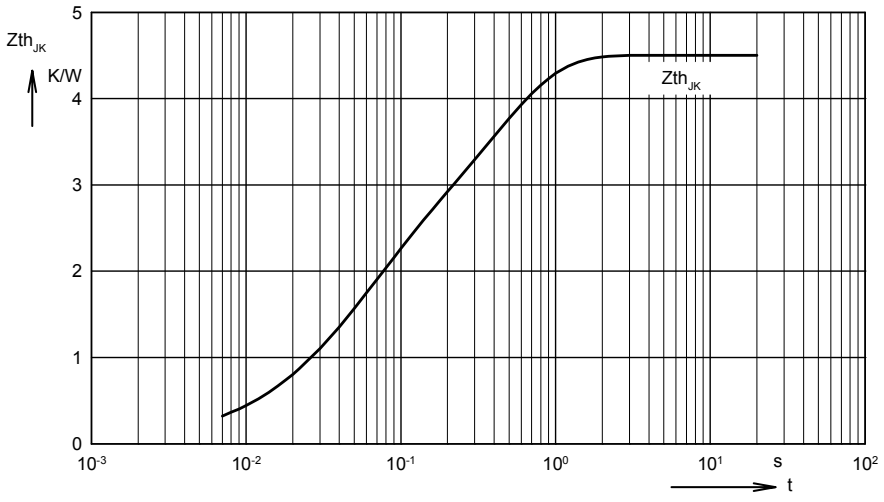


Fig. 6 Transient thermal impedance junction to heatsink per diode

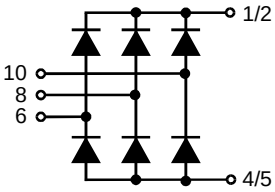
Constants for Z_{thJK} calculation:

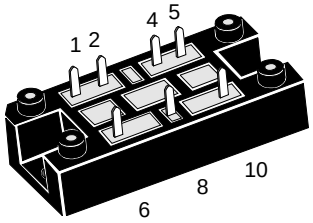
i	R_{th} (K/W)	t_i (s)
1	0.015	0.008
2	0.1	0.02
3	1.835	0.05
4	2.55	0.4

Three Phase Rectifier Bridge

I_{dAVM} = 25 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 22-08NO1
1300	1200	VUO 22-12NO1
1500	1400	VUO 22-14NO1
1700	1600	VUO 22-16NO1
1900	1800	VUO 22-18NO1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 90°C, module		22	A
I_{dAV}	T_A = 45°C (R_{thKA} = 0.5 K/W), module		25	A
I_{dAVM}	module		25	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	106	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	85	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	90	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	47	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	33	A^2s
T_{VJ}			-40...+130	°C
T_{VJM}			130	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2 - 2.5	Nm
		(10-32UNF)	18-22	lb.in.
Weight	typ.		35	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM}	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM}	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 7 A;	T_{VJ} = 25°C	≤	1.12	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				40	mΩ
R_{thJH}	per diode, 120° rect.			3.1	K/W
	per module, 120° rect.			0.516	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

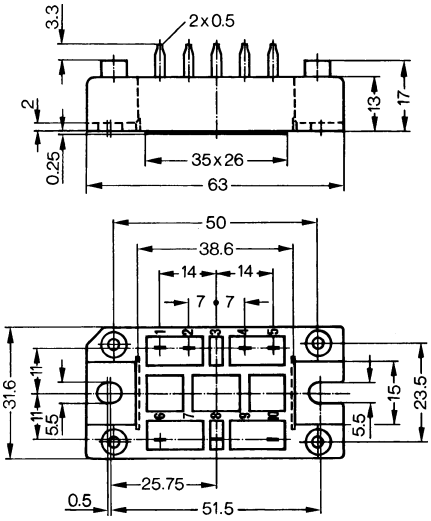
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



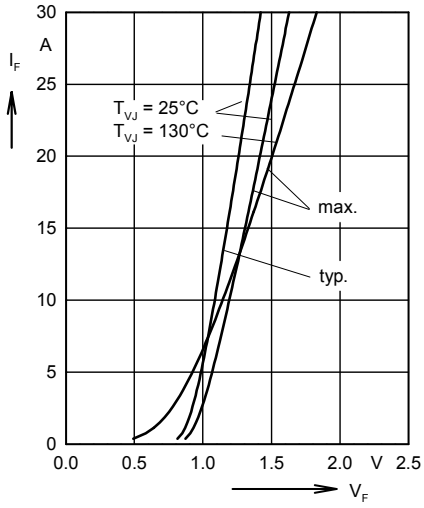


Fig. 1 Forward current versus voltage drop per diode

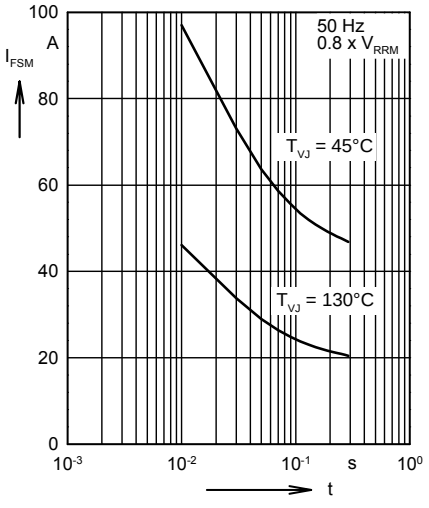


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t:duration

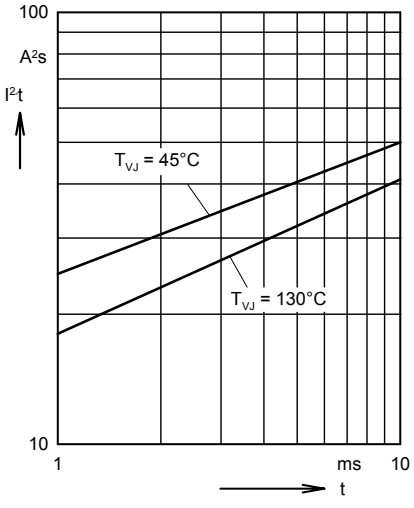


Fig. 3 I^2t versus time (1-10 ms) per diode

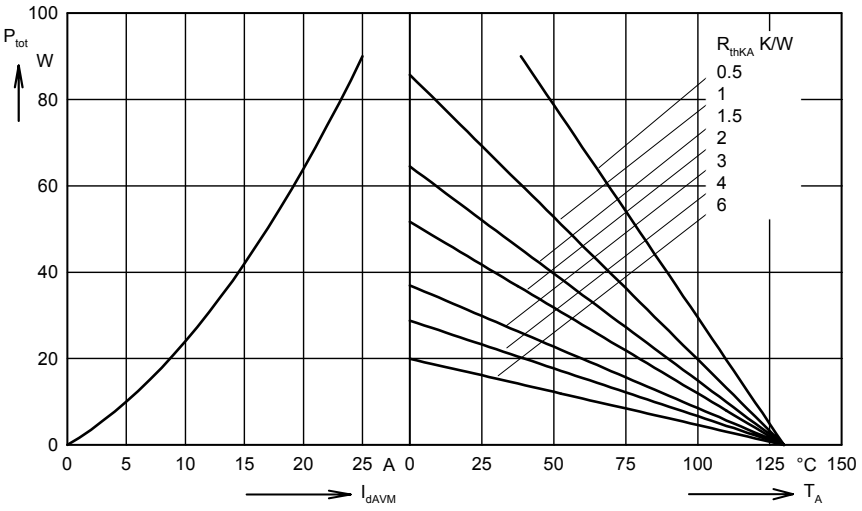


Fig. 4 Power dissipation versus direct output current and ambient temperature

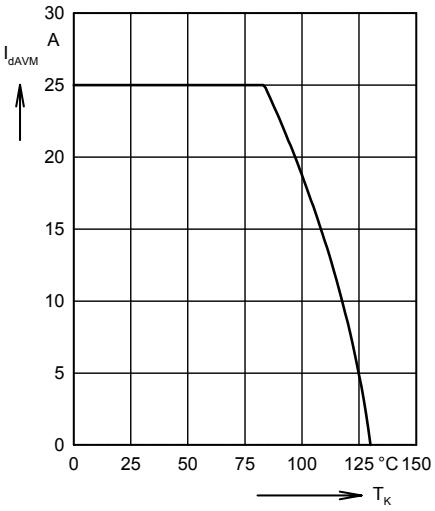


Fig. 5 Maximum forward current at heatsink temperature T_K

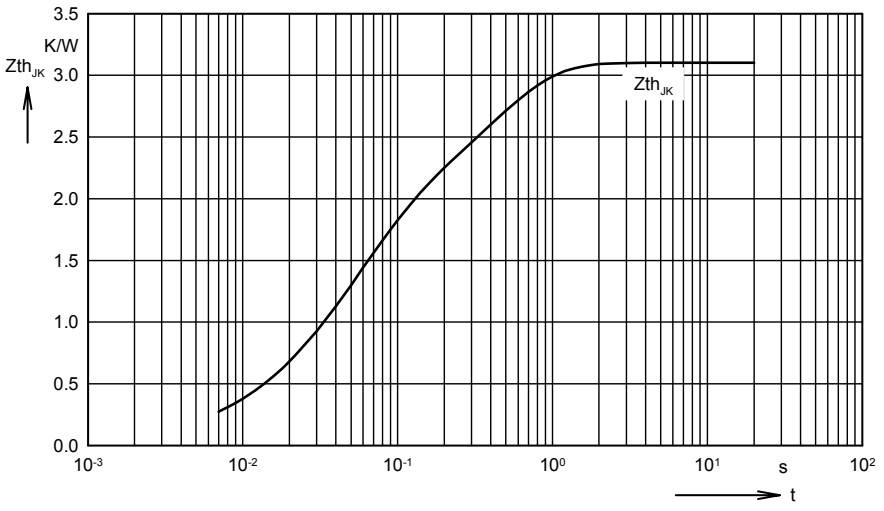


Fig. 6 Transient thermal impedance junction to heatsink per diode

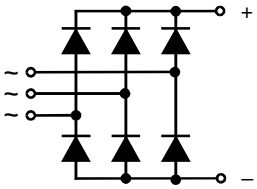
Constants for Z_{thJK} calculation:

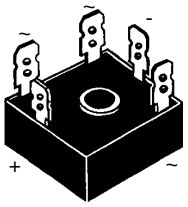
i	R_{th} (K/W)	t_i (s)
1	0.015	0.008
2	0.1	0.02
3	1.635	0.05
4	1.35	0.4

Three Phase Rectifier Bridge

I_{dAVM} = 25 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
600	600	VUO 25-06NO8
1200	1200	VUO 25-12NO8
1400	1400	VUO 25-14NO8
1600	1600	VUO 25-16NO8
1800	1800	VUO 25-18NO8





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 85°C, module		20	A
I_{dAVM}	T_C = 63°C, module		25	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	380	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	360	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	725	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	750	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	650	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	650	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	2 ± 10 %	Nm
		(10-32 UNF)	18 ± 10 %	lb.in.
Weight	typ.		22	g

Symbol	Test Conditions		Characteristic Values	
I_R	T_{VJ} = 25°C;	$V_R = V_{RRM}$	≤ 0.3	mA
	$T_{VJ} = T_{VJM}$;	$V_R = V_{RRM}$	≤ 5.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤ 2.2	V
V_{T0}	For power-loss calculations only		0.85	V
r_T			12	mΩ
R_{thJC}	per diode; DC current		9.3	K/W
	per module		1.55	K/W
R_{thJH}	per diode; DC current		10.2	K/W
	per module		1.7	K/W
d_S	Creeping distance on surface		12.7	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

Data according to DIN IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with ¼" fast-on terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

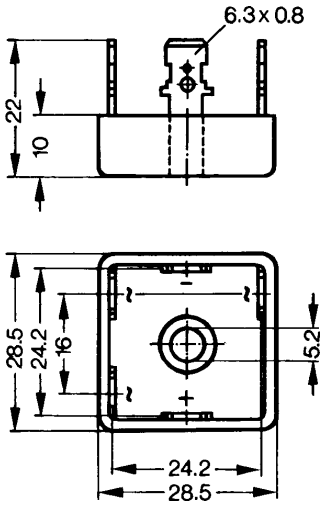
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



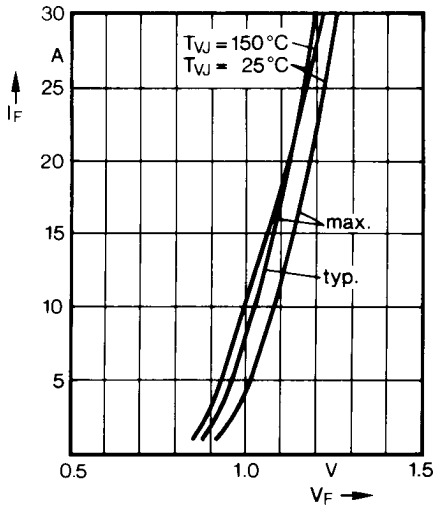


Fig. 1 Forward current versus voltage drop per diode

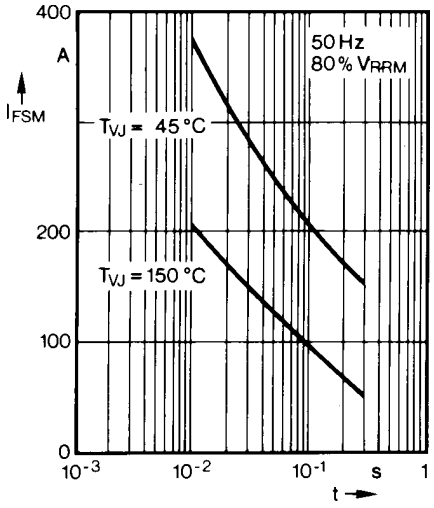


Fig. 2 Surge overload current per diode I_{FSM}: Crest value. t: duration

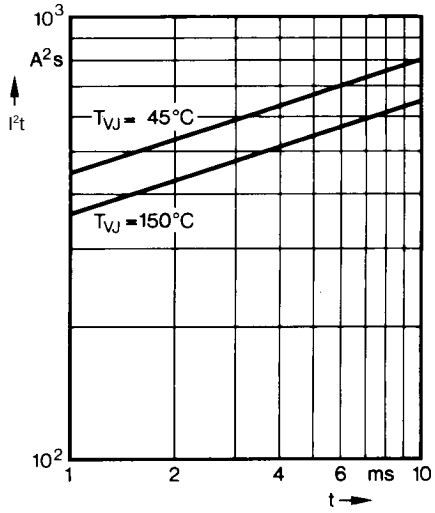


Fig. 3 I^2t versus time (1-10 ms) per diode

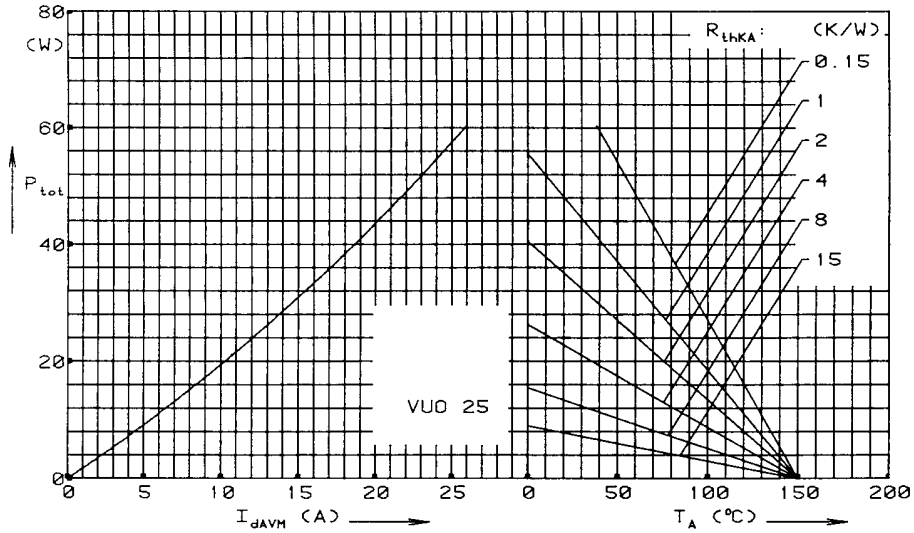


Fig. 4 Power dissipation versus direct output current and ambient temperature

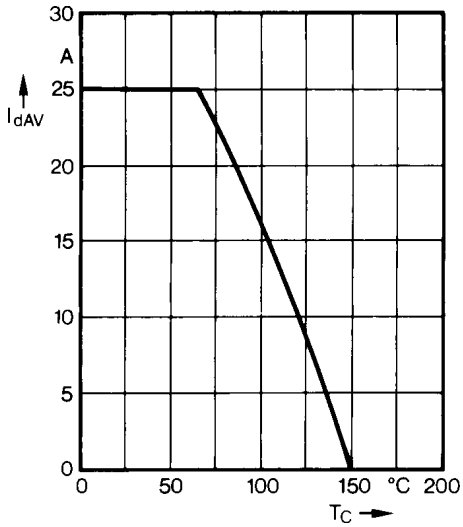


Fig. 5 Maximum forward current at case temperature

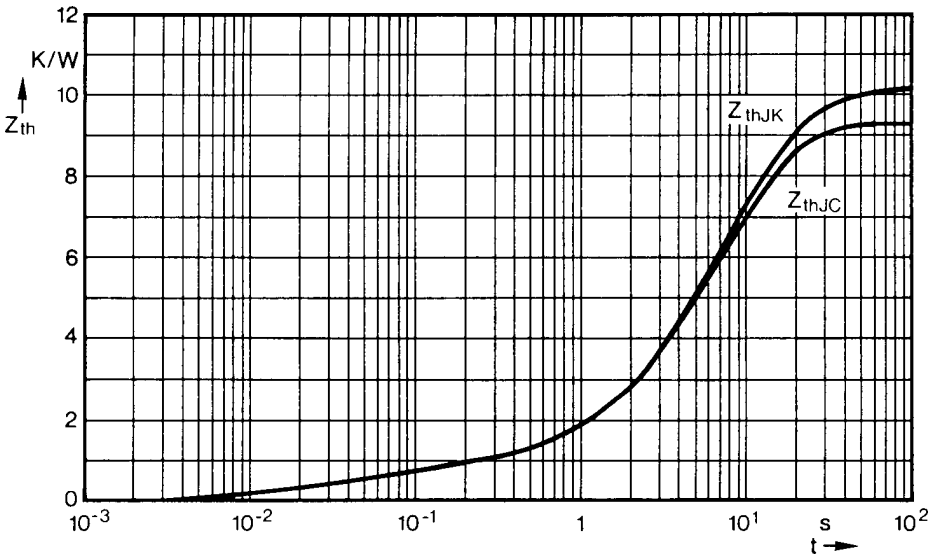


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.194	0.024
2	0.556	0.07
3	2.25	5.8
4	6.3	8.5

Constants for Z_{thJK} calculation:

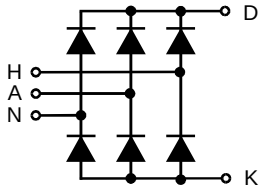
i	R_{thi} (K/W)	t_i (s)
1	0.194	0.024
2	0.556	0.07
3	2.25	5.8
4	6.3	8.5
5	0.9	28.0

Three Phase Rectifier Bridge

I_{dAV} = 28 A
V_{RRM} = 600-1200 V

Preliminary data

V_{RSM} V	V_{RRM} V	Type
700	600	VUO 28-06NO7
900	800	VUO 28-08NO7
1300	1200	VUO 28-12NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		28	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	106	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	85	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	90	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	47	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	36	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	33	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 7 A;	T_{VJ} = 25°C	≤	1.12	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				40	mΩ
R_{thJC}	per diode; DC current			2.3	K/W
	per module			0.39	K/W
R_{thJH}	per diode, DC current			2.8	K/W
	per module			0.47	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

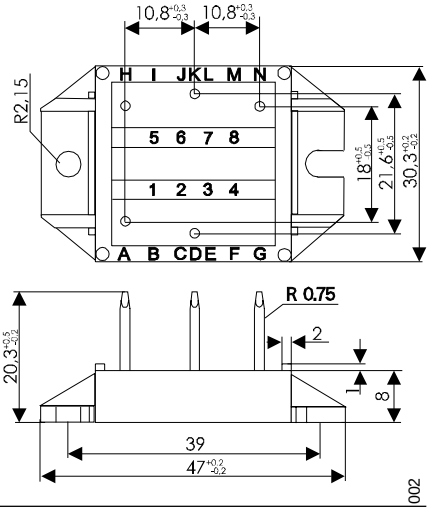
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

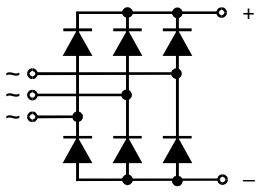
Dimensions in mm (1 mm = 0.0394")

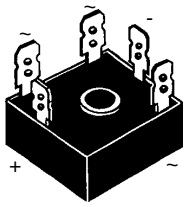


Three Phase Rectifier Bridge

I_{dAVM} = 35 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
600	600	VUO 36-06NO8
1200	1200	VUO 36-12NO8
1400	1400	VUO 36-14NO8
1600	1600	VUO 36-16NO8
1800	1800	VUO 36-18NO8





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 85°C, module		27	A
I_{dAVM}	T_C = 62°C, module		35	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	2 ± 10 %	Nm
		(10-32 UNF)	18 ± 10 %	lb.in.
Weight	typ.		22	g

Symbol	Test Conditions		Characteristic Values	
I_R	T_{VJ} = 25°C;	V_R = V_{RRM}	≤ 0.3	mA
	T_{VJ} = T_{VJM};	V_R = V_{RRM}	≤ 2.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤ 1.7	V
V_{T0}	For power-loss calculations only		0.8	V
r_T			7.4	mΩ
R_{thJC}	per diode; DC current		7.5	K/W
	per module		1.25	K/W
R_{thJH}	per diode; DC current		8.4	K/W
	per module		1.4	K/W
d_S	Creeping distance on surface		12.7	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

Features

- Package with ¼" fast-on terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

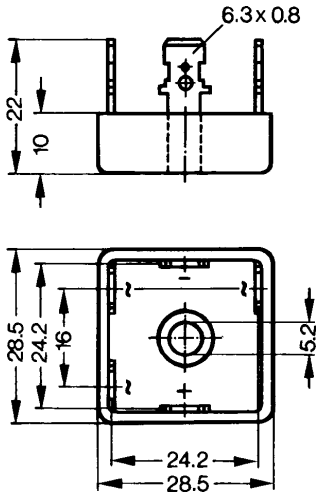
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with one screw
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to DIN IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

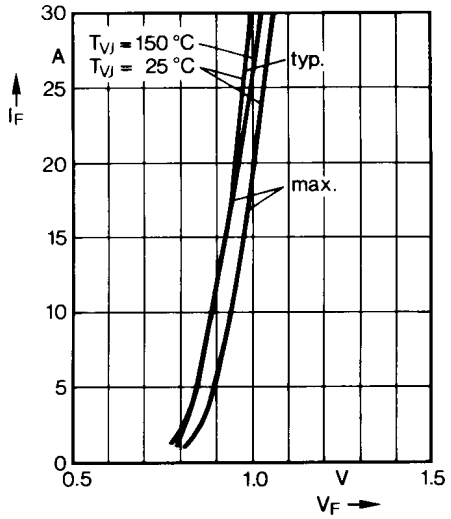


Fig. 1 Forward current versus voltage drop per diode

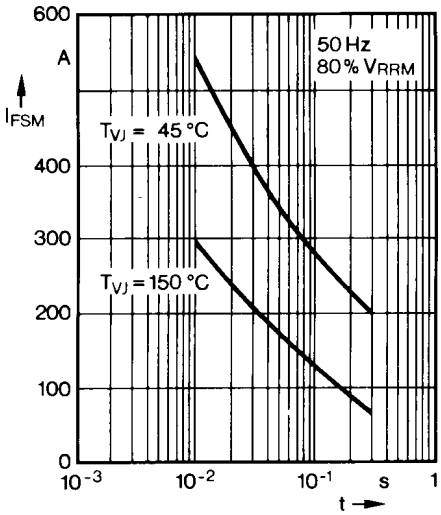


Fig. 2 Surge overload current per diode I_{FSM}: Crest value. t: duration

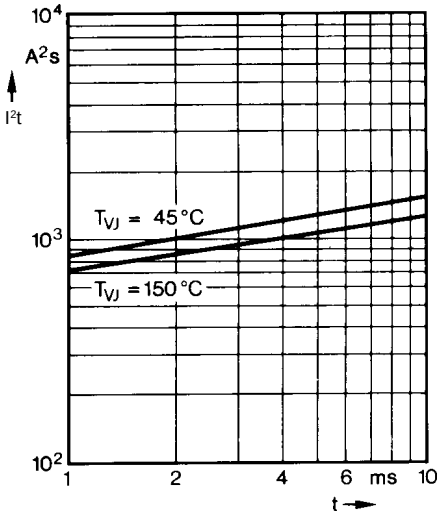


Fig. 3 I^2t versus time (1-10 ms) per diode

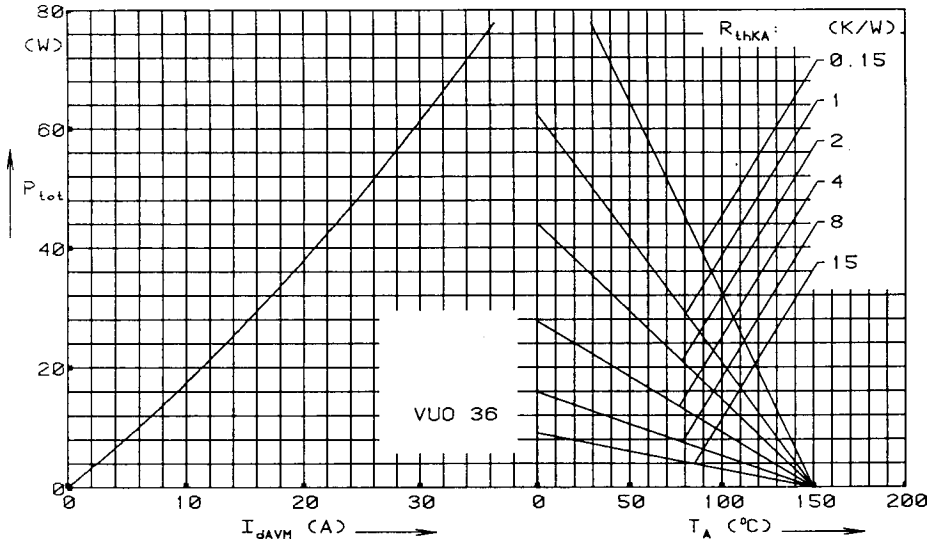


Fig. 4 Power dissipation versus direct output current and ambient temperature

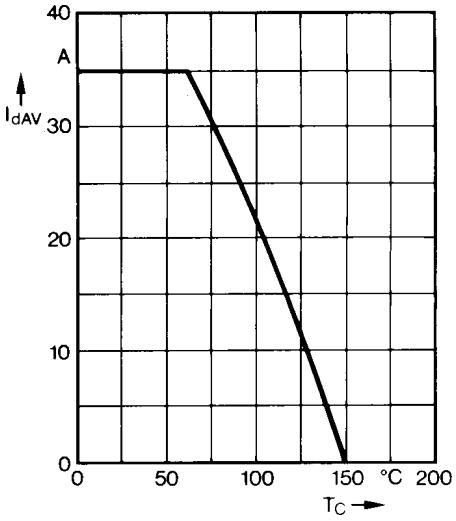


Fig. 5 Maximum forward current at case temperature

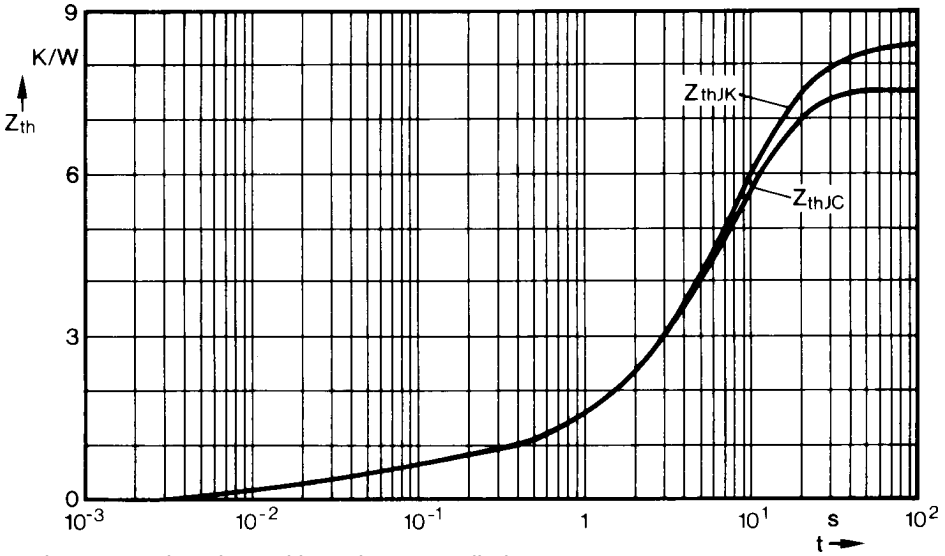


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.183	0.032
2	0.528	0.085
3	1.89	5.9
4	4.9	8.3

Constants for Z_{thJK} calculation:

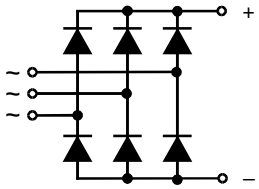
i	R_{thi} (K/W)	t_i (s)
1	0.183	0.032
2	0.528	0.085
3	1.89	5.9
4	4.9	8.3
5	0.9	28.0

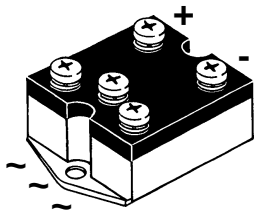
Three Phase Rectifier Bridge

I_{dAVM} = 38 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
600	600	VUO 35-06NO7
1200	1200	VUO 35-12NO7
1400	1400	VUO 35-14NO7
1600	1600	VUO 35-16NO7
1800	1800	VUO 35-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		38	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	400	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	440	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	360	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	810	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	650	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	670	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 ± 15 %	Nm
			13 ± 15 %	lb.in.
	Terminal connection torque (M4)		1.5 ± 15 %	Nm
			13 ± 15 %	lb.in.
Weight	typ.		135	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	2.2	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				12	mΩ
R_{thJC}	per diode; DC current			4.2	K/W
	per module			0.7	K/W
R_{thJH}	per diode; DC current			4.8	K/W
	per module			0.8	K/W

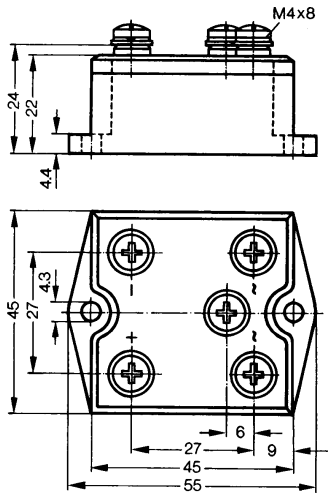
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



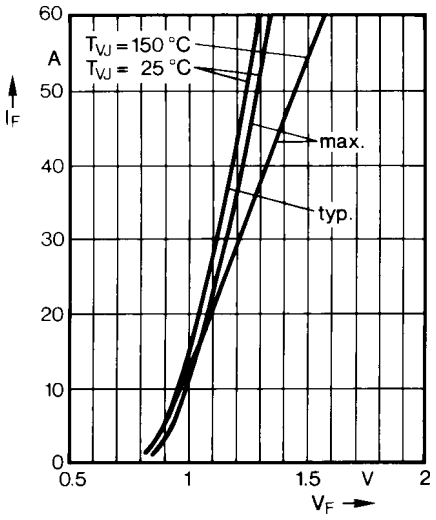


Fig. 1 Forward current versus voltage drop per diode

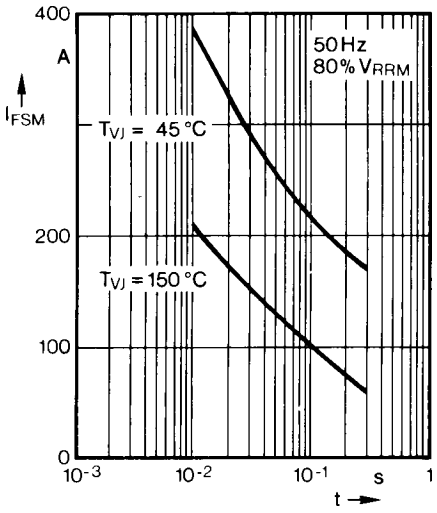


Fig. 2 Surge overload current per diode I_{FSM}: Crest value. t: duration

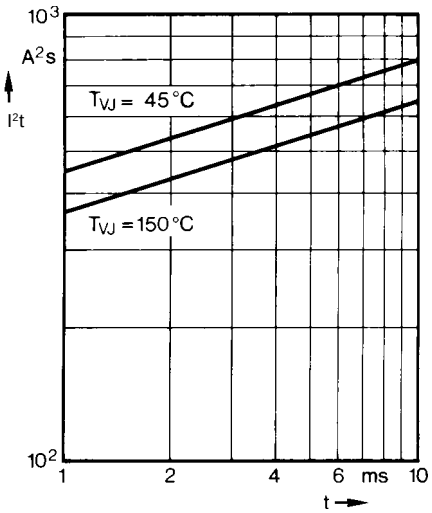


Fig. 3 I^2t versus time (1-10 ms) per diode

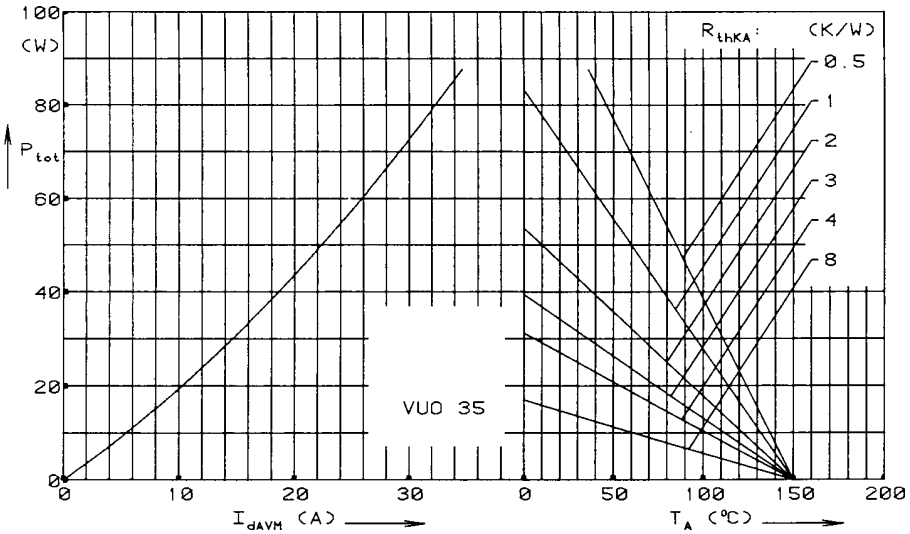


Fig. 4 Power dissipation versus direct output current and ambient temperature

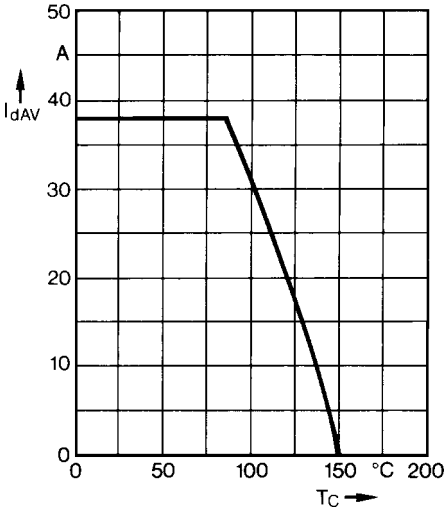


Fig. 5 Maximum forward current at case temperature

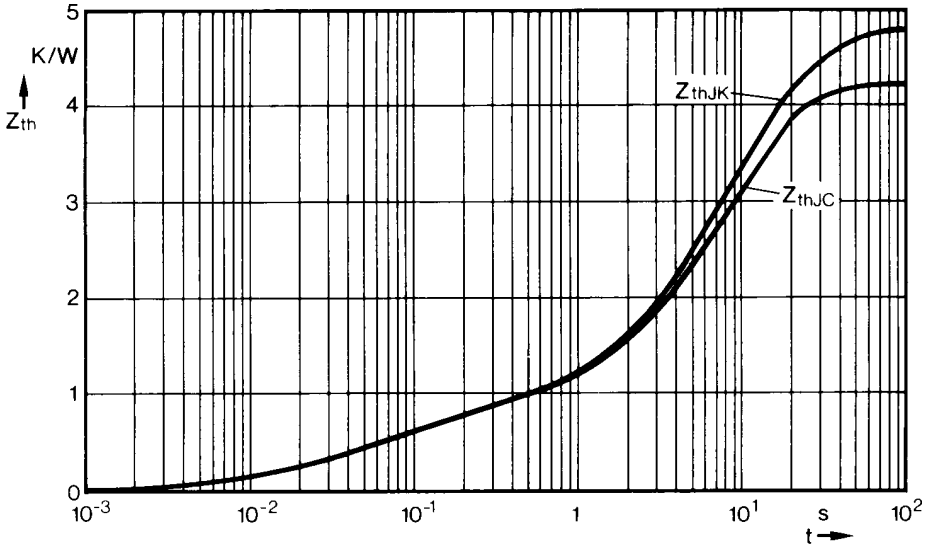


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.194	0.024
2	0.556	0.07
3	0.45	3.25
4	3.0	9.3

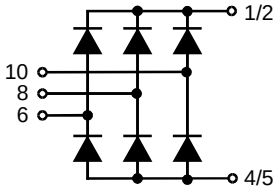
Constants for Z_{thJK} calculation:

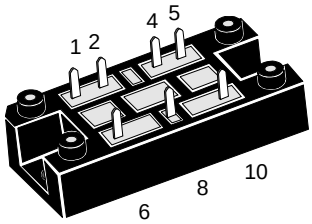
i	R_{thi} (K/W)	t_i (s)
1	0.194	0.024
2	0.556	0.07
3	0.45	3.25
4	3.0	9.3
5	0.6	28.0

Three Phase Rectifier Bridge

I_{dAVM} = 45 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 34-08NO1
1300	1200	VUO 34-12NO1
1500	1400	VUO 34-14NO1
1700	1600	VUO 34-16NO1
1900	1800	VUO 34-18NO1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 90°C, module		36	A
I_{dAV}	T_A = 45°C (R_{thKA} = 0.5 K/W), module		37	A
I_{dAVM}	module		45	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	260	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	280	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	425	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	340	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	325	A^2s
T_{VJ}			-40...+130	°C
T_{VJM}			130	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2 - 2.5	Nm
		(10-32UNF)	18-22	lb.in.
Weight	typ.		35	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM}	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM}	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.51	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				15	mΩ
R_{thJH}	per diode, 120° rect.			2.5	K/W
	per module, 120° rect.			0.42	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

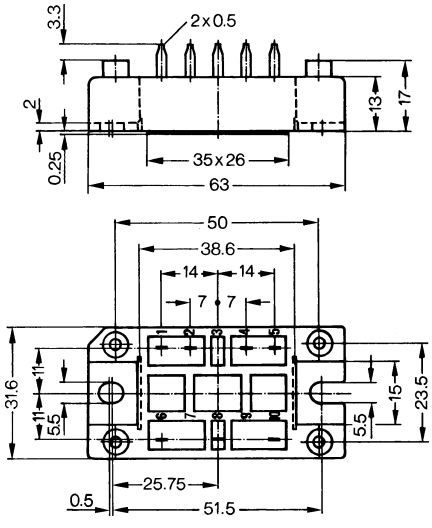
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



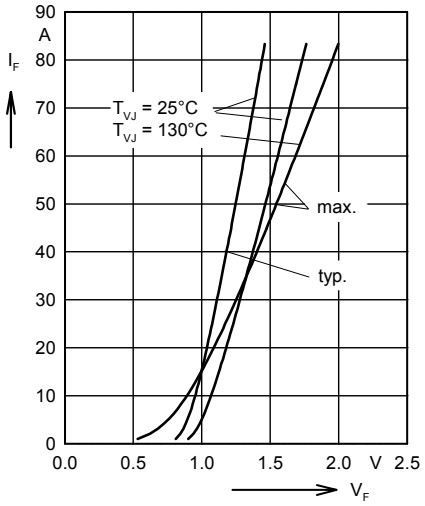


Fig. 1 Forward current versus voltage drop per diode

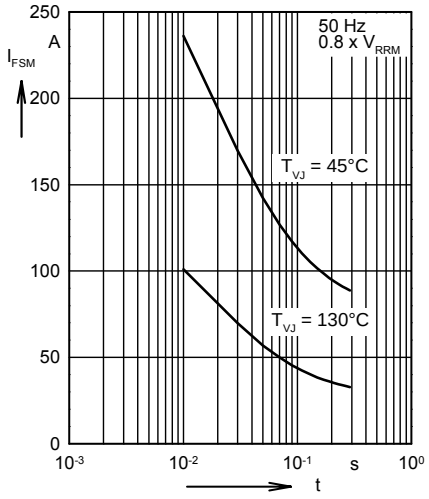


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t:duration

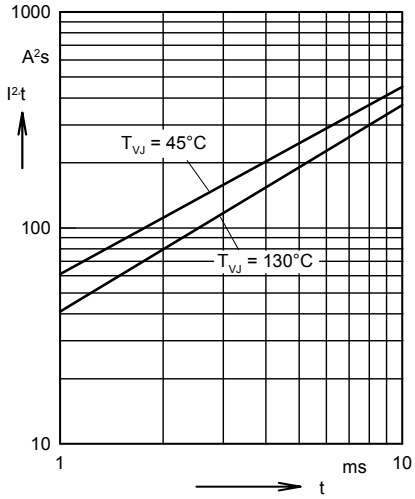


Fig. 3 I^2t versus time (1-10 ms) per diode

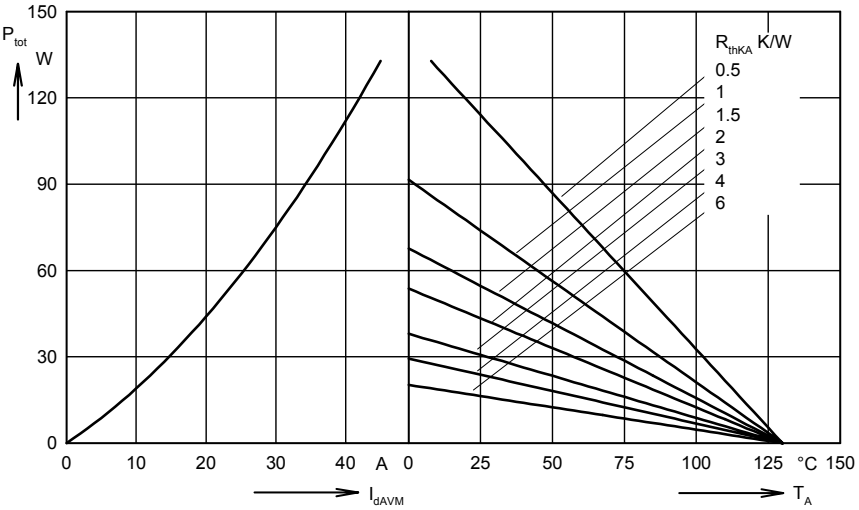


Fig. 4 Power dissipation versus direct output current and ambient temperature

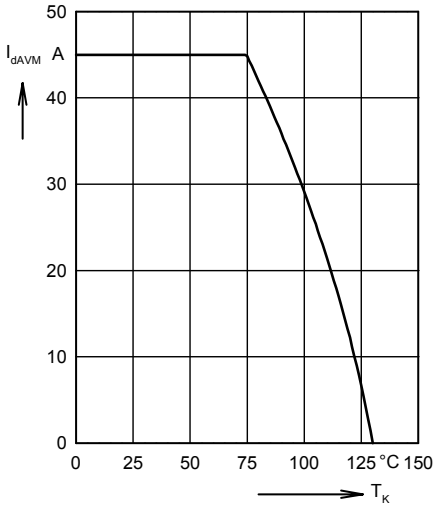


Fig. 5 Maximum forward current at heatsink temperature T_K

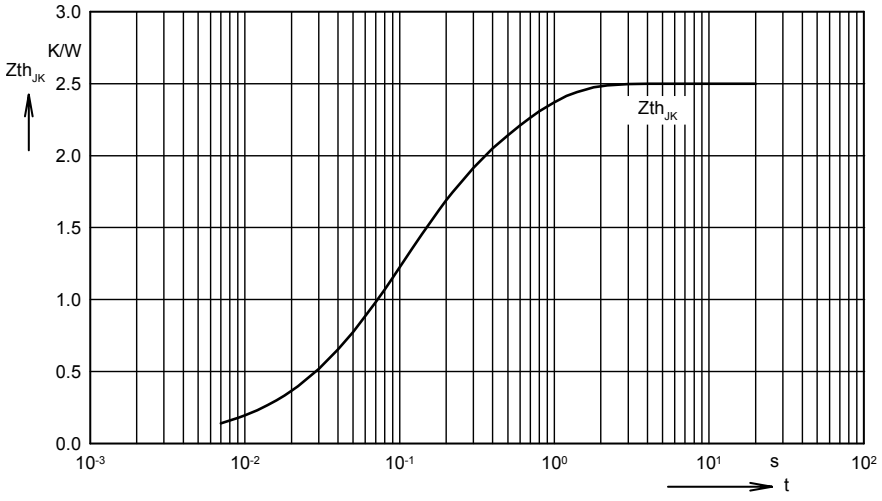


Fig. 6 Transient thermal impedance junction to heatsink per diode

Constants for Z_{thJK} calculation:

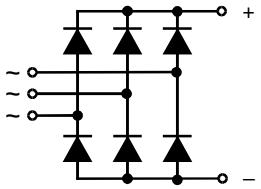
i	R_{th} (K/W)	t_i (s)
1	0.005	0.008
2	0.3	0.05
3	1.245	0.1
4	0.95	0.5

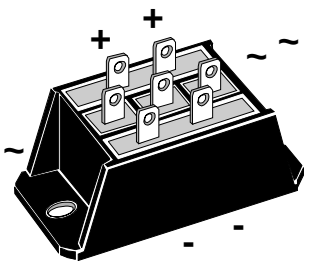
Three Phase Rectifier Bridge

I_{dAV} = 37 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 30-08NO3
1300	1200	VUO 30-12NO3
1500	1400	VUO 30-14NO3
1700	1600	VUO 30-16NO3
1900	1800	VUO 30-18NO3*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		37	A
I_{dAVM} ①	module		50	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	330	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	290	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	460	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	355	A^2s
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		50	g

Symbol	Test Conditions		Characteristic Values	
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	5	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	2.55	V
V_{T0}	For power-loss calculations only		0.9	V
r_T			11	mΩ
R_{thJC}	per diode, DC current		2.4	K/W
	per module		0.4	K/W
R_{thJH}	per diode, DC current		3.0	K/W
	per module		0.5	K/W
d_S	Creeping distance on surface		10	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

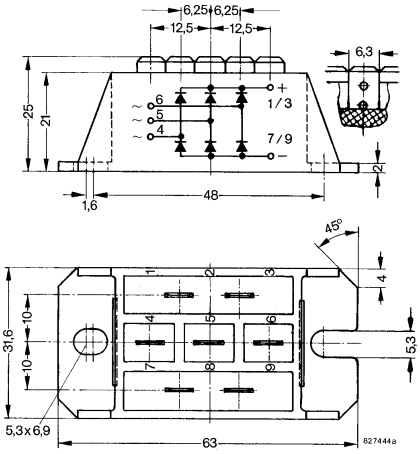
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
① for resistive load at bridge output
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Rectifier for DC motors field current

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Use output terminals in parallel connection!

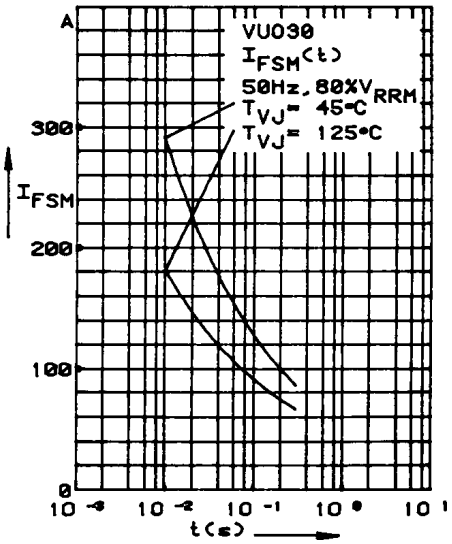


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

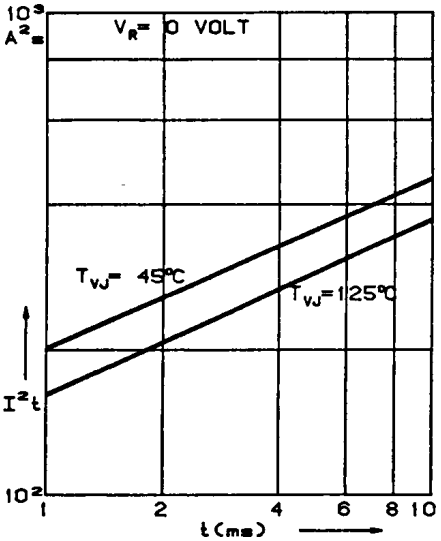


Fig. 2 I^2t versus time (1-10 ms)

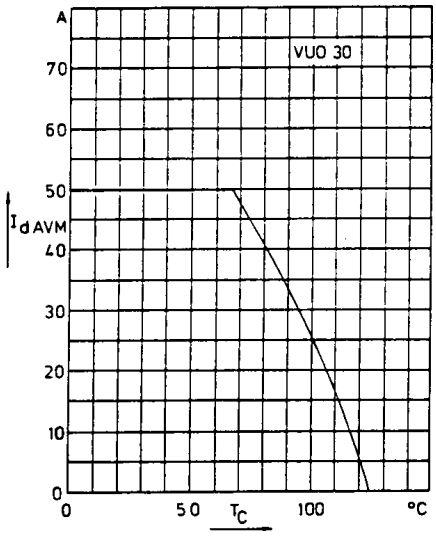


Fig. 3 Max. forward current at case temperature

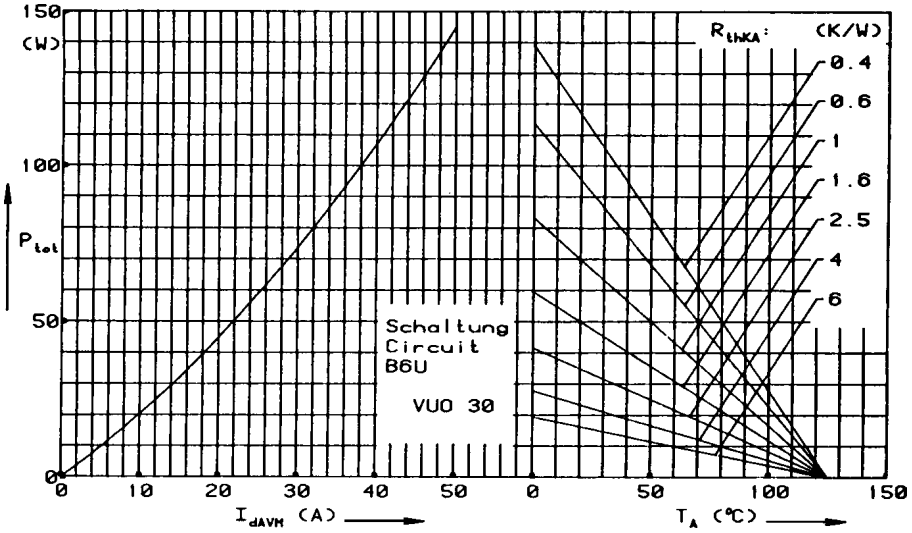


Fig. 4 Power dissipation versus forward current and ambient temperature

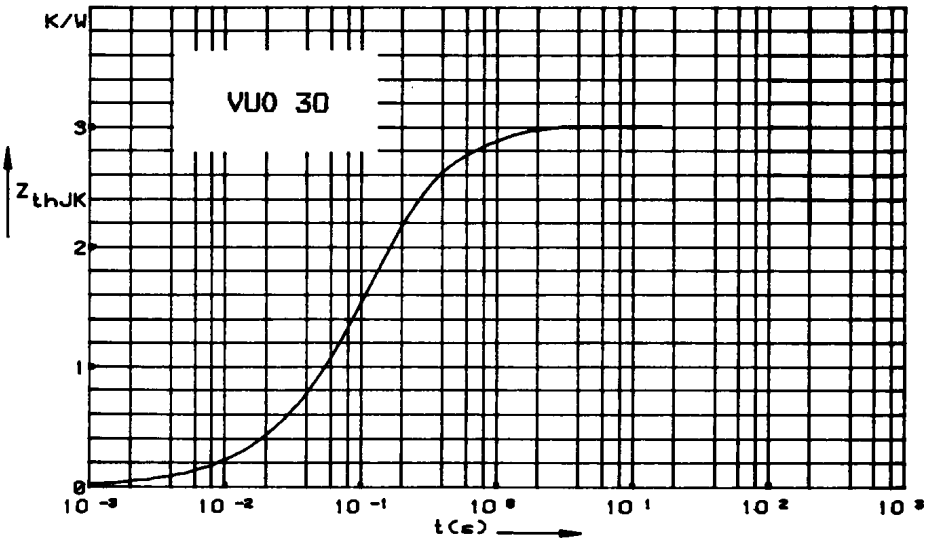


Fig. 5 Transient thermal impedance junction to heatsink per diode

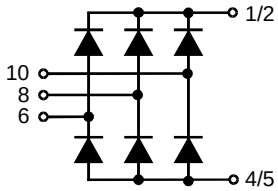
Constants for Z_{thJK} calculation:

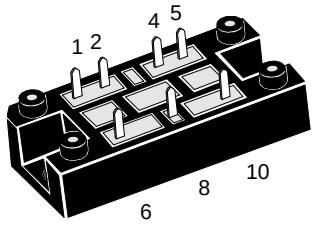
i	R_{thi} (K/W)	t_i (s)
1	0.489	0.0717
2	0.544	0.1241
3	1.376	0.1214
4	0.6	0.620

Three Phase Rectifier Bridge

I_{dAVM} = 55 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 52-08NO1
1300	1200	VUO 52-12NO1
1500	1400	VUO 52-14NO1
1700	1600	VUO 52-16NO1
1900	1800	VUO 52-18NO1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 90°C, module		54	A
I_{dAV}	T_A = 45°C (R_{thKA} = 0.5 K/W), module		43	A
I_{dAVM}	module		55	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	375	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	305	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	325	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	615	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	590	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	465	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	445	A^2s
T_{VJ}			-40...+130	°C
T_{VJM}			130	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2 - 2.5	Nm
		(10-32UNF)	18-22	lb.in.
Weight	typ.		35	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM}	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM}	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.46	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				12.5	mΩ
R_{thJH}	per diode, 120° rect.			1.5	K/W
	per module, 120° rect.			0.25	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

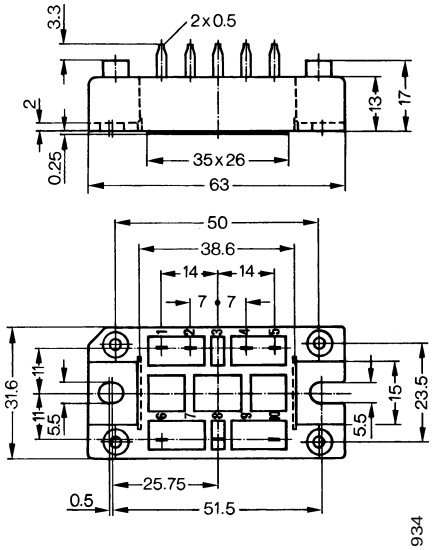
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



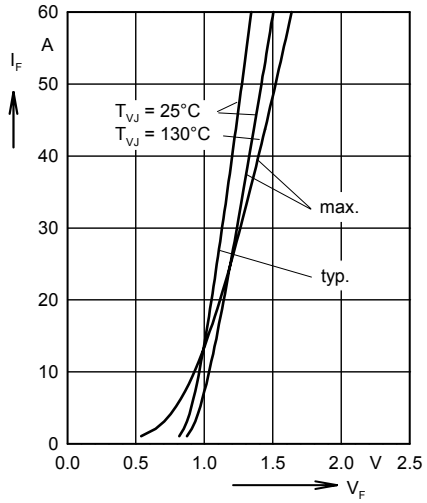


Fig. 1 Forward current versus voltage drop per diode

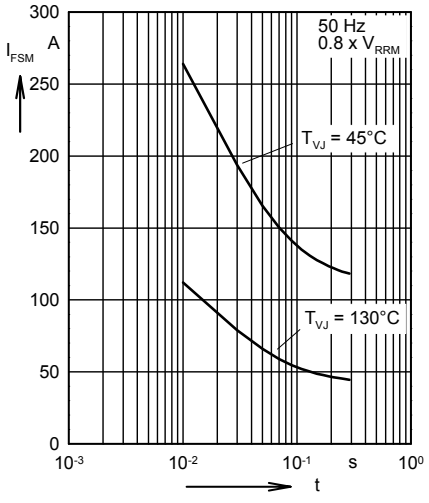


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t:duration

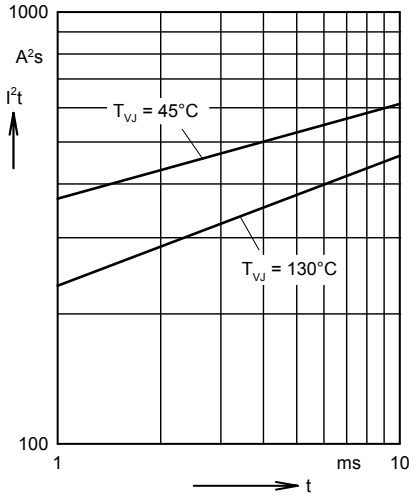


Fig. 3 I^2t versus time (1-10 ms) per diode

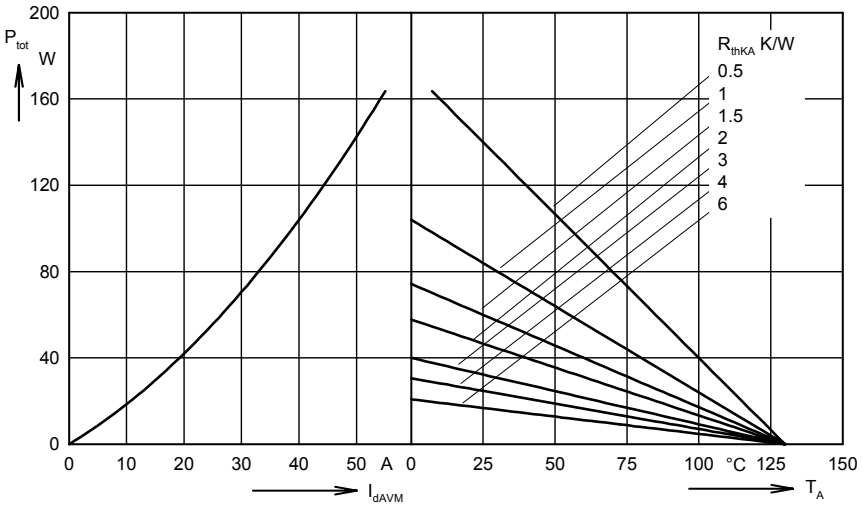


Fig. 4 Power dissipation versus direct output current and ambient temperature

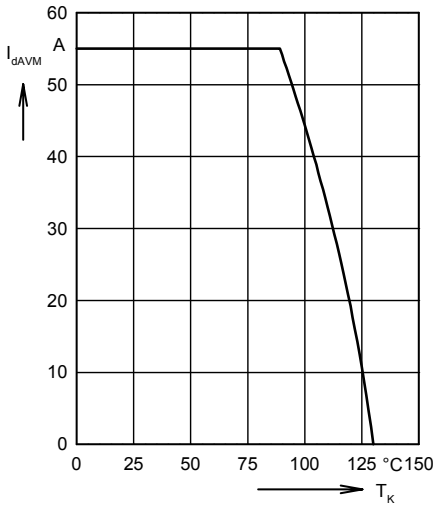


Fig. 5 Maximum forward current at heatsink temperature T_K

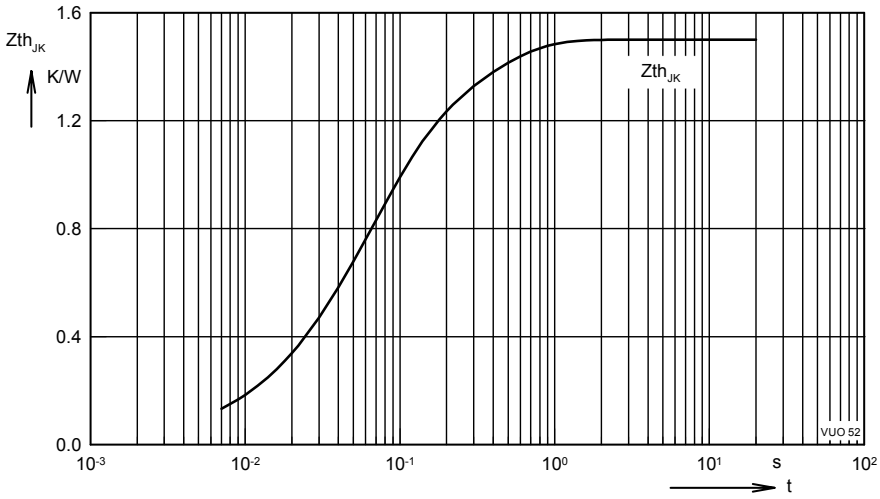


Fig. 6 Transient thermal impedance junction to heatsink per diode

Constants for Z_{thJK} calculation:

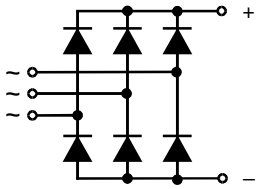
i	R_{th} (K/W)	t_i (s)
1	0.005	0.008
2	0.2	0.05
3	0.845	0.06
4	0.45	0.3

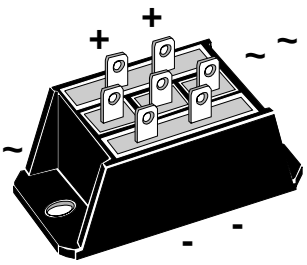
Three Phase Rectifier Bridge

I_{dAV} = 58 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 50-08NO3
1300	1200	VUO 50-12NO3
1500	1400	VUO 50-14NO3
1700	1600	VUO 50-16NO3
1900	1800	VUO 50-18NO3*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		58	A
I_{dAVM} ①	module		75	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	525	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	415	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	440	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1160	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	860	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	810	A^2s
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		50	g

Symbol	Test Conditions		Characteristic Values	
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	5	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	1.9	V
V_{T0}	For power-loss calculations only		0.9	V
r_T			6.0	mΩ
R_{thJC}	per diode, DC current		1.62	K/W
	per module		0.27	K/W
R_{thJH}	per diode, DC current		2.22	K/W
	per module		0.37	K/W
d_S	Creeping distance on surface		10	mm
d_A	Creepage distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

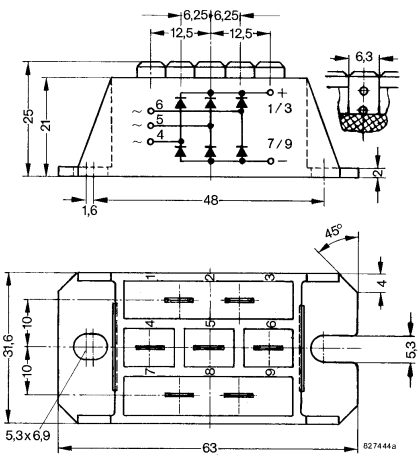
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
① for resistive load at bridge output
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Rectifier for DC motors field current

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Use output terminals in parallel connection!

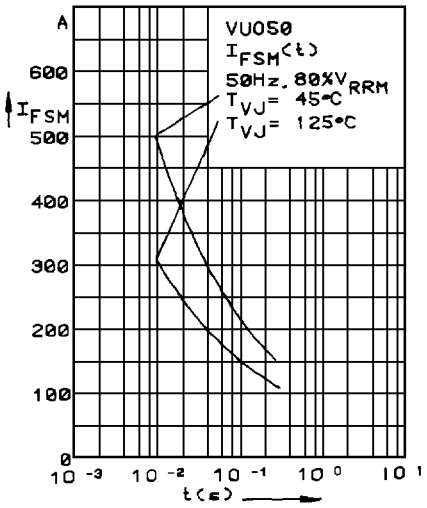


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

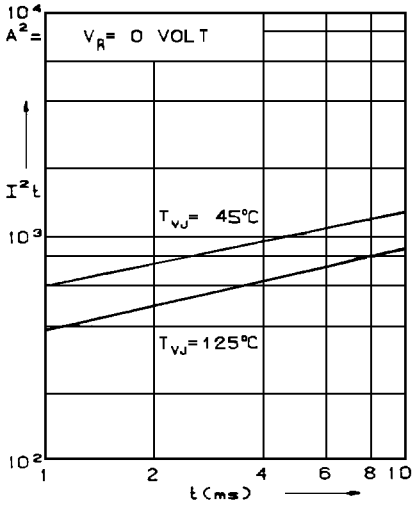


Fig. 2 I^2t versus time (1-10 ms)

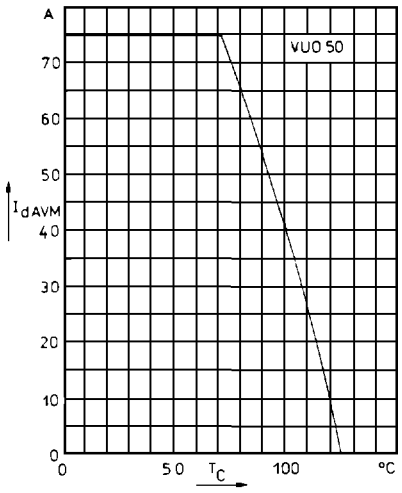


Fig. 3 Max. forward current at case temperature

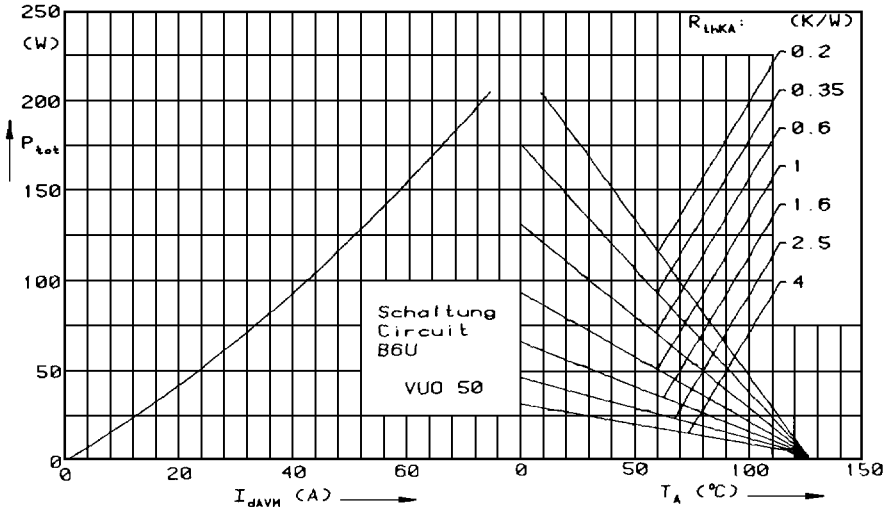
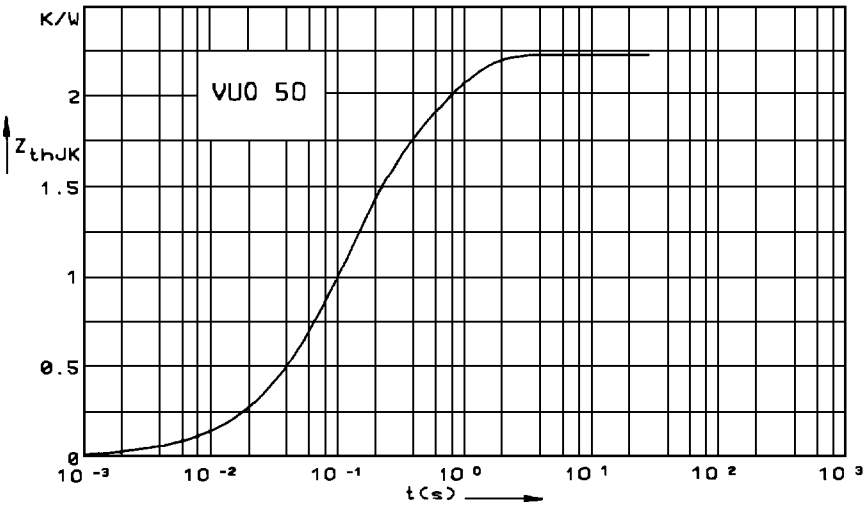


Fig. 4 Power dissipation versus forward current and ambient temperature



Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	1.21	0.1015
2	0.1339	0.1026
3	0.2763	0.4919
4	0.600	0.620

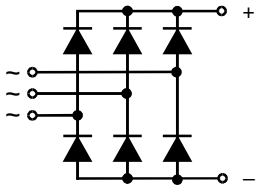
Fig. 5 Transient thermal impedance junction to heatsink per diode

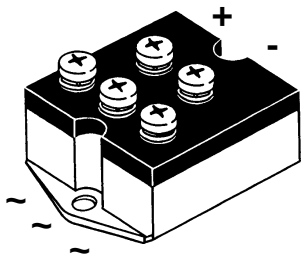
Three Phase Rectifier Bridge

I_{dAVM} = 58 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VUO 55-12NO7
1400	1400	VUO 55-14NO7
1600	1600	VUO 55-16NO7
1800	1800	VUO 55-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		58	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	820	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	670	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	740	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2820	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2300	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		3 ± 15 %	Nm
			26 ± 15 %	lb.in.
Weight	typ.		260	g

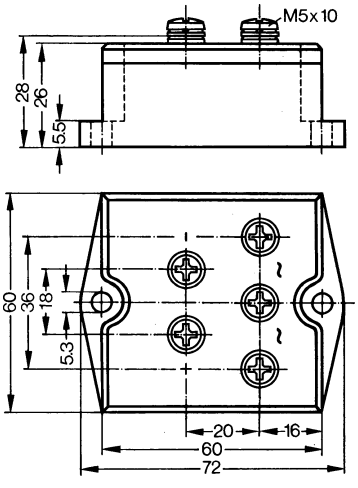
Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				8	mΩ
R_{thJC}	per diode; DC current			2.7	K/W
	per module			0.45	K/W
R_{thJH}	per diode; DC current			3.06	K/W
	per module			0.51	K/W

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

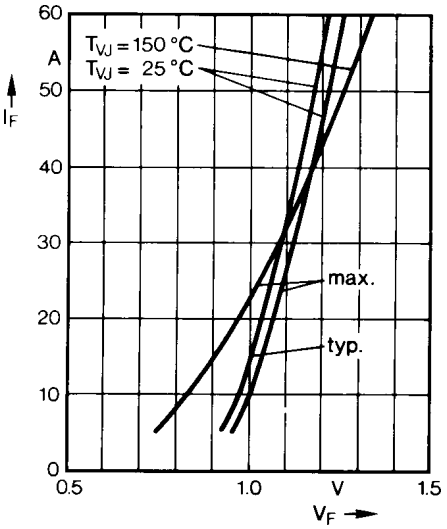


Fig. 1 Forward current versus voltage drop per diode

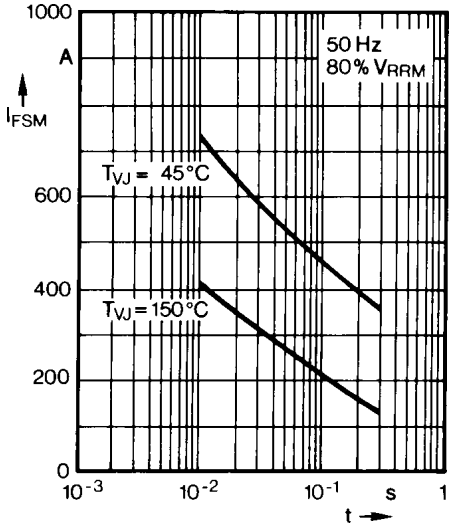


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t: duration

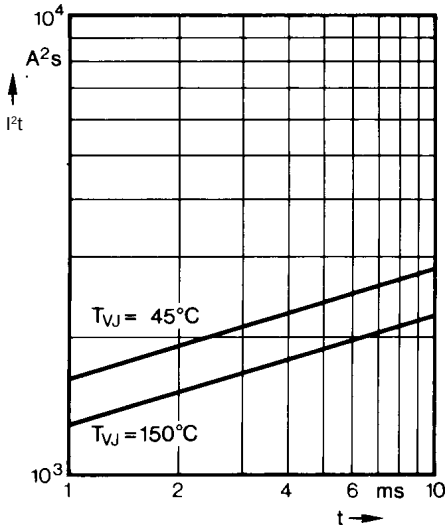


Fig. 3 I^2t versus time (1-10 ms) per diode

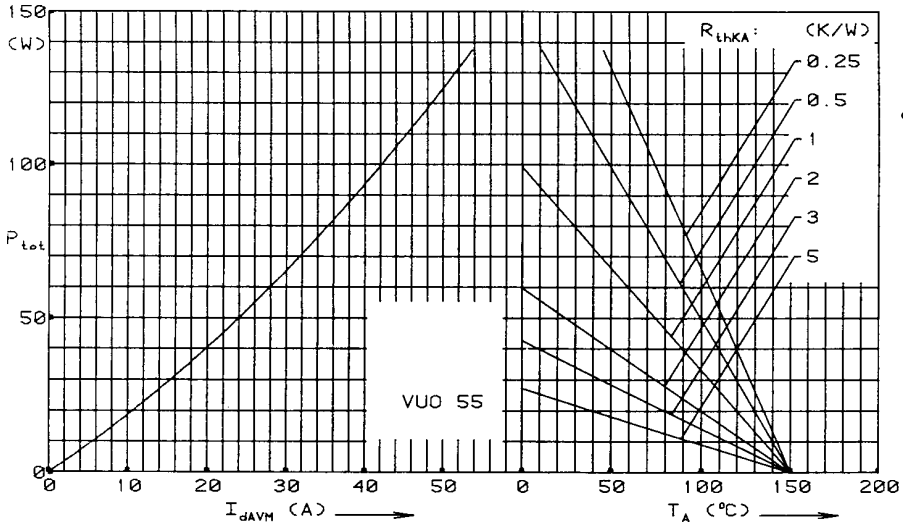


Fig. 4 Power dissipation versus direct output current and ambient temperature

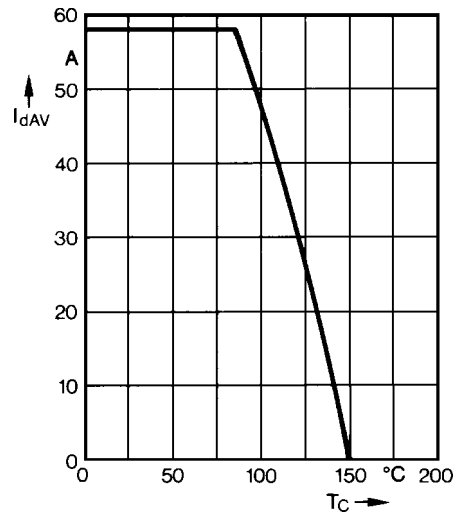


Fig. 5 Maximum forward current at case temperature

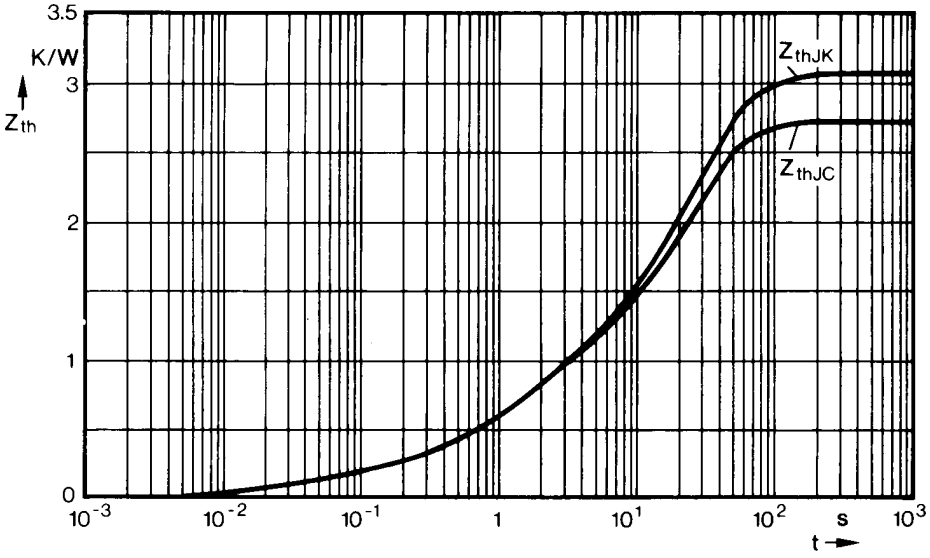


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.036	0.013
2	0.149	0.034
3	0.615	1.35
4	1.9	23.0

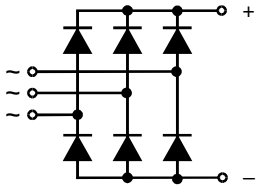
Constants for Z_{thJK} calculation:

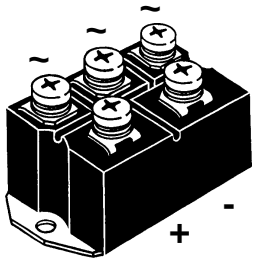
i	R_{thi} (K/W)	t_i (s)
1	0.036	0.013
2	0.149	0.034
3	0.615	1.35
4	1.9	23.0
5	0.36	52.0

Three Phase Rectifier Bridge

I_{dAV} = 63/88 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type	
600	600	VUO 62-06NO7	VUO 82-06NO7
800	800	VUO 62-08NO7	VUO 82-08NO7
1200	1200	VUO 62-12NO7	VUO 82-12NO7
1400	1400	VUO 62-14NO7	VUO 82-14NO7
1600	1600	VUO 62-16NO7	VUO 82-16NO7
1800	1800	VUO 62-18NO7*	VUO 82-18NO7*





* delivery time on request

Symbol	Test Conditions		Maximum Ratings VUO 62	VUO 82	
I_{dAV}	T_C = 110°C, module		63	88	A
I_{dAV}	T_A = 45°C (R_{thCA} = 0.6 K/W), module		48	57	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	820	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	670	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	740	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	2800	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	2250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	2250	A^2s
T_{VJ}			-40...+150		°C
T_{VJM}			150		°C
T_{stg}			-40...+125		°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500		V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000		V~
M_d	Mounting torque (M5)		5 ± 15 %		Nm
	Terminal connection torque (M5)		5 ± 15 %		Nm
Weight	typ.		160		g

Symbol	Test Conditions		Characteristic Values VUO 62	VUO 82	
I_R	V_R = V_{RRM}; T_{VJ} = 25°C	≤	0.3	0.3	mA
	V_R = V_{RRM}; T_{VJ} = T_{VJM}	≤	5	5	mA
V_F	I_F = 150 A; T_{VJ} = 25°C	≤	1.8	1.6	V
V_{T0}	For power-loss calculations only		0.8	0.8	V
r_T			8	5	mΩ
R_{thJC}	per diode		1.45	1.1	K/W
	per module		0.24	0.183	K/W
R_{thJH}	per diode		1.87	1.52	K/W
	per module		0.31	0.253	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

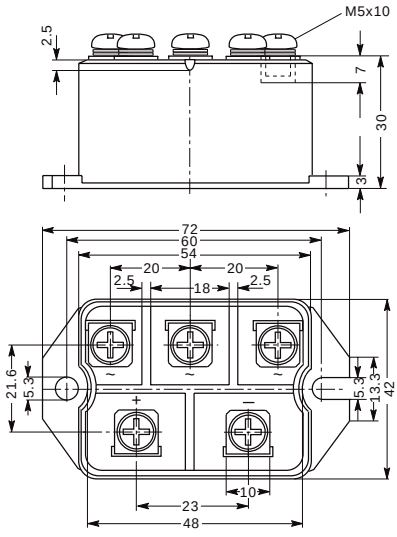
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")

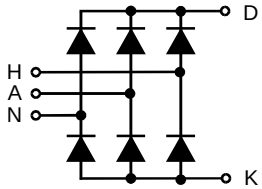


Three Phase Rectifier Bridge

I_{dAV} = 68 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VUO 68-08NO7
1300	1200	VUO 68-12NO7
1500	1400	VUO 68-14NO7
1700	1600	VUO 68-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		68	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	260	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	280	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	425	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	340	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	325	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \le$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M4)	1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	≤	0.5	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	≤	3	mA
V_F	I_F = 55 A;	T_{VJ} = 25°C	≤	1.46	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				13	mΩ
R_{thJC}	per diode; DC current			1.1	K/W
	per module			0.18	K/W
R_{thJH}	per diode, DC current			1.6	K/W
	per module			0.27	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

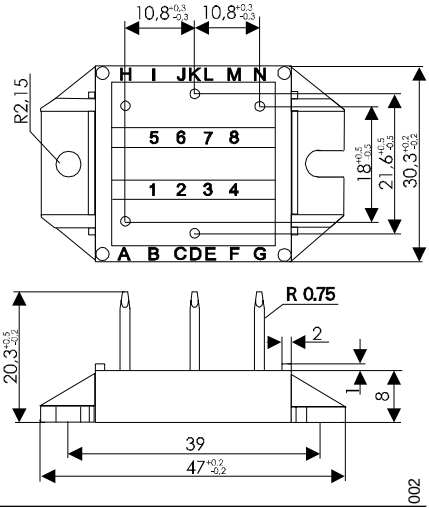
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")

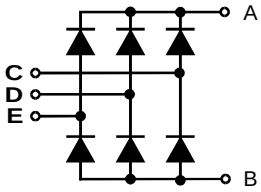


Three Phase Rectifier Bridge

I_{dAV} = 70 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VUO 70-08NO7
1300	1200	VUO 70-12NO7
1500	1400	VUO 70-14NO7
1700	1600	VUO 70-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		70	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.7	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				8	mΩ
R_{thJC}	per diode; DC current			1.45	K/W
	per module			0.363	K/W
R_{thJH}	per diode, DC current			1.9	K/W
	per module			0.475	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on power terminals

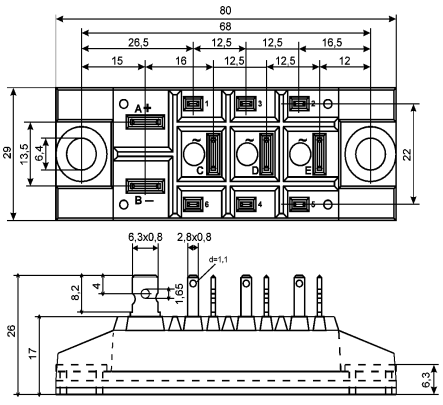
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

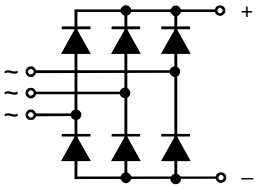
800

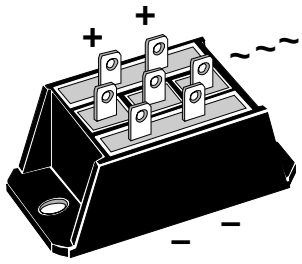
Three Phase Rectifier Bridge

I_{dAV} = 72 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1300	1200	VUO 60-12NO3
1500	1400	VUO 60-14NO3
1700	1600	VUO 60-16NO3
1900	1800	VUO 60-18NO3*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		72	A
I_{dAVM} ①	module		75	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	650	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	540	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1770	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	1460	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1510	A^2s
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		50	g

Symbol	Test Conditions		Characteristic Values	
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	0.3	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	5	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	1.9	V
V_{T0}	For power-loss calculations only		0.8	V
r_T			6.5	mΩ
R_{thJC}	per diode, DC current		1.2	K/W
	per module		0.2	K/W
R_{thJH}	per diode, DC current		1.6	K/W
	per module		0.27	K/W
d_S	Creep distance on surface		10	mm
d_A	Strike distance in air		9.4	mm
a	Max. allowable acceleration		50	m/s^2

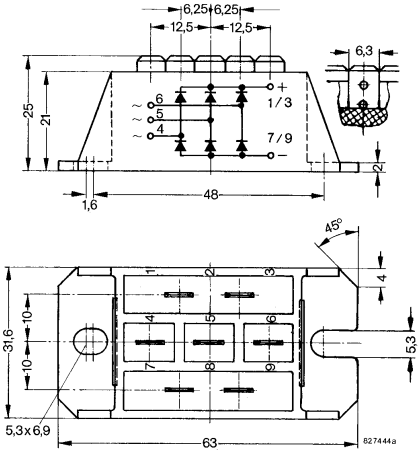
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
① for resistive load at bridge output
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- ¼" fast-on terminals
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Rectifier for DC motors field current

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Use output terminals in parallel connection!

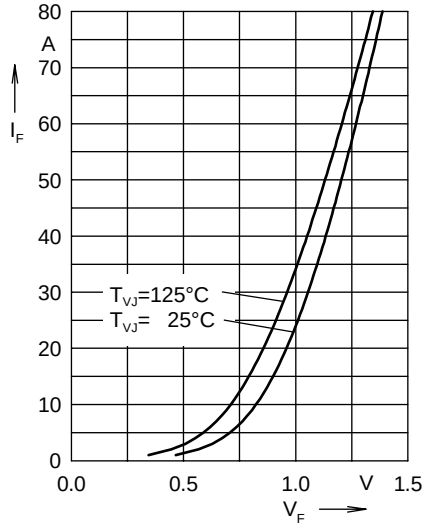


Fig. 4 Forward current versus voltage drop per diode

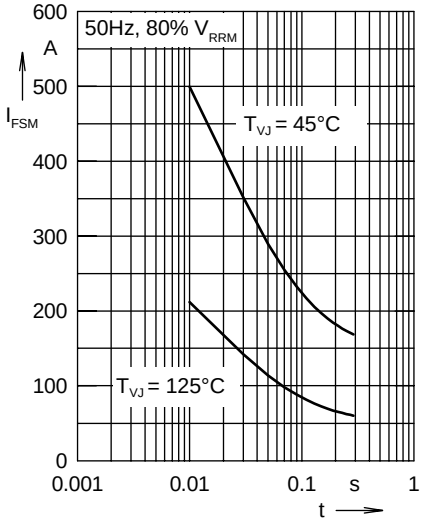


Fig. 5 Surge overload current

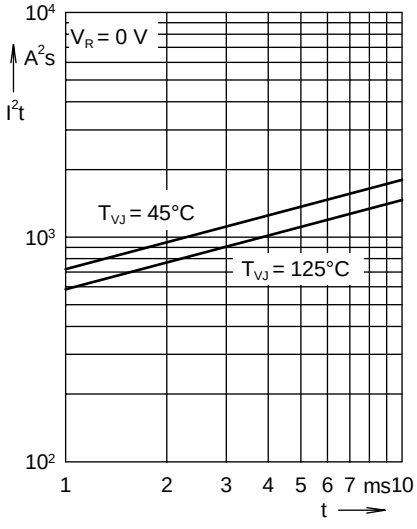


Fig. 6 I^2t versus time per diode

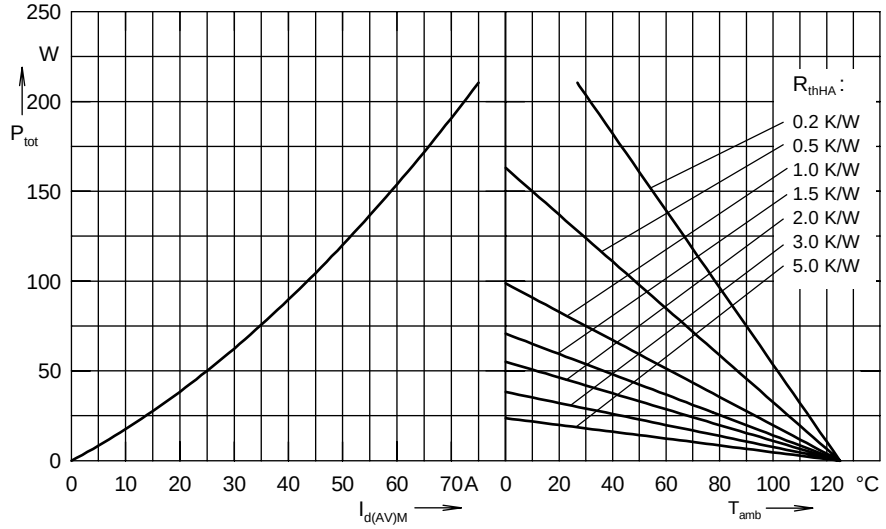


Fig. 7 Power dissipation versus direct output current and ambient temperature

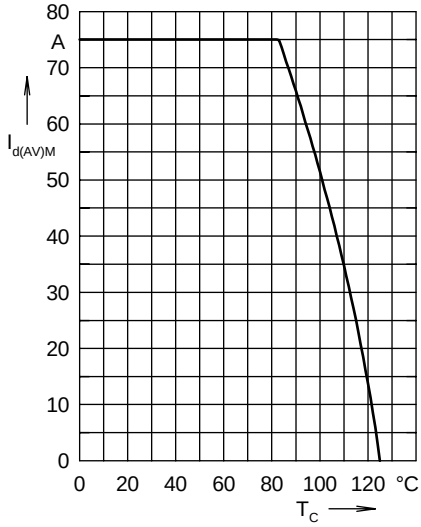


Fig. 8 Max. forward current versus case temperature

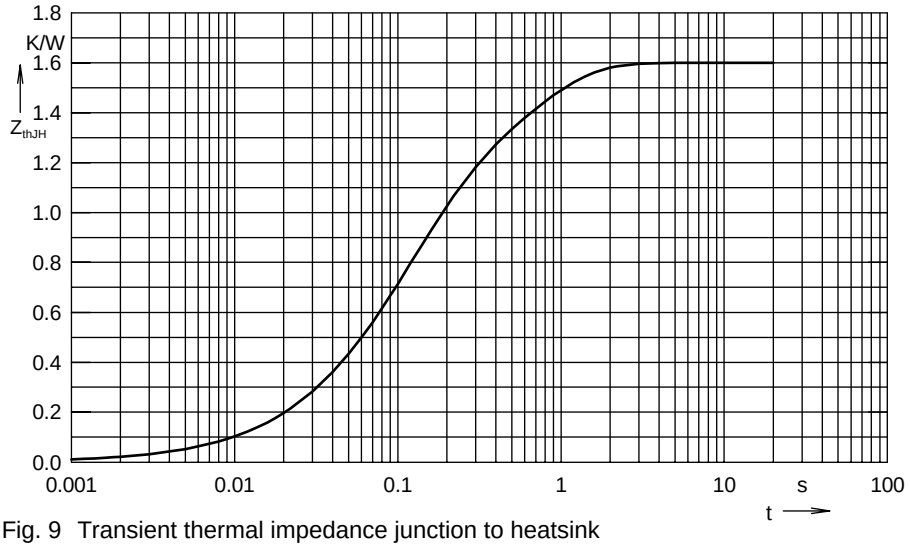


Fig. 9 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

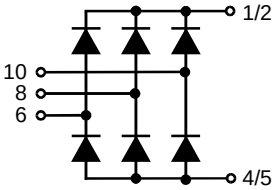
i	R_{thi} (K/W)	t_i (s)
1	0.883	0.102
2	0.098	0.103
3	0.202	0.492
4	0.417	0.62

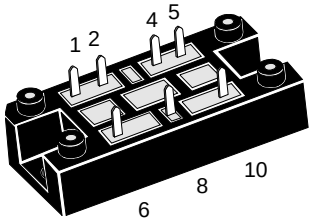
706

Three Phase Rectifier Bridge

I_{dAVM} = 82 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	VUO 80-08NO1
1300	1200	VUO 80-12NO1
1500	1400	VUO 80-14NO1
1700	1600	VUO 80-16NO1
1900	1800	VUO 80-18NO1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 90°C, module		82	A
I_{dAVM}	module		82	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	640	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	520	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	555	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1720	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	1350	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1295	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+130	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	$I_{ISOL} \le$ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2 - 2.5	Nm
		(10-32UNF)	18-22	lb.in.
Weight	typ.		35	g

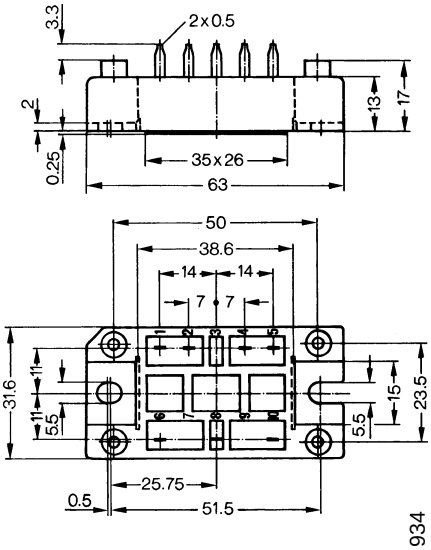
Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$	T_{VJ} = 25°C	≤	0.3	mA
	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$	≤	6	mA
V_F	I_F = 80 A;	T_{VJ} = 25°C	≤	1.5	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				7.5	mΩ
R_{thJH}	per diode, 120° rect.			1.42	K/W
	per module, 120° rect.			0.24	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- Leads suitable for PC board soldering
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

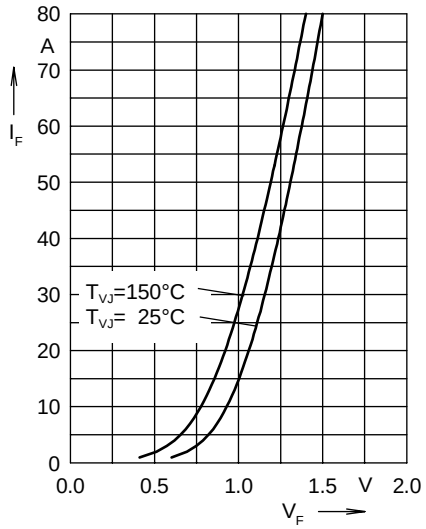


Fig. 1 Forward current versus voltage drop per diode

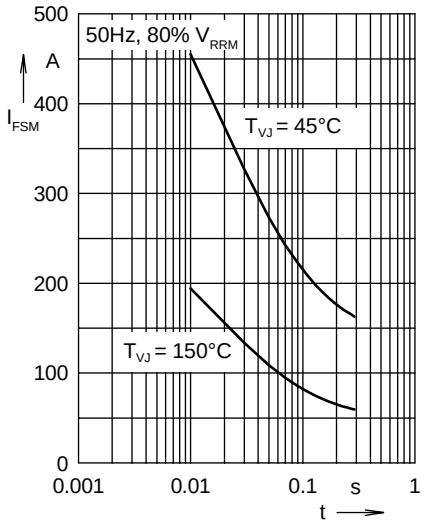


Fig. 2 Surge overload current

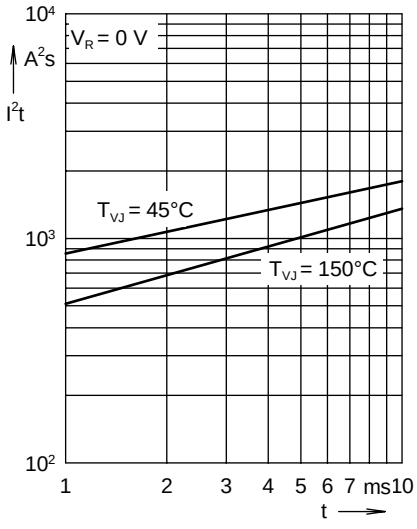


Fig. 3 I^2t versus time per diode

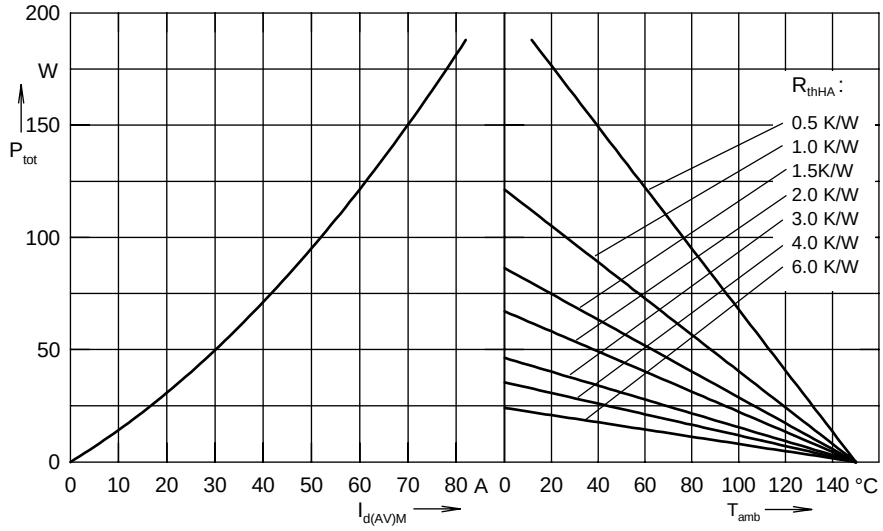


Fig. 4 Power dissipation versus direct output current and ambient temperature

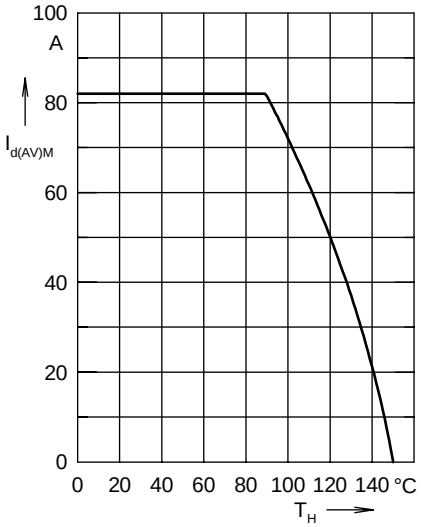


Fig. 5 Max. forward current versus heatsink temperature

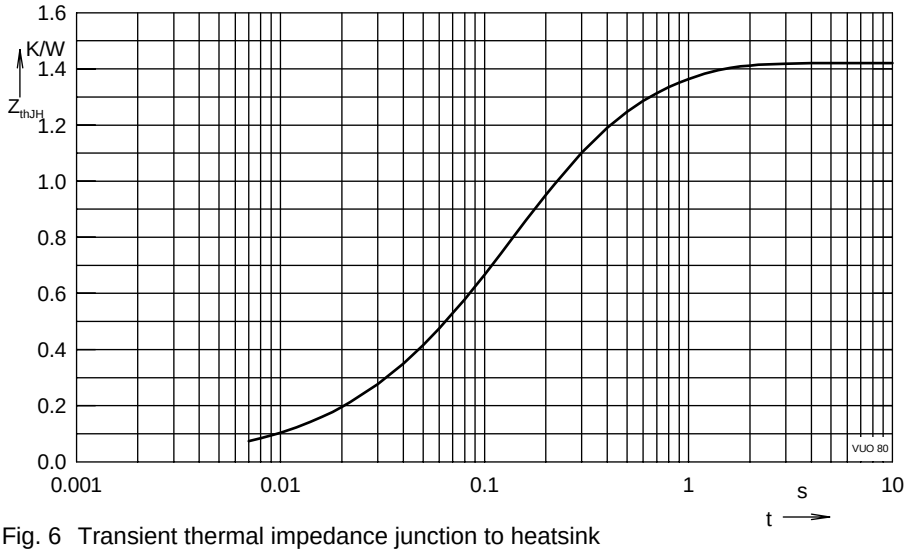


Fig. 6 Transient thermal impedance junction to heatsink

Constants for Z_{thJH} calculation:

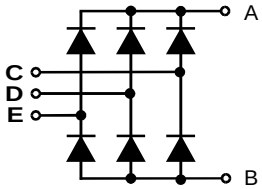
i	R_{thi} (K/W)	t_i (s)
1	0.005	0.01
2	0.21	0.05
3	0.795	0.14
4	0.41	0.5

Three Phase Rectifier Bridge

I_{dAV} = 85 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VUO 85-08NO7
1300	1200	VUO 85-12NO7
1500	1400	VUO 85-14NO7
1700	1600	VUO 85-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		85	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	750	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	820	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	700	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	2800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2820	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2250	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				6	mΩ
R_{thJC}	per diode; DC current			1.3	K/W
	per module			0.22	K/W
R_{thJH}	per diode, DC current			1.6	K/W
	per module			0.27	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on power terminals

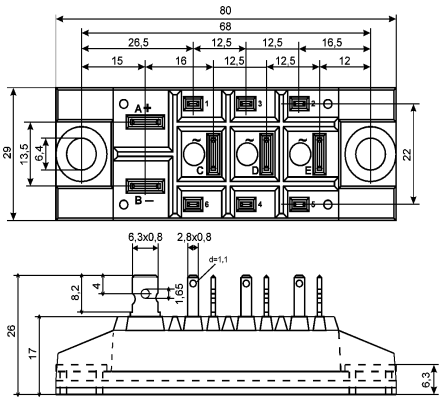
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

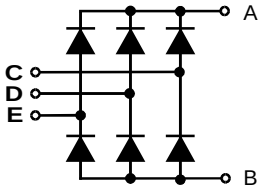
008

Three Phase Rectifier Bridge

I_{dAV} = 86 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
900	800	VUO 86-08NO7
1300	1200	VUO 86-12NO7
1500	1400	VUO 86-14NO7
1700	1600	VUO 86-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 90°C, module		86	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	530	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	570	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	480	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	520	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1400	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1360	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1150	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1140	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M4)	1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	3	mA
V_F	I_F = 80 A;	T_{VJ} = 25°C	≤	1.5	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				7.5	mΩ
R_{thJC}	per diode; DC current			1.2	K/W
	per module			0.2	K/W
R_{thJH}	per diode, DC current			1.5	K/W
	per module			0.25	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			9.7	mm
a	Max. allowable acceleration			50	m/s^2

Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output.

IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

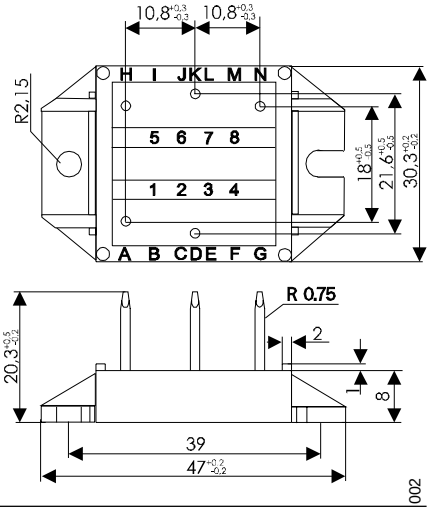
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")

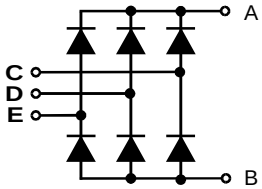


Three Phase Rectifier Bridge

I_{dAV} = 100 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V	V_{RRM} V	Types
800	800	VUO 100-08NO7
1200	1200	VUO 100-12NO7
1400	1400	VUO 100-14NO7
1600	1600	VUO 100-16NO7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 100°C, module		100	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1000	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1100	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	700	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	750	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	5000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	5020	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2330	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight	typ.		110	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.5	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	10	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.4	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				5	mΩ
R_{thJC}	per diode; DC current			1.12	K/W
	per module			0.28	K/W
R_{thJH}	per diode, DC current			1.5	K/W
	per module			0.375	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Features

- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on power terminals

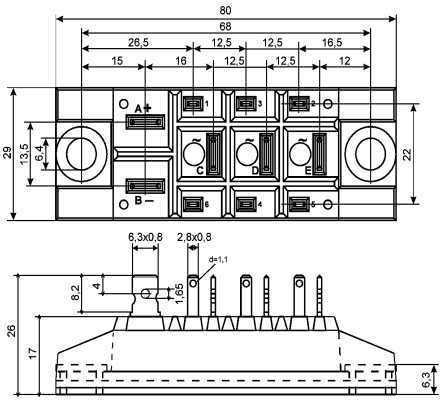
Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 refer to a single diode unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

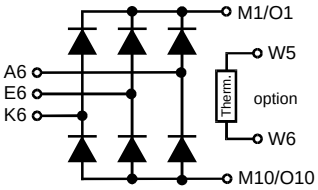
008

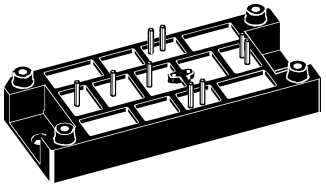
Three Phase Rectifier Bridge

I_{dAVM} = 121/157 A
V_{RRM} = 1200-1600 V

Preliminary Data

V_{RRM} V	Type	V_{RRM} V	Type
1200	VUO 120-12 NO1	1600	VUO 120-16 NO1
1200	VUO 155-12 NO1	1600	VUO 155-16 NO1





Symbol	Test Conditions		Maximum Ratings VUO 120	VUO155	
V_{RRM}			1200/1600	1200/1600	V
I_{dAVM}	T_C = 75°C, sinusoidal 120°		121	157	A
I_{FSM}	T_{VJ} = 45°C,	t = 10 ms, V_R = 0 V	650	850	A
	T_{VJ} = 150°C,	t = 10 ms, V_R = 0 V	580	760	A
I^2t	T_{VJ} = 45°C,	t = 10 ms, V_R = 0 V	2110	3610	A
	T_{VJ} = 150°C,	t = 10 ms, V_R = 0V	1680	2880	A
P_{tot}	T_C = 25°C per diode		150	190	W
T_{VJ}			-40...+150		°C
T_{VJM}			150		°C
T_{stg}			-40...+125		°C
V_{ISOL}	50/60 Hz	t = 1 min	3000		V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600		V~
M_d	Mounting torque	(M5)	2-2.5		Nm
		(10-32 unf)	18-22		lb.in.
d_S	Creep distance on surface		12.7		mm
d_A	Strike distance in air		9.4		mm
a	Maximum allowable acceleration		50		m/s^2
Weight	typ.		80		g

Symbol	Test Conditions			Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_R	$V_R = V_{RRM}$,	T_{VJ} = 25°C				0.3	mA
	$V_R = V_{RRM}$,	T_{VJ} = 150°C				5	mA
V_F	I_F = 150 A,	T_{VJ} = 25°C	VUO 120			1.59	V
			VUO 155			1.49	V
V_{F0}	For power-loss calculations only		VUO 120			0.80	V
			VUO 155			0.75	V
r_T	T_{VJ} = 150°C		VUO 120			6.1	mΩ
			VUO 155			4.6	mΩ
R_{thJC}	per diode		VUO 120			1.0	K/W
			VUO 155			0.8	K/W
R_{thJH}			VUO 120			1.3	K/W
			VUO 155			1.1	K/W
R_{25} (option)	Siemens S 891/2,2/+9					2.2	kΩ

Features

- Soldering connections for PCB mounting
- Isolation voltage 3600 V~
- Convenient package outline
- UL registered E 72873
- Case and potting UL94 V-0

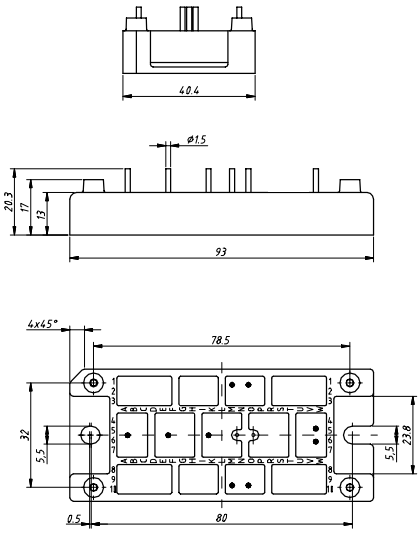
Applications

- Input Rectifier for Drive Inverters

Advantages

- Easy to mount with two screws
- Suitable for wave soldering
- High temperature and power cycling capability

Dimensions in mm (1 mm = 0.0394")



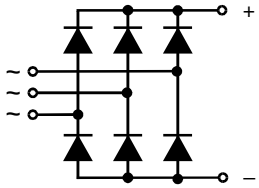
IXYS reserves the right to change limits, test conditions and dimensions

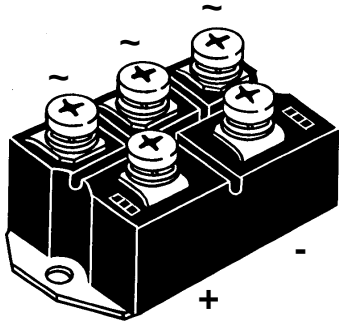
Three Phase Rectifier Bridge

I_{dAV} = 127 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
800	800	VUO 110-08NO7
1200	1200	VUO 110-12NO7
1400	1400	VUO 110-14NO7
1600	1600	VUO 110-16NO7
1800	1800	VUO 110-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C, module		127	A
I_{dAV}	T_A = 35°C (R_{thCA} = 0.2 K/W), module		118	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1300	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1000	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1100	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	7200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	7200	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	5000	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	5000	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M6)		5 ± 15 %	Nm
	Terminal connection torque (M6)		5 ± 15 %	Nm
Weight	typ.		270	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 300 A;	T_{VJ} = 25°C	≤	1.9	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				4	mΩ
R_{thJC}	per diode			0.9	K/W
	per module			0.15	K/W
R_{thJH}	per diode			1.08	K/W
	per module			0.18	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

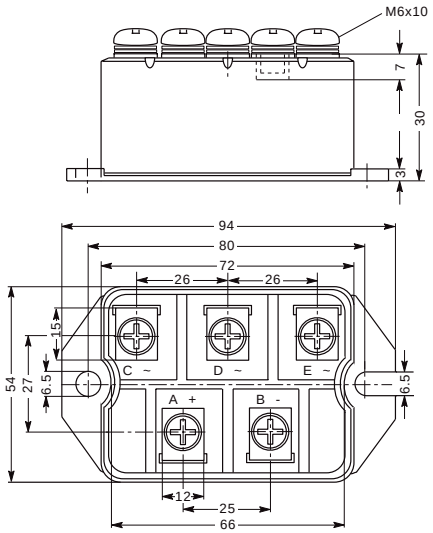
Data according to IEC 60747 and refer to a single diode unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")

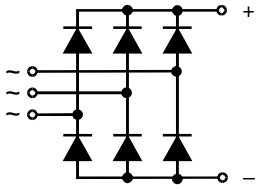


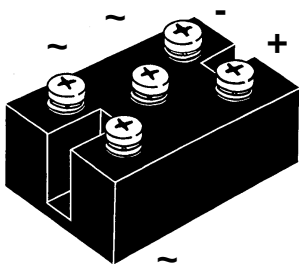
Three Phase Rectifier Bridge

I_{dAVM} = 140 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VUO 105-12NO7
1400	1400	VUO 105-14NO7
1600	1600	VUO 105-16NO7
1800	1800	VUO 105-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		140	A
I_{FSM}	T_{VJ} = 45°C; V_R = 0	t = 10 ms (50 Hz), sine	1500	A
		t = 8.3 ms (60 Hz), sine	1650	A
	$T_{VJ} = T_{VJM}$ V_R = 0	t = 10 ms (50 Hz), sine	1350	A
		t = 8.3 ms (60 Hz), sine	1500	A
I^2t	T_{VJ} = 45°C V_R = 0	t = 10 ms (50 Hz), sine	11250	A^2s
		t = 8.3 ms (60 Hz), sine	11300	A^2s
	$T_{VJ} = T_{VJM}$ V_R = 0	t = 10 ms (50 Hz), sine	9120	A^2s
		t = 8.3 ms (60 Hz), sine	9350	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq$ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
Weight	typ.		225	g

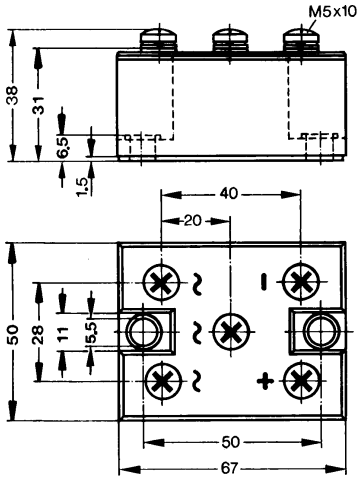
Symbol	Test Conditions		Characteristic Values		
I_R	$V_R = V_{RRM}$;	T_{VJ} = 25°C	≤	0.3	mA
	$V_R = V_{RRM}$;	$T_{VJ} = T_{VJM}$	≤	8.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.6	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				5	mΩ
R_{thJC}	per diode			0.83	K/W
	per module			0.138	K/W
R_{thJH}	per diode			1.13	K/W
	per module			0.188	K/W

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

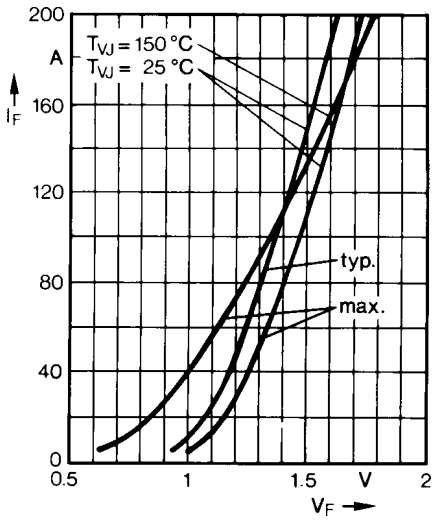


Fig. 1 Forward current versus voltage drop per diode

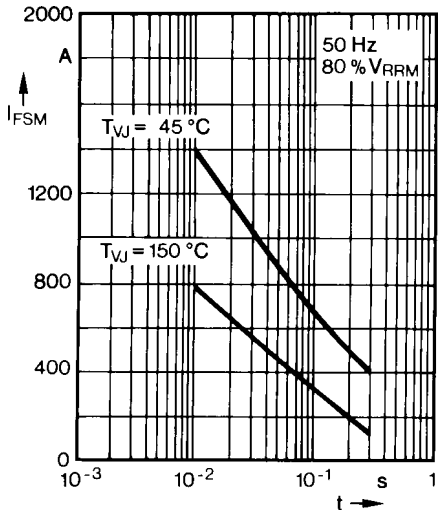


Fig. 2 Surge overload current per diode
I_{FSM}: Crest value. t: duration

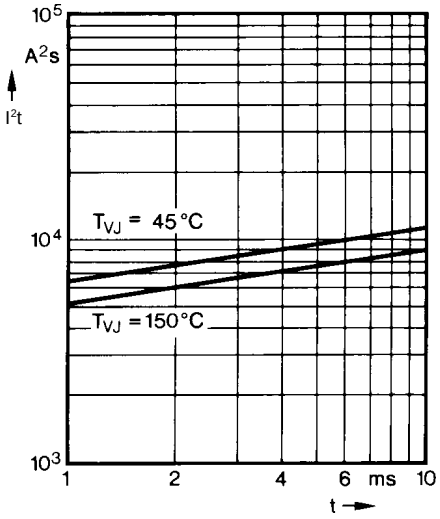


Fig. 3 I^2t versus time (1-10 ms) per diode

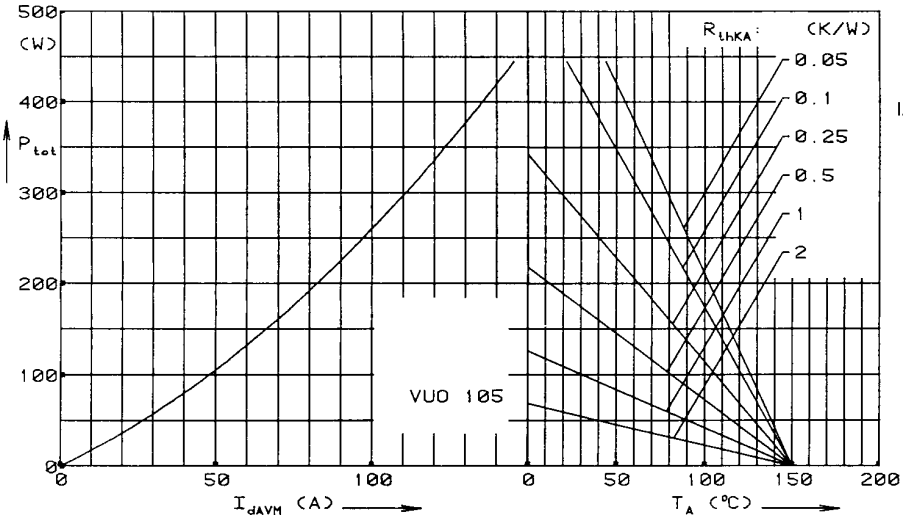


Fig. 4 Power dissipation versus direct output current and ambient temperature

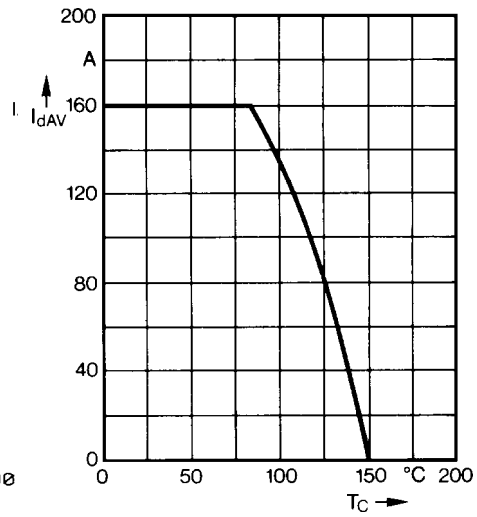


Fig. 5 Maximum forward current at case temperature

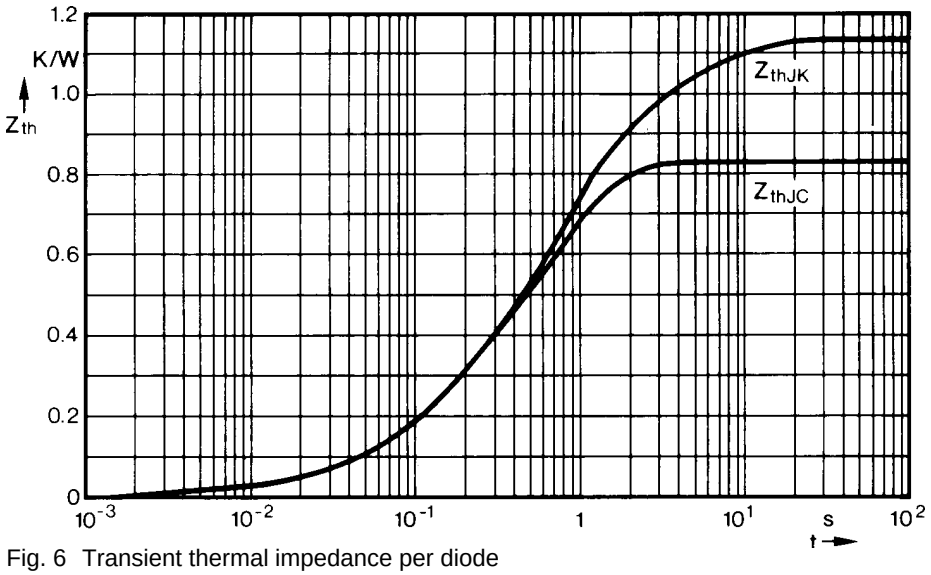


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.014	0.011
2	0.067	0.094
3	0.139	0.28
4	0.61	0.7

Constants for Z_{thJK} calculation:

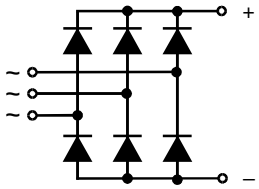
i	R_{thi} (K/W)	t_i (s)
1	0.014	0.011
2	0.067	0.094
3	0.139	0.28
4	0.61	0.7
5	0.3	4.2

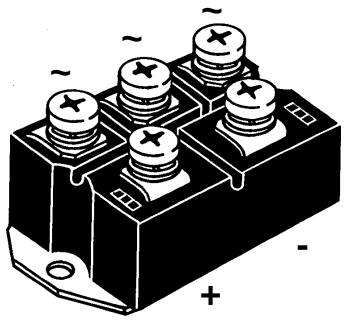
Three Phase Rectifier Bridge

I_{dAV} = 175 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
800	800	VUO 160-08NO7
1200	1200	VUO 160-12NO7
1400	1400	VUO 160-14NO7
1600	1600	VUO 160-16NO7
1800	1800	VUO 160-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C, module		175	A
I_{dAV}	T_A = 35°C (R_{thCA} = 0.2 K/W), module		139	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1950	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1800	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	16 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	16 200	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	12 800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	13 400	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M6)		5 ± 15 %	Nm
	Terminal connection torque (M6)		5 ± 15 %	Nm
Weight	typ.		270	g

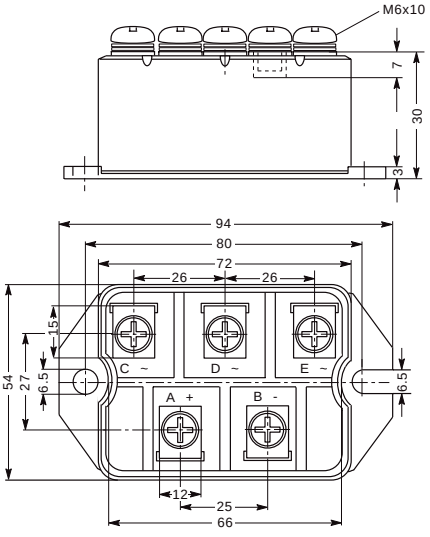
Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 300 A;	T_{VJ} = 25°C	≤	1.65	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				3	mΩ
R_{thJC}	per diode			0.65	K/W
	per module			0.108	K/W
R_{thJH}	per diode			0.83	K/W
	per module			0.138	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



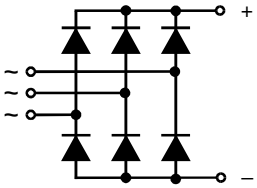
Data according to IEC 60747 and refer to a single diode unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

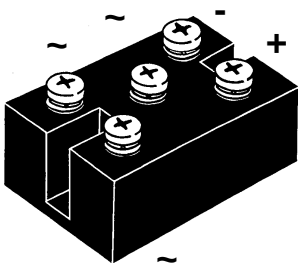
Three Phase Rectifier Bridge

I_{dAVM} = 166 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1200	1200	VUO 125-12NO7
1400	1400	VUO 125-14NO7
1600	1600	VUO 125-16NO7
1800	1800	VUO 125-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAVM}	T_C = 85°C, module		166	A
I_{FSM}	T_{VJ} = 45°C; V_R = 0	t = 10 ms (50 Hz), sine	1800	A
		t = 8.3 ms (60 Hz), sine	1950	A
	T_{VJ} = T_{VJM} V_R = 0	t = 10 ms (50 Hz), sine	1600	A
		t = 8.3 ms (60 Hz), sine	1800	A
I^2t	T_{VJ} = 45°C V_R = 0	t = 10 ms (50 Hz), sine	16200	A^2s
		t = 8.3 ms (60 Hz), sine	16000	A^2s
	T_{VJ} = T_{VJM} V_R = 0	t = 10 ms (50 Hz), sine	12800	A^2s
		t = 8.3 ms (60 Hz), sine	13600	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
	Terminal connection torque (M5)		5 ± 15 %	Nm
			44 ± 15 %	lb.in.
Weight	typ.		225	g

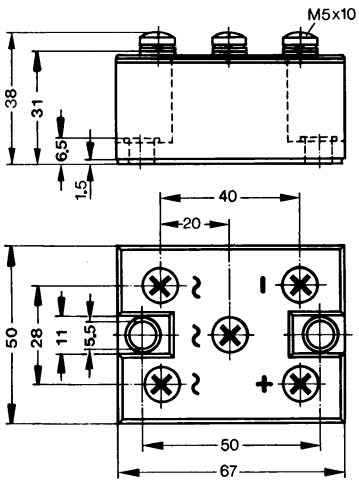
Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	8.0	mA
V_F	I_F = 150 A;	T_{VJ} = 25°C	≤	1.3	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				3	mΩ
R_{thJC}	per diode			0.83	K/W
	per module			0.138	K/W
R_{thJH}	per diode			1.13	K/W
	per module			0.188	K/W

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E 72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single diode unless otherwise stated.
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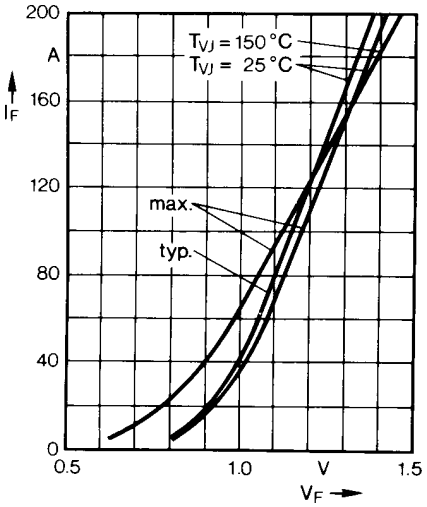


Fig. 1 Forward current versus voltage drop per diode

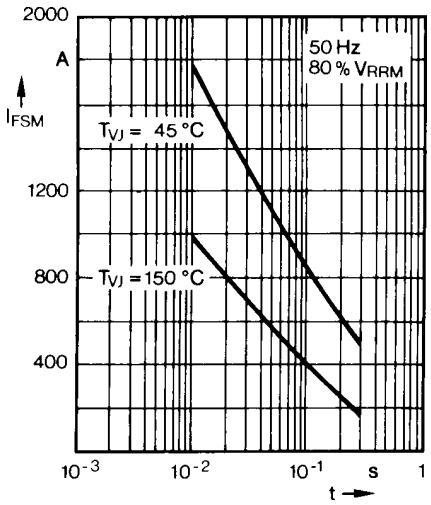


Fig. 2 Surge overload current per diode I_{FSM}: Crest value. t: duration

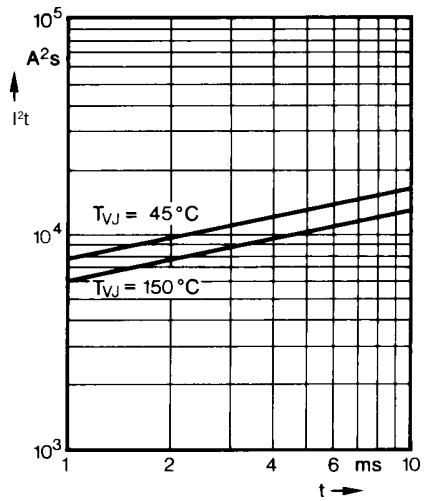


Fig. 3 I^2t versus time (1-10 ms) per diode

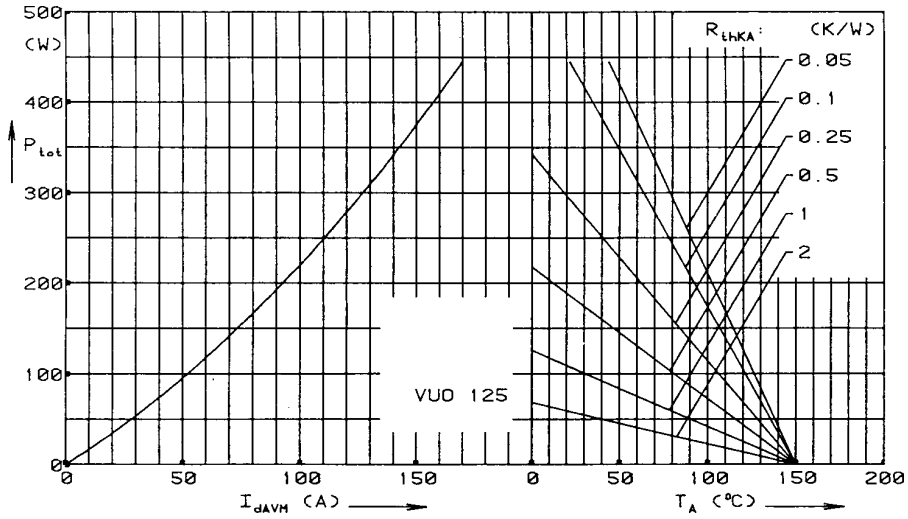


Fig. 4 Power dissipation versus direct output current and ambient temperature

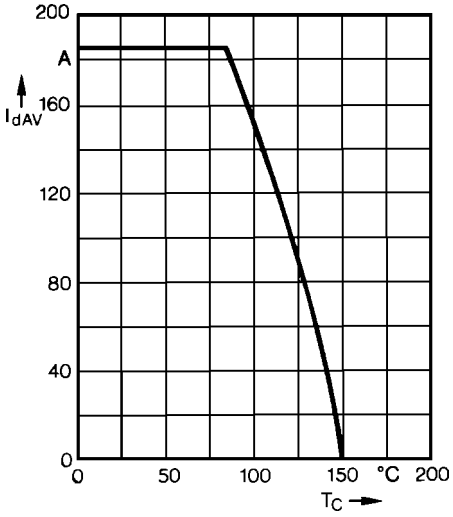


Fig. 5 Maximum forward current at case temperature

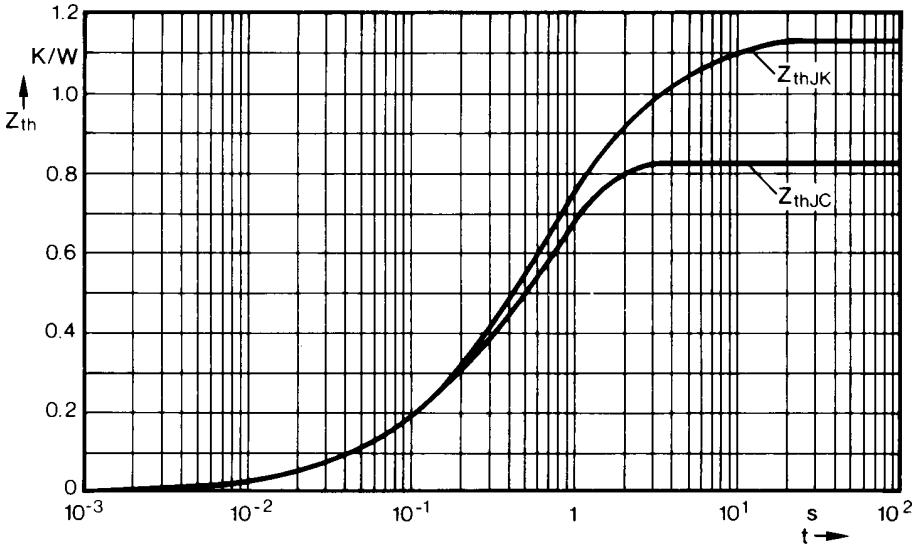


Fig. 6 Transient thermal impedance per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.014	0.011
2	0.067	0.094
3	0.139	0.28
4	0.61	0.7

Constants for Z_{thJK} calculation:

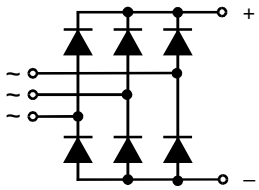
i	R_{thi} (K/W)	t_i (s)
1	0.014	0.011
2	0.067	0.094
3	0.139	0.28
4	0.61	0.7
5	0.3	4.2

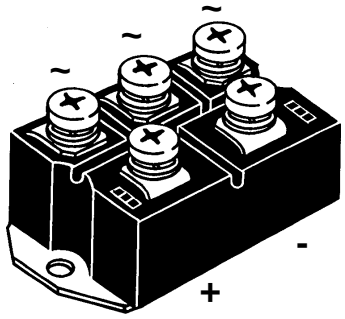
Three Phase Rectifier Bridge

I_{dAV} = 248 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
800	800	VUO 190-08NO7
1200	1200	VUO 190-12NO7
1400	1400	VUO 190-14NO7
1600	1600	VUO 190-16NO7
1800	1800	VUO 190-18NO7*

* delivery time on request





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_C = 100°C, module		248	A
I_{dAV}	T_A = 35°C (R_{thCA} = 0.2 K/W), module		165	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	2800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	3300	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	2500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	2750	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	39 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	45 000	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	31 200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	31 300	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M6)		5 ± 15 %	Nm
	Terminal connection torque (M6)		5 ± 15 %	Nm
Weight	typ.		270	g

Symbol	Test Conditions		Characteristic Values		
I_R	V_R = V_{RRM};	T_{VJ} = 25°C	≤	0.3	mA
	V_R = V_{RRM};	T_{VJ} = T_{VJM}	≤	5	mA
V_F	I_F = 300 A;	T_{VJ} = 25°C	≤	1.43	V
V_{T0}	For power-loss calculations only			0.8	V
r_T				2.2	mΩ
R_{thJC}	per diode, 120°			0.45	K/W
	per module			0.075	K/W
R_{thJH}	per diode, 130°			0.6	K/W
	per module			0.1	K/W
d_S	Creeping distance on surface			10	mm
d_A	Creepage distance in air			9.4	mm
a	Max. allowable acceleration			50	m/s^2

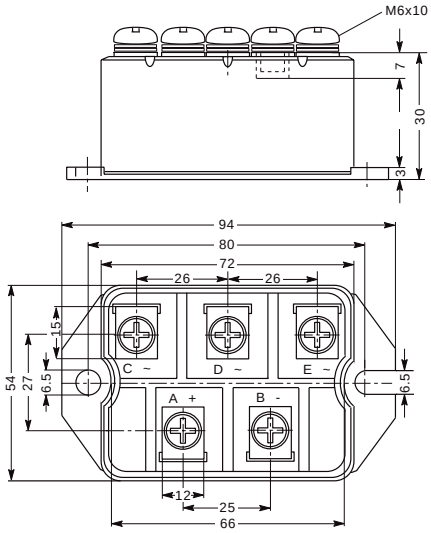
Data according to IEC 60747 and refer to a single diode unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered E72873

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

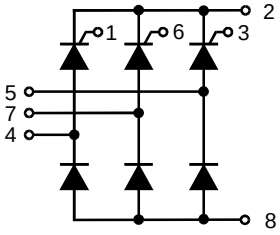
Dimensions in mm (1 mm = 0.0394")

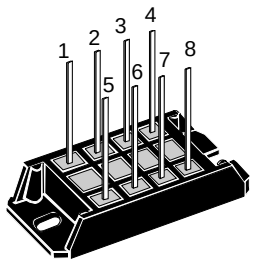


Three Phase Half Controlled Rectifier Bridge

I_{dAVM} = 20 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	VVZ 12-12io1
1500	1400	VVZ 12-14io1
1700	1600	VVZ 12-16io1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 100°C; module		15	A
I_{dAVM}	module		20	A
I_{FRMS}, I_{TRMS}	per leg		12	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	110	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	115	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	100	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	105	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	60	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	55	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	50	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	45	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 50 A	150	A/µs
	f =400 Hz, t_p =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 1/3 ˜ I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		28	g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Soldering terminals
- UL registered E 72873

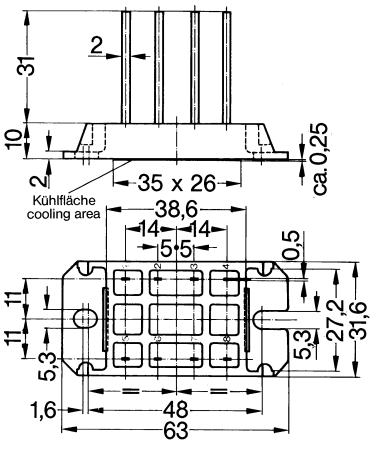
Applications

- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



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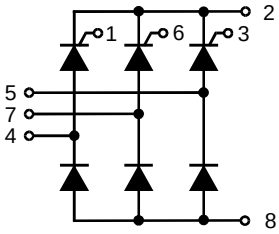
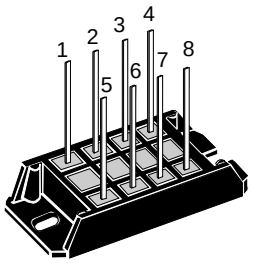
Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_F, V_T	I_F, I_T = 30 A, $T_{VJ} = 25°C$		≤	2	V
V_{T0}	For power-loss calculations only			1.1	V
r_T	($T_{VJ} = 125°C$)			30	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$; I_T = 15 A, t_p = 300 µs, -di/dt = 10 A/µs		typ.	150	µs
Q_r	V_R = 100 V, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			75	µC
R_{thJC}	per thyristor (diode); DC current			2.5	K/W
	per module			0.42	K/W
R_{thJH}	per thyristor (diode); DC current			3.1	K/W
	per module			0.52	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2

Three Phase Half Controlled Rectifier Bridge

I_{dAVM} = 27 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	VVZ 24-12io1
1500	1400	VVZ 24-14io1
1700	1600	VVZ 24-16io1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 100°C; module		21	A
I_{dAVM}	module		27	A
I_{FRMS}, I_{TRMS}	per leg		16	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	320	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	290	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	430	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	350	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 50 A	150	A/µs
	f =400 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 1/3 • I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		28	g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Soldering terminals
- UL registered E 72873

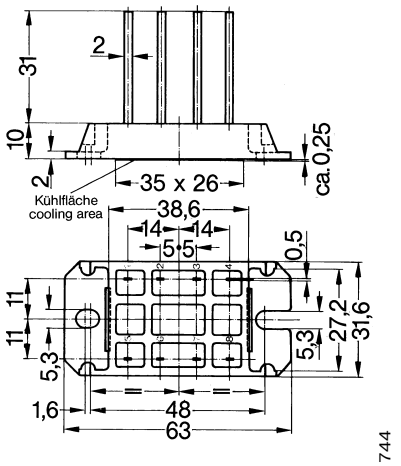
Applications

- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_F, V_T	I_F, I_T = 30 A, $T_{VJ} = 25°C$		≤	1.45	V
V_{T0}	For power-loss calculations only			1	V
r_T	($T_{VJ} = 125°C$)			16	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$		≤	2	µs
	I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	$T_{VJ} = 125°C$; I_T = 15 A, t_p = 300 µs, -di/dt = 10 A/µs		typ.	150	µs
Q_r	V_R = 100 V, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			75	µC
R_{thJC}	per thyristor (diode); DC current			2.1	K/W
	per module			0.35	K/W
R_{thJH}	per thyristor (diode); DC current			2.7	K/W
	per module			0.45	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2

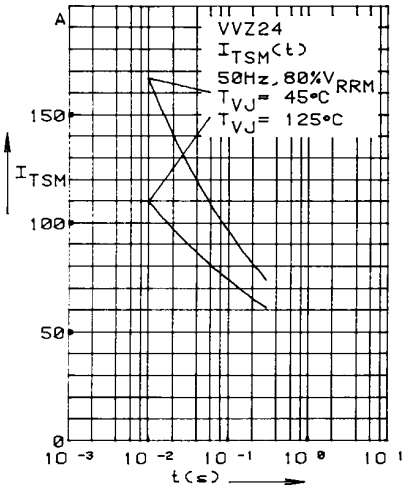


Fig. 1 Surge overload current per chip
I_{FSM}: Crest value, t: duration

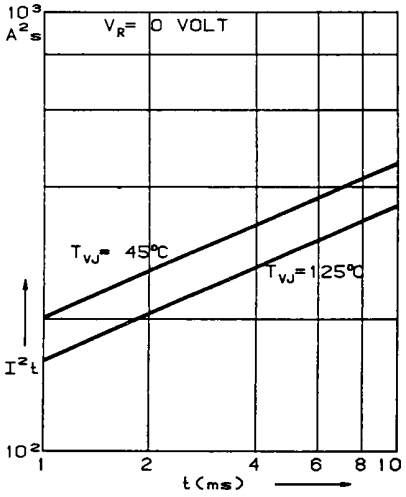


Fig. 2 I^2t versus time (1-10 ms) per chip

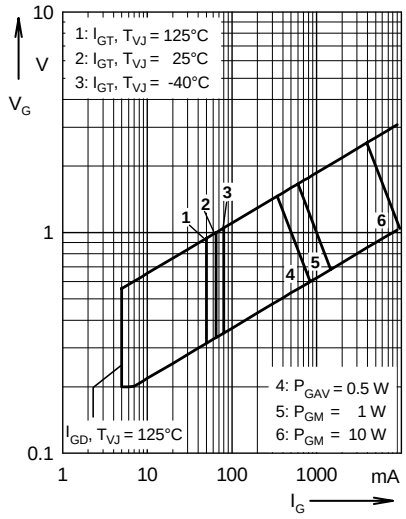


Fig. 3 Gate trigger characteristics
Triggering:

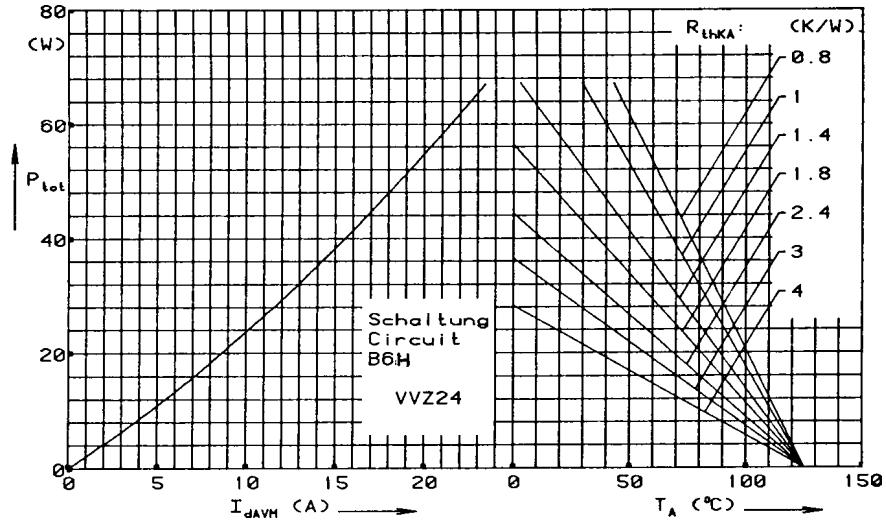


Fig. 4 Power dissipation versus direct output current and ambient temperature

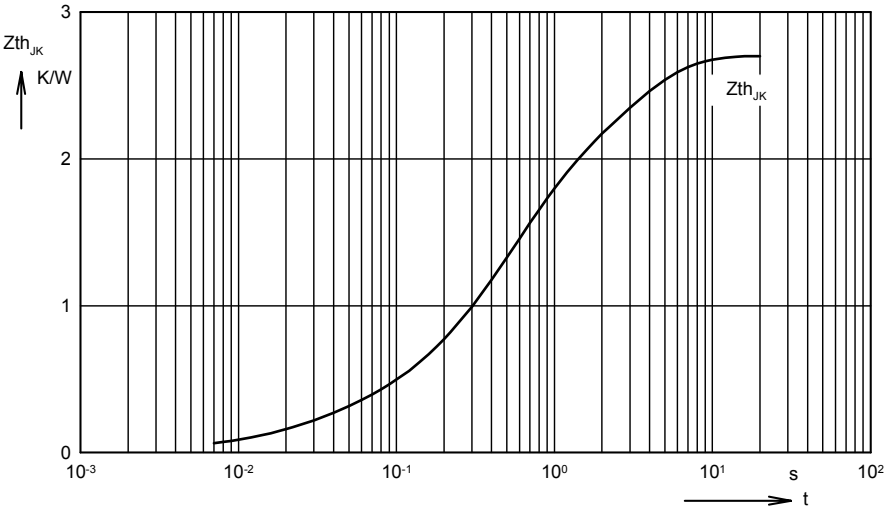


Fig. 5 Transient thermal impedance junction to heatsink

Constants for Z_{thJK} calculation

i	R_{thi} (K/W)	t_i (s)
1	0.17	0.028
2	1.4	0.44
3	1.1	2.6

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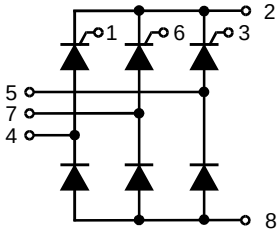
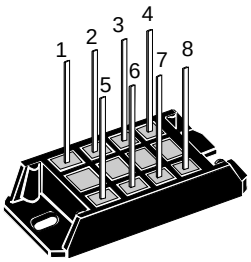
Three Phase Half Controlled Rectifier Bridge

I_{dAVM} = 43 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	VVZ 40-12io1
1500	1400	VVZ 40-14io1
1700	1600	VVZ 40-16io1





Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	T_K = 100°C; module		34	A
I_{dAVM}	module		43	A
I_{FRMS}, I_{TRMS}	per leg		25	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	320	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	340	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	290	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	310	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	510	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	485	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	420	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	400	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 50 A	150	A/µs
	f =400 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.3 A,	non repetitive, I_T = 1/3 • I_{dAV}	500	A/µs
	di_G/dt = 0.3 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque	(M5)	2-2.5	Nm
		(10-32 UNF)	18-22	lb.in.
Weight	typ.		28	g

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Soldering terminals
- UL registered E 72873

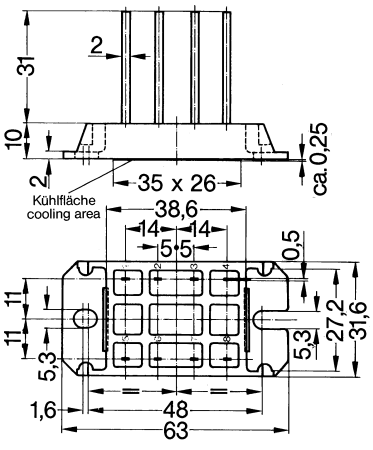
Applications

- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Dimensions in mm (1 mm = 0.0394")



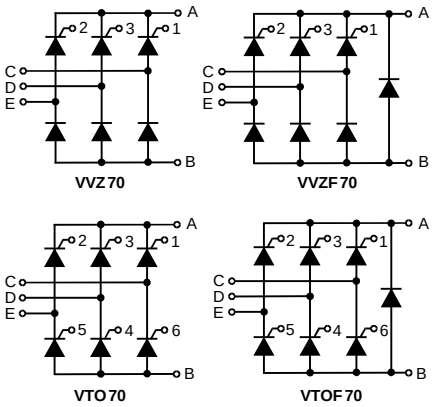
Symbol	Test Conditions		Characteristic Values		
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5	mA
		$T_{VJ} = 25°C$	≤	0.3	mA
V_F, V_T	I_F, I_T = 30 A, $T_{VJ} = 25°C$		≤	1.33	V
V_{T0}	For power-loss calculations only			0.85	V
r_T	($T_{VJ} = 125°C$)			15	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.0	V
		$T_{VJ} = -40°C$	≤	1.2	V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	65	mA
		$T_{VJ} = -40°C$	≤	80	mA
		$T_{VJ} = 125°C$	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5	mA
I_L	I_G = 0.3 A; t_G = 30 µs	$T_{VJ} = 25°C$	≤	150	mA
	di_G/dt = 0.3 A/µs	$T_{VJ} = -40°C$	≤	200	mA
		$T_{VJ} = 125°C$	≤	100	mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2	µs
t_q	$T_{VJ} = 125°C$; I_T = 15 A, t_p = 300 µs, -di/dt = 10 A/µs		typ.	150	µs
Q_r	V_R = 100 V, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			75	µC
R_{thJC}	per thyristor (diode); DC current			1.0	K/W
	per module			0.17	K/W
R_{thJH}	per thyristor (diode); DC current			1.6	K/W
	per module			0.27	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2

Three Phase Rectifier Bridge

I_{dAV} = 70 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
800	800	xxx 70-08io7
1200	1200	xxx 70-12io7
1400	1400	xxx 70-14io7
1600	1600	xxx 70-16io7
		xxx = type



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		70	A
I_{dAVM} ①	module		70	A
I_{FRMS}, I_{TRMS}	per leg		36	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	550	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0 V	t = 8.3 ms (60 Hz), sine	1250	A^2s
$(di/dt)_{cr}$	T_{VJ} = 125°C f = 50 Hz, t_p = 200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A	150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = 1/2 • I_{dAV}	500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000	V/µs
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10	W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5	W
		t_p = 10 ms	≤ 1	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque	(M5)	5 ± 15 %	Nm
		(10-32 UNF)	44 ± 15 %	lb.in.
Weight			50	g

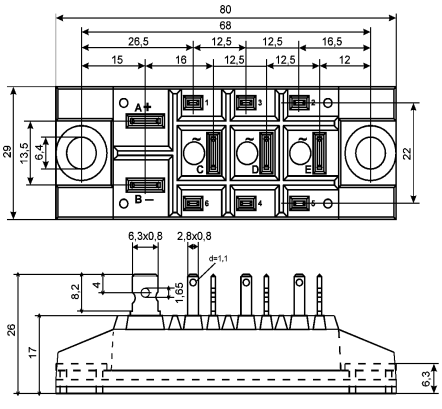
Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with copper base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- ¼" fast-on power terminals

Applications
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Dimensions in mm (1 mm = 0.0394")



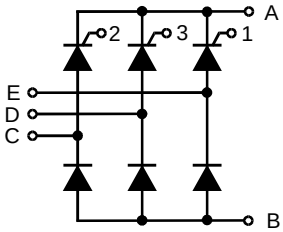
008

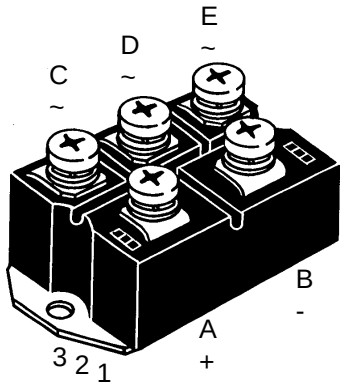
Symbol	Test Conditions		Characteristic Values		
I_D, I_R	T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}		≤	5	mA
V_T	I_T = 80 A; T_{VJ} = 25°C		≤	1.64	V
V_{T0}	For power-loss calculations only			0.85	V
r_T				11	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	1.6	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	100	mA
		T_{VJ} = -40°C	≤	200	mA
V_{GD}	T_{VJ} = T_{VJM};	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}			≤	5	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	450	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	200	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	2	µs
t_q	T_{VJ} = T_{VJM}; I_T = 20 A, t_P = 200 µs; di/dt = -10 A/µs V_R = 100 V; dv/dt = 15 V/µs; V_D = 2/3 V_{DRM}		typ.	250	µs
R_{thJC}	per thyristor / Diode; DC			0.9	K/W
	per module			0.15	K/W
R_{thJH}	per thyristor / Diode; DC			1.1	K/W
	per module			0.157	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			7.5	mm
a	Max. allowable acceleration			50	m/s^2

Three Phase Half Controlled Rectifier Bridge, B6HK

I_{dAVM} = 110/167 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type	
1300	1200	VVZ 110-12io7	VVZ 175-12io7
1500	1400	VVZ 110-14io7	VVZ 175-14io7
1700	1600		VVZ 175-16io7





Symbol	Test Conditions		Maximum Ratings VVZ 110	VVZ 175	
I_{dAV}	T_C = 85°C; module		110	167	A
I_{FRMS}, I_{TRMS}	per leg		58	89	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1150	1500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1230	1600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1000	1350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1070	1450	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	6600	11200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	6280	10750	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	5000	9100	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	4750	8830	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} repetitive, I_T = 50 A f =400 Hz, t_P =200 µs V_D = 2/3 V_{DRM}		150		A/µs
	I_G = 0.3 A, non repetitive, di_G/dt = 0.3 A/µs, I_T = 1/3 • I_{dAV}		500		A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)		1000		V/µs
V_{RGM}			10		V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10		W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5		W
		t_p = 10 ms	≤ 1		W
P_{GAVM}			0.5		W
T_{VJ}			-40...+125		°C
T_{VJM}			125		°C
T_{stg}			-40...+125		°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500		V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000		V~
M_d	Mounting torque (M6)		5±15 %		Nm
	Terminal connection torque (M6)		5±15 %		Nm
Weight	typ.		300		g

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- UL registered E72873

Applications

- Input rectifier for PWM converter
- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions			Characteristic Values VVZ 110	VVZ 175	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5		mA
		$T_{VJ} = 25°C$	≤	0.3		mA
V_F, V_T	I_F, I_T = 200 A, $T_{VJ} = 25°C$		≤	1.75	1.57	V
V_{T0}	For power-loss calculations only			0.85	0.85	V
r_T	($T_{VJ} = 125°C$)			6	3.5	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.5		V
		$T_{VJ} = -40°C$	≤	1.6		V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	100		mA
		$T_{VJ} = -40°C$	≤	200		mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2		V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5		mA
I_L	I_G = 0.3 A; t_G = 30 µs di_G/dt = 0.3 A/µs	$T_{VJ} = 25°C$	≤	450		mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	200		mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2		µs
R_{thJC}	per thyristor (diode); DC current			0.65	0.46	K/W
	per module			0.108	0.077	K/W
R_{thJH}	per thyristor (diode); DC current			0.8	0.55	K/W
	per module			0.133	0.092	K/W
d_S	Creeping distance on surface				10	mm
d_A	Creepage distance in air				9.4	mm
a	Max. allowable acceleration				50	m/s^2

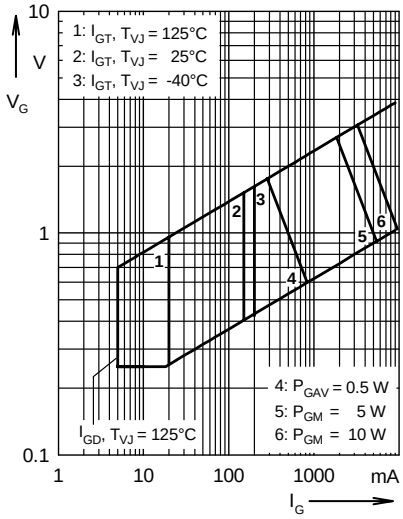


Fig. 1 Gate trigger characteristics

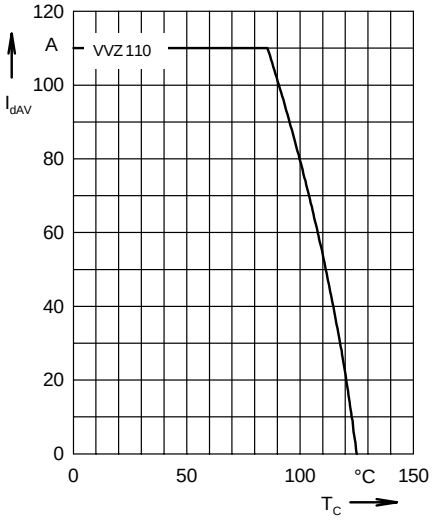
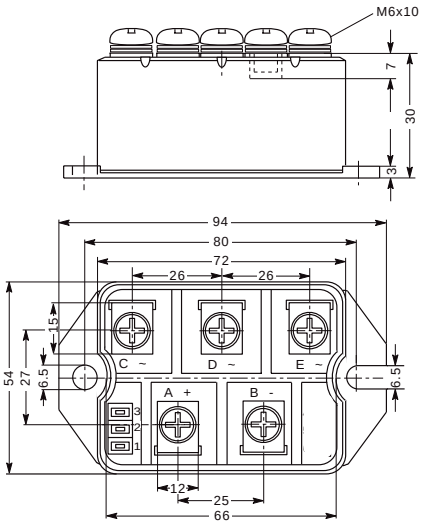


Fig. 2 DC output current at case temperature

Dimensions in mm (1 mm = 0.0394")



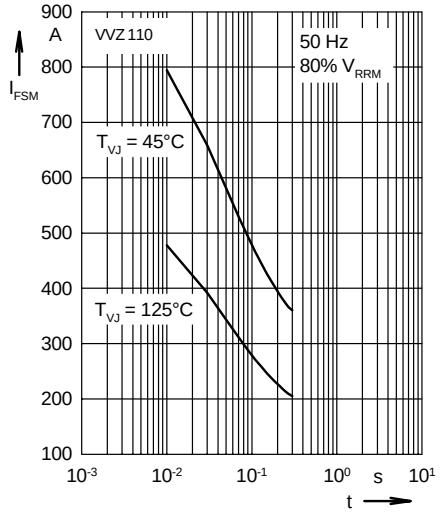


Fig. 3 Surge overload current
I_{FSM}: Crest value, t: duration

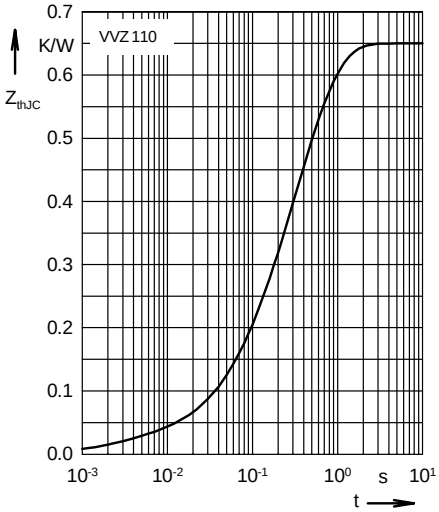


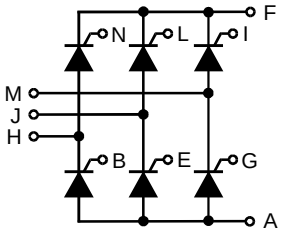
Fig. 4 Transient thermal impedance junction to case (per leg)

Three Phase Rectifier Bridge

I_{dAV} = 39 A
V_{RRM} = 600-1200 V

Priliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
700	600	VTO 39-06io7
900	800	VTO 39-08io7
1300	1200	VTO 39-12io7



Symbol	Test Conditions		Maximum Ratings	
I_{dAV} ①	T_C = 85°C, module		39	A
I_{TAVM}	T_C = 85°C; (180° sine ; per thyristor)		16	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	210	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	180	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	190	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	150	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	160	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	150	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 20 A	100	A/µs
	f =50 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.15 A	non repetitive, I_T = I_{TAVM}	500	A/µs
	di_G/dt = 0.15 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM};	V_{DR} = 2/3 V_{DRM}	500	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
V_{RGM}			10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 5	W
	I_T = I_{TAVM}	t_p = 300 µs	≤ 2.5	W
P_{GAVM}			0.5	W
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M4)		1.5 - 2	Nm
			14 - 18	lb.in.
Weight	typ.		18	g

Features

- Package with DCB ceramic base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Advantages

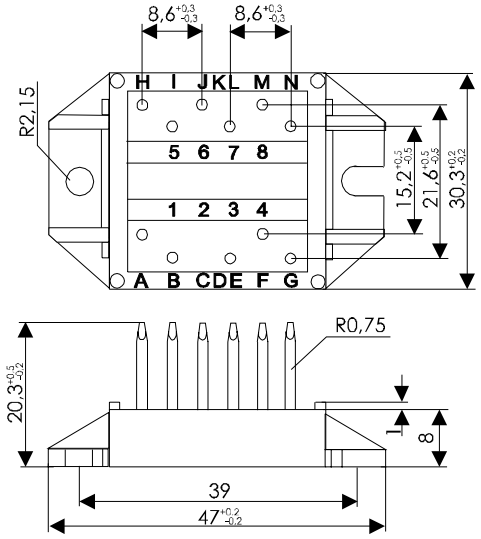
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight

Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
① for resistive load at bridge output. IXYS reserves the right to change limits, test conditions and dimensions.

002

Symbol	Test Conditions		Characteristic Values		
I_D, I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	5	mA
V_T	I_T = 20 A; T_{VJ} = 25°C		≤	1.6	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			0.85	V
r_T				27	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	2.5	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	25	mA
		T_{VJ} = -40°C	≤	50	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}			≤	3	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	75	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	50	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.1 A; di_G/dt = 0.1 A/µs		≤	2	µs
R_{thJC}	per thyristor; DC			1.3	K/W
	per module			0.22	K/W
R_{thJH}	per thyristor; DC			1.8	K/W
	per module			0.3	K/W
d_S	Creeping distance on surface			11.2	mm
d_A	Creepage distance in air			5	mm
a	Max. allowable acceleration			50	m/s^2

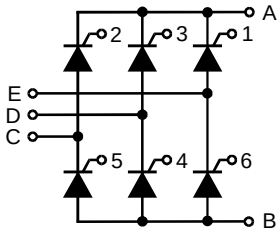
Dimensions in mm (1 mm = 0.0394")

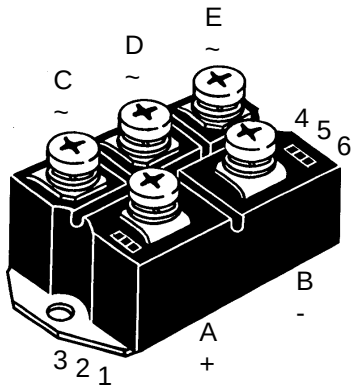


Three Phase Full Controlled Rectifier Bridge, B6C

I_{dAVM} = 110/167 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type	
1300	1200	VTO 110-12io7	VTO 175-12io7
1500	1400	VTO 110-14io7	VTO 175-14io7
1700	1600		VTO 175-16io7





Symbol	Test Conditions		Maximum Ratings VTO 110	VTO 175	
I_{dAV}	T_C = 85°C; module		110	167	A
I_{FRMS}, I_{TRMS}	per leg		58	89	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1150	1500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1230	1600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1000	1350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	1070	1450	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	6600	11200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	6280	10750	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	5000	9100	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	4750	8830	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} repetitive, I_T = 50 A		150		A/µs
	f =400 Hz, t_P =200 µs				
	V_D = 2/3 V_{DRM}				
	I_G = 0.3 A, non repetitive		500		A/µs
	di_G/dt = 0.3 A/µs, I_T = 1/3 • I_{dAV}				
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM}		1000		V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)				
V_{RGM}			10		V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤ 10		W
	I_T = I_{TAVM}	t_p = 500 µs	≤ 5		W
		t_p = 10 ms	≤ 1		W
P_{GAVM}			0.5		W
T_{VJ}			-40...+125		°C
T_{VJM}			125		°C
T_{stg}			-40...+125		°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500		V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000		V~
M_d	Mounting torque (M6)		5-15		Nm
	Terminal connection torque (M6)		5-15		lb.in.
Weight	typ.		300		g

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar passivated chips
- UL registered E72873

Applications

- Input rectifier for PWM converter
- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Symbol	Test Conditions			Characteristic Values VTO 110	VTO 175	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤	5		mA
		$T_{VJ} = 25°C$	≤	0.3		mA
V_F, V_T	I_F, I_T = 200 A, $T_{VJ} = 25°C$		≤	1.75	1.57	V
V_{T0}	For power-loss calculations only			0.85	0.85	V
r_T	($T_{VJ} = 125°C$)			6	3.5	mΩ
V_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	1.5		V
		$T_{VJ} = -40°C$	≤	1.6		V
I_{GT}	V_D = 6 V;	$T_{VJ} = 25°C$	≤	100		mA
		$T_{VJ} = -40°C$	≤	200		mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	0.2		V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$	≤	5		mA
I_L	I_G = 0.3 A; t_G = 30 µs di_G/dt = 0.3 A/µs	$T_{VJ} = 25°C$	≤	450		mA
I_H	$T_{VJ} = 25°C$; V_D = 6 V; $R_{GK} = \infty$		≤	200		mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	2		µs
R_{thJC}	per thyristor (diode); DC current			0.65	0.46	K/W
	per module			0.108	0.077	K/W
R_{thJH}	per thyristor (diode); DC current			0.8	0.55	K/W
	per module			0.133	0.092	K/W
d_S	Creeping distance on surface				10	mm
d_A	Creepage distance in air				9.4	mm
a	Max. allowable acceleration				50	m/s^2

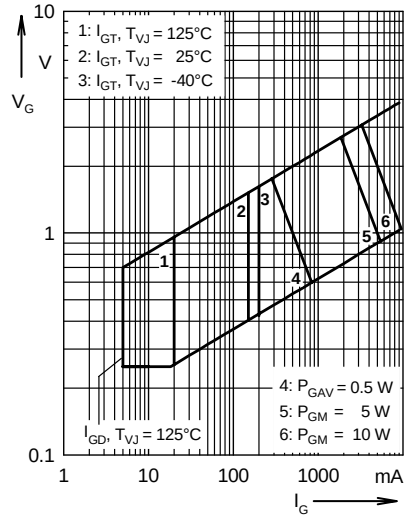


Fig. 1 Gate trigger characteristics

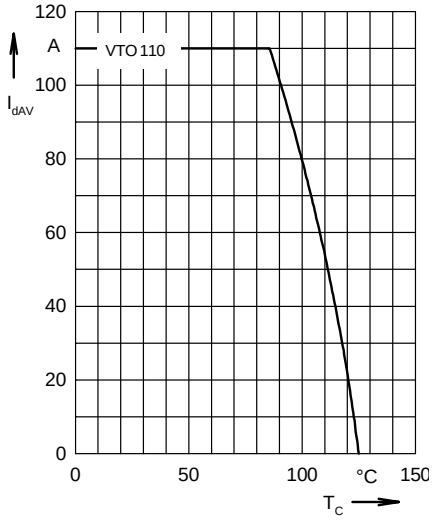
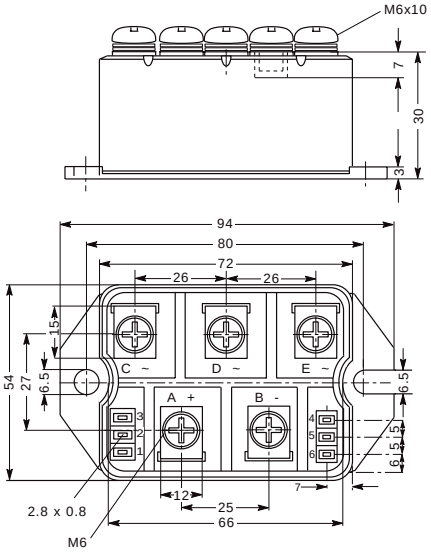


Fig. 2 DC output current at case temperature

Dimensions in mm (1 mm = 0.0394")



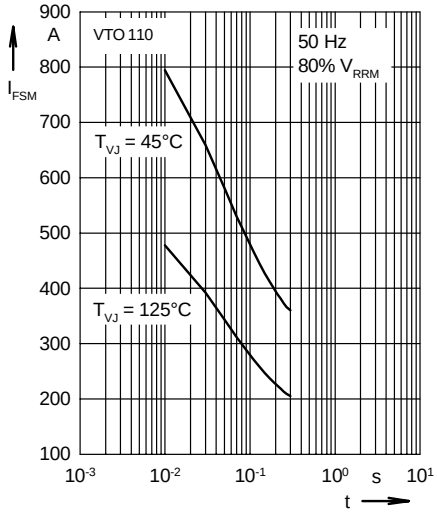


Fig. 3 Surge overload current
I_{FSM}: Crest value, t: duration

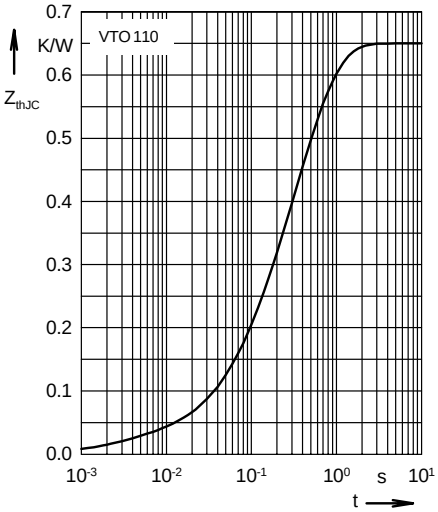


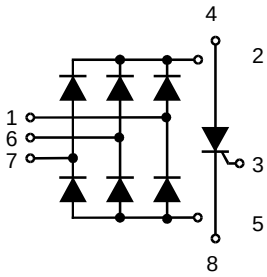
Fig. 4 Transient thermal impedance junction to case (per leg)

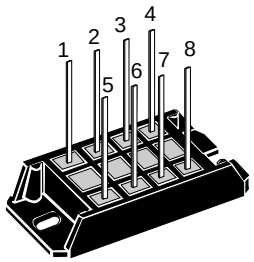
Three Phase Rectifier Bridge

with Fast Diodes and "Softstart" Thyristor

I_{dAVM} = 28 A
I_{TAVM} = 26 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	VUC 25-12go2
1500	1400	VUC 25-14go2
1700	1600	VUC 25-16go2





Symbol	Test Conditions		Maximum Ratings Diode	Thyristor	
I_{dAV}	T_K = 85°C; module		25	-	A
I_{dAVM}	module		28	-	A
I_{TAVM}	T_K = 85°C; (DC)		-	26	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	330	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	330	370	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	300	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	300	330	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	545	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	460	575	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	380	460	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} f =400 Hz, t_P =200 µs V_D = 2/3 V_{DRM}	repetitive, I_T = 50 A		150	A/µs
	I_G = 0.3 A, di_G/dt = 0.3 A/µs	non repetitive, I_T = I_{TAVM}		500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)			200	V/µs
V_{RGM}				10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤	10	W
	I_T = I_{TAVM}	t_p = 10 ms	≤	1	W
P_{GAVM}				0.5	W
T_{VJ}				-40...+125	°C
T_{VJM}				125	°C
T_{stg}				-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min		3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s		3600	V~
M_d	Mounting torque	(M5)		2-2.5	Nm
		(10-32 UNF)		18-22	lb.in.
Weight	typ.			28	g

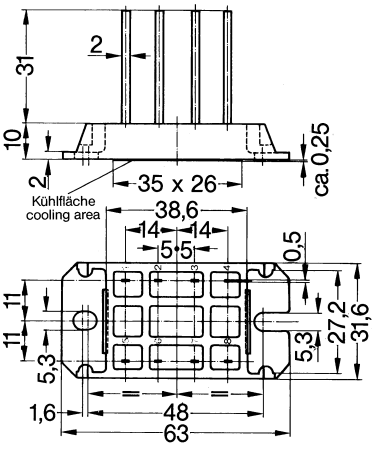
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Fast recovery diodes to reduce EMI
- Separate thyristor for softstart
- Solderable terminals
- UL registered E 72873

Applications
- Input rectifier for switching power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling
- Up to 10 dB lower EMI/RFI compared to standard rectifier

Dimensions in mm (1 mm = 0.0394")



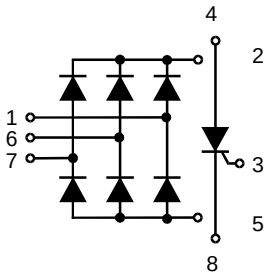
Symbol	Test Conditions		Characteristic Values Diode	Thyristor	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤ 5	≤ 5	mA
		$T_{VJ} = 25°C$	≤ 0.3	≤ 0.3	mA
V_F, V_T	$I_F = 55$ A; $I_T = 45$ A, $T_{VJ} = 25°C$		≤ 2.2	≤ 1.5	V
V_{T0}	For power-loss calculations only		1.2	1.1	V
r_T	($T_{VJ} = 125°C$)		18	11	mΩ
V_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$		≤ 1.5	V
I_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$		≤ 80	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$		≤ 0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$		≤ 5	mA
I_L	$T_{VJ} = 25°C$; $t_G = 30$ µs $I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			≤ 300	mA
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$			≤ 100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			≤ 2.5	µs
t_q	$T_{VJ} = 125°C$; $I_T = 15$ A, $t_p = 300$ µs, -di/dt = 10 A/µs $V_R = 100$ V, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			typ. 130	µs
t_{rr}	$T_{VJ} = 25°C$; $I_F = 10$ A; -di/dt = 10 A/µs, $V_R = 1/2\ V_{RRM}$		≤ 1.5	-	µs
R_{thJC}	per thyristor (diode); DC current		2.3	0.9	K/W
	per module		0.38	-	K/W
R_{thJH}	per thyristor (diode); DC current		2.9	1.1	K/W
	per module		0.48	-	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2

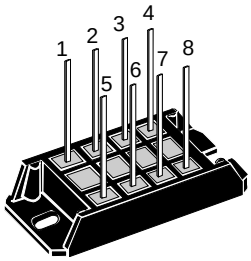
Three Phase Rectifier Bridge

with Fast Diodes and "Softstart" Thyristor

I_{dAVM} = 39 A
I_{TAVM} = 31 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1300	1200	VUC 36-12go2
1500	1400	VUC 36-14go2
1700	1600	VUC 36-16go2





Symbol	Test Conditions		Maximum Ratings Diode	Thyristor	
I_{dAV}	T_K = 85°C; module		34	-	A
I_{dAVM}	module		39	-	A
I_{TAVM}	T_K = 85°C; (DC)		-	31	A
I_{FSM}, I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	300	400	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	330	440	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	270	360	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	300	400	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	450	800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	460	810	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	365	650	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	380	670	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} f =400 Hz, t_P =200 µs V_D = 2/3 V_{DRM} I_G = 0.3 A, di_G/dt = 0.3 A/µs	repetitive, I_T = 50 A		150	A/µs
		non repetitive, I_T = I_{TAVM}		500	A/µs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; V_{DR} = 2/3 V_{DRM} R_{GK} = ∞; method 1 (linear voltage rise)			200	V/µs
V_{RGM}				10	V
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	≤	10	W
	I_T = I_{TAVM}	t_p = 10 ms	≤	1	W
P_{GAVM}				0.5	W
T_{VJ}				-40...+125	°C
T_{VJM}				125	°C
T_{stg}				-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min		3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s		3600	V~
M_d	Mounting torque	(M5)		2-2.5	Nm
		(10-32 UNF)		18-22	lb.in.
Weight	typ.			28	g

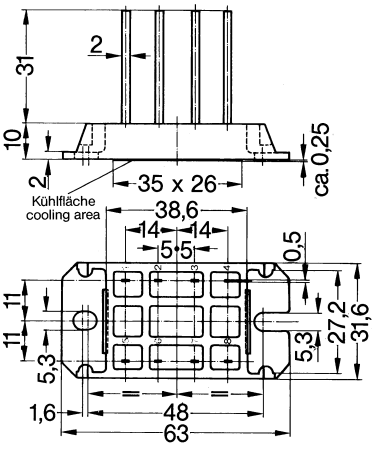
Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

Features
- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Fast recovery diodes to reduce EMI
- Separate thyristor for softstart
- Solderable terminals
- UL registered E 72873

Applications
- Input rectifier for switching power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling
- Up to 10 dB lower EMI/RFI compared to standard rectifier

Dimensions in mm (1 mm = 0.0394")



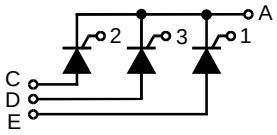
Symbol	Test Conditions		Characteristic Values Diode	Thyristor	
I_R, I_D	$V_R = V_{RRM}$; $V_D = V_{DRM}$	$T_{VJ} = T_{VJM}$	≤ 5	≤ 5	mA
		$T_{VJ} = 25°C$	≤ 0.3	≤ 0.3	mA
V_F, V_T	$I_F = 55$ A; $I_T = 45$ A, $T_{VJ} = 25°C$		≤ 1.85	≤ 1.4	V
V_{T0}	For power-loss calculations only		1.2	0.85	V
r_T	($T_{VJ} = 125°C$)		16	10	mΩ
V_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$		≤ 1.5	V
I_{GT}	$V_D = 6$ V;	$T_{VJ} = 25°C$		≤ 80	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$		≤ 0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = 2/3\ V_{DRM}$		≤ 5	mA
I_L	$T_{VJ} = 25°C$; $t_G = 30$ µs $I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			≤ 300	mA
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$			≤ 100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			≤ 2.5	µs
t_q	$T_{VJ} = 125°C$; $I_T = 15$ A, $t_p = 300$ µs, -di/dt = 10 A/µs $V_R = 100$ V, dv/dt = 20 V/µs, $V_D = 2/3\ V_{DRM}$			typ. 130	µs
t_{rr}	$T_{VJ} = 25°C$; $I_F = 10$ A; -di/dt = 10 A/µs, $V_R = 1/2\ V_{RRM}$		≤ 1.5	-	µs
R_{thJC}	per thyristor (diode); DC current		1.4	0.9	K/W
	per module		0.233	-	K/W
R_{thJH}	per thyristor (diode); DC current		2.0	1.1	K/W
	per module		0.333	-	K/W
d_S	Creeping distance on surface			7	mm
d_A	Creepage distance in air			7	mm
a	Max. allowable acceleration			50	m/s^2

Three Thyristor Module

I_{FAV} = 3x 28 A
V_{RRM} = 800-1600 V

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
800	800	VYK 70-08io7
1200	1200	VYK 70-12io7
1400	1400	VYK 70-14io7
1600	1600	VYK 70-16io7



Symbol	Test Conditions		Maximum Ratings	
I_{FAVM}	T_C = 85°C, 50 - 400 Hz (per phase)		28	A
I_{FRMS}	T_C = 85°C, 50 - 400 Hz (per phase)		43	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	600	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	500	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	550	A
$\int i^2dt$	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1520	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1520	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	1250	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	1250	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM}	repetitive, I_T = 25 A	150	A/µs
	f =50 Hz, t_P =200 µs			
	V_D = 2/3 V_{DRM}			
	I_G = 0.45 A	non repetitive, I_T = I_{TAVM}	500	A/µs
	di_G/dt = 0.45 A/µs			
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM};	V_{DR} = 2/3 V_{DRM}	1000	V/µs
	R_{GK} = ∞; method 1 (linear voltage rise)			
P_{GM}	T_{VJ} = T_{VJM}	t_p = 30 µs	10	W
	I_T = I_{TAVM}	t_p = 300 µs	5	W
P_{GAVM}			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5±15 %	Nm
		(10-32 UNF)	44±15 %	lb.in.
Weight	typ.		110	g

Data according to IEC 60747 refer to a single diode/thyristor unless otherwise stated
IXYS reserves the right to change limits, test conditions and dimensions.

Features

- Package with metal base plate
- Isolation voltage 3000 V~
- Planar passivated chips
- UL applied
- ¼" fast-on power terminals

Applications

- Switching and control of three phase AC circuits
- Softstart AC motor controller
- Solid state switches
- Light and temperature control

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling

Symbol	Test Conditions			Characteristic Values	
I_D, I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	5	mA
V_T	I_T = 45 A; T_{VJ} = 25°C		≤	1.45	V
V_{T0}	For power-loss calculations only (T_{VJ} = 125°C)			0.85	V
r_T				11	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	1.6	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	100	mA
		T_{VJ} = -40°C	≤	200	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	V_D = 2/3 V_{DRM}	≤	0.2	V
I_{GD}			≤	5	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	450	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	200	mA
t_{gd}	T_{VJ} = 25°C; V_D = 1/2 V_{DRM} I_G = 0.45 A; di_G/dt = 0.45 A/µs		≤	2	µs
t_q	$T_{VJ} = T_{VJM}$; I_T = 20 A, t_P = 200 µs; di/dt = -10 A/µs V_R = 100 V; dv/dt = 15 V/µs; V_D = 2/3 V_{DRM}		typ.	150	µs
R_{thJC}	per thyristor; sine 180°el			0.9	K/W
	per module			0.15	K/W
R_{thJH}	per thyristor; sine 180°el			1.1	K/W
	per module			0.183	K/W
d_S	Creeping distance on surface			16.1	mm
d_A	Creepage distance in air			6.0	mm
a	Max. allowable acceleration			50	m/s^2

Dimensions in mm (1 mm = 0.0394")