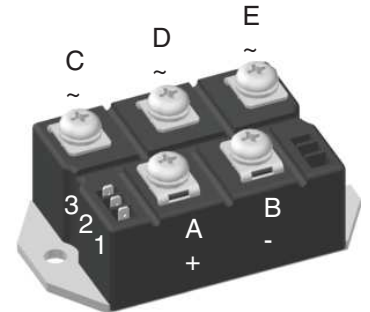
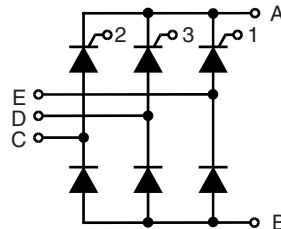


# Three Phase Half Controlled Rectifier Bridge, B6HK

$$I_{dAVM} = 110/167 \text{ A}$$

$$V_{RRM} = 1200-1600 \text{ V}$$

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



Symbol	Test Conditions	Maximum Ratings			
		VVZ 110	VVZ 175		
$I_{dAV}$	$T_C = 85^\circ\text{C}$ ; module per leg	110	167	A	
$I_{FRMS}, I_{TRMS}$		58	89	A	
$I_{FSM}, I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	1150	1500	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	1230	1600	A
$I^2t$	$T_{VJ} = T_{VJM}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	1000	1350	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	1070	1450	A
$(di/dt)_{cr}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	6600	11200	A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	6280	10750	A <sup>2</sup> s
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $V_{DR} = 2/3 V_{DRM}$	$t = 10 \text{ ms}$ (50 Hz), sine	5000	9100	A <sup>2</sup> s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	4750	8830	A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 50 \text{ A}$ $f = 400 \text{ Hz}$ , $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$		150		A/ $\mu\text{s}$
	$I_G = 0.3 \text{ A}$ , non repetitive, $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ , $I_T = 1/3 \cdot I_{dAV}$		500		A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)		1000		V/ $\mu\text{s}$
$V_{RGM}$			10		V
$P_{GM}$	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	$\leq 10$		W
	$I_T = I_{TAVM}$	$t_p = 500 \mu\text{s}$	$\leq 5$		W
		$t_p = 10 \text{ ms}$	$\leq 1$		W
$P_{GAVM}$			0.5		W
$T_{VJ}$			-40...+125		$^\circ\text{C}$
$T_{VJM}$			125		$^\circ\text{C}$
$T_{stg}$			-40...+125		$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $t = 1 \text{ min}$		2500		V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$		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.

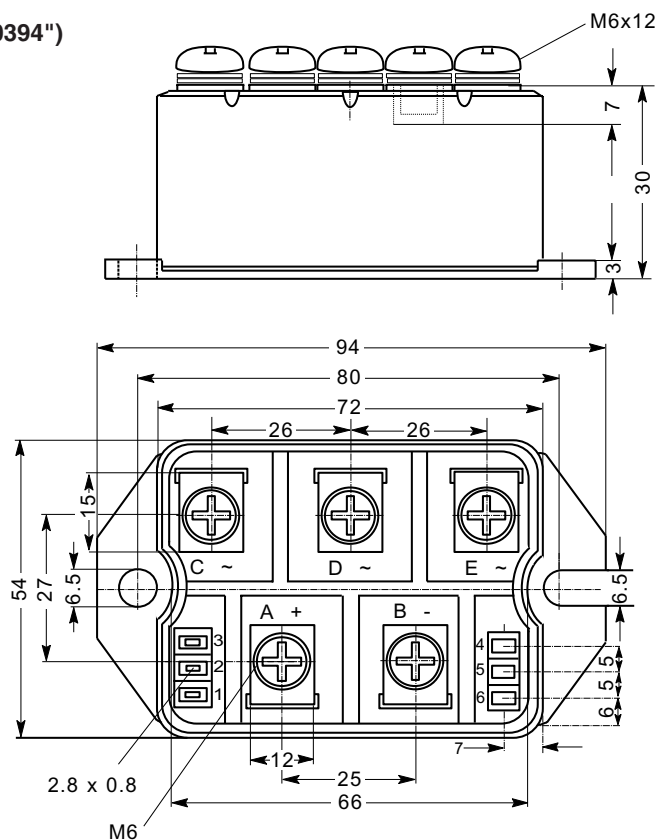
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IXYS reserves the right to change limits, test conditions and dimensions.

20200117c

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

**Dimensions in mm (1 mm = 0.0394")**


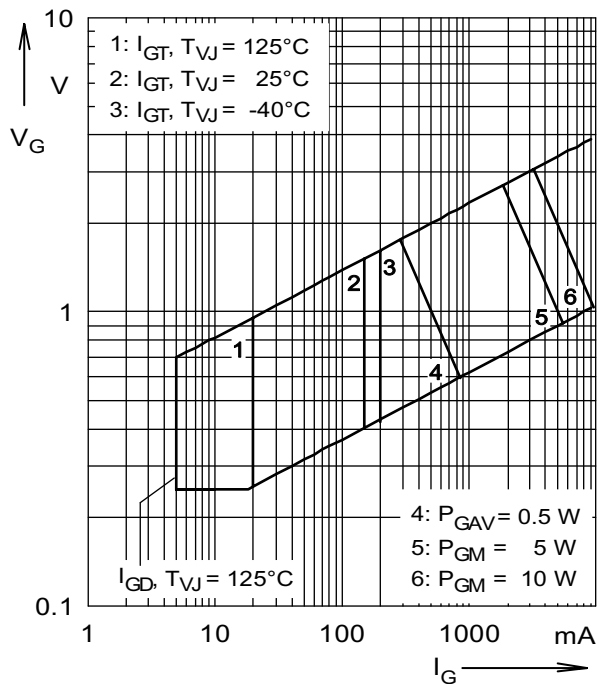


Fig. 1 Gate trigger characteristics

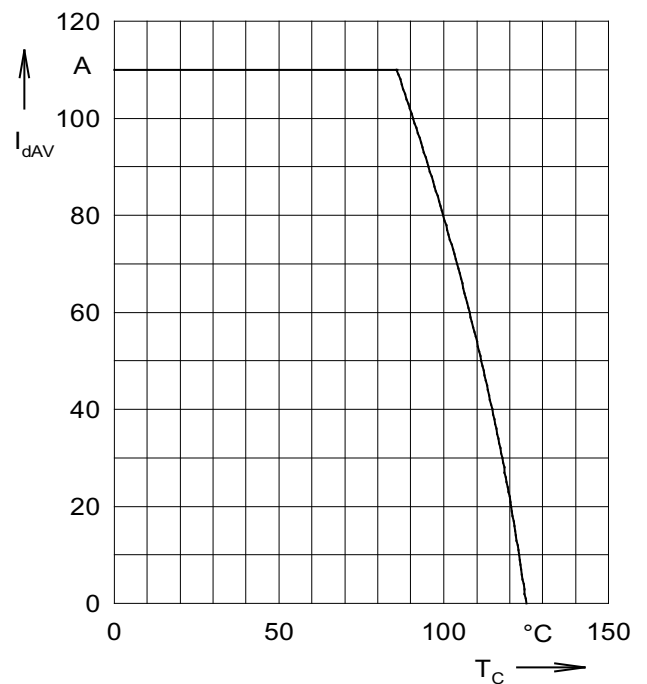


Fig. 2 DC output current at case temperature

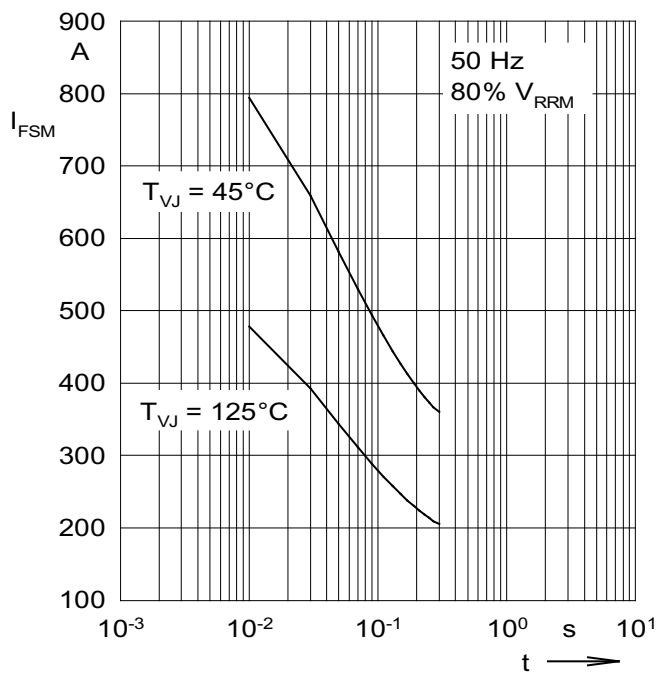


Fig. 3 Surge overload current  
 $I_{FSM}$ : Crest value,  $t$ : duration

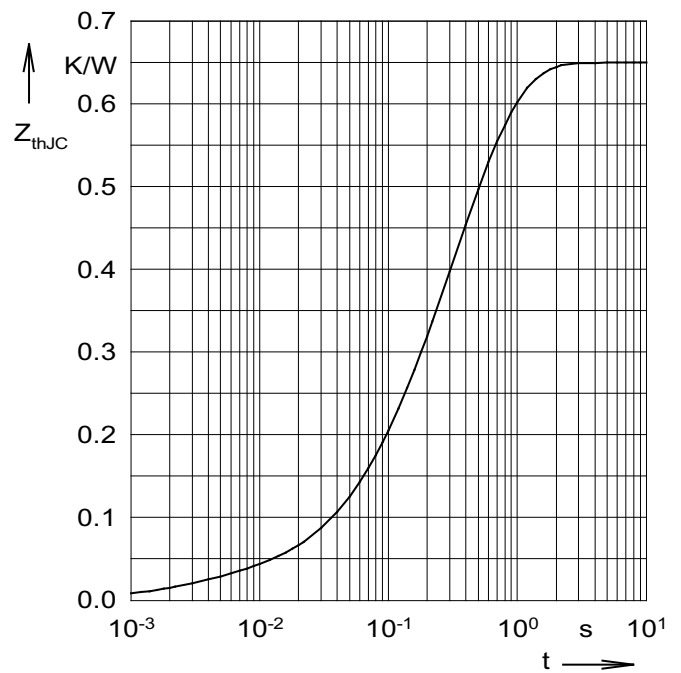


Fig. 4 Transient thermal impedance  
junction to case (per leg)