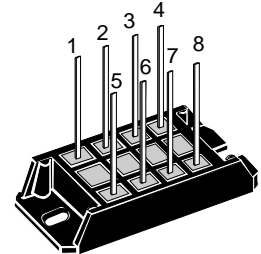
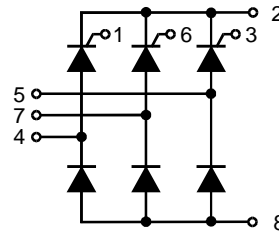


# Three Phase Half Controlled Rectifier Bridge

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

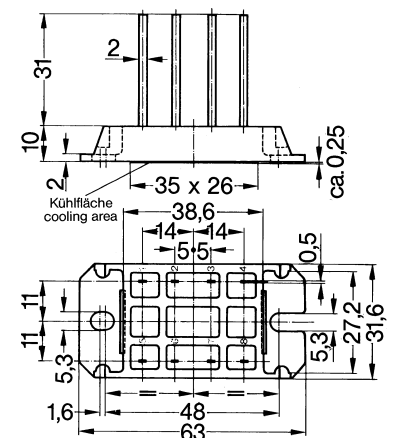
$V_{RSM}$ $V_{DSM}$ V	$V_{RRM}$ $V_{DRM}$ V	Type
1300	1200	VVZ 12-12io1
1500	1400	VVZ 12-14io1
1700	1600	VVZ 12-16io1



Symbol	Test Conditions	Maximum Ratings	Features
$I_{dAV}$ $I_{dAVM}$ $I_{FRMS}, I_{TRMS}$	$T_K = 100^\circ\text{C}$ ; module module per leg	15 A 20 A 12 A	<ul style="list-style-type: none"> <li>• Package with DCB ceramic base plate</li> <li>• Isolation voltage 3600 V~</li> <li>• Planar passivated chips</li> <li>• Soldering terminals</li> <li>• UL registered E 72873</li> </ul>
$I_{FSM}, I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine 110 A $t = 8.3 \text{ ms}$ (60 Hz), sine 115 A	
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine 60 A <sup>2</sup> s $t = 8.3 \text{ ms}$ (60 Hz), sine 55 A <sup>2</sup> s	<b>Applications</b> <ul style="list-style-type: none"> <li>• Input rectifier for switch mode power supplies (SMPS)</li> <li>• Softstart capacitor charging</li> <li>• Electric drives and auxiliaries</li> </ul>
	$T_{VJ} = T_{VJM}$ $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine 50 A <sup>2</sup> s $t = 8.3 \text{ ms}$ (60 Hz), sine 45 A <sup>2</sup> s	
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 400 \text{ Hz}$ , $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3 \text{ A}$ , $di_G/dt = 0.3 \text{ A}/\mu\text{s}$	repetitive, $I_T = 50 \text{ A}$ 150 A/ $\mu\text{s}$ non repetitive, $I_T = 1/3 \sim I_{dAV}$ 500 A/ $\mu\text{s}$	<b>Advantages</b> <ul style="list-style-type: none"> <li>• Easy to mount with two screws</li> <li>• Space and weight savings</li> <li>• Improved temperature and power cycling</li> </ul>
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)	1000 V/ $\mu\text{s}$	
$V_{RGM}$		10 V	
$P_{GM}$	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30 \mu\text{s}$ $\leq 10 \text{ W}$	
		$t_p = 500 \mu\text{s}$ $\leq 5 \text{ W}$	
		$t_p = 10 \text{ ms}$ $\leq 1 \text{ W}$	
$P_{GAVM}$		0.5 W	
$T_{VJ}$		-40...+125 °C	
$T_{VJM}$		125 °C	
$T_{stg}$		-40...+125 °C	
$V_{ISOL}$	50/60 Hz, RMS	$t = 1 \text{ min}$ 3000 V~	
	$I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ s}$ 3600 V~	
$M_d$	Mounting torque (M5) (10-32 UNF)	2-2.5 Nm	
		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.

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



Symbol	Test Conditions	Characteristic Values	
$I_R, I_D$	$V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$	$\leq 5$ mA $\leq 0.3$ mA	
$V_F, V_T$	$I_F, I_T = 30$ A, $T_{VJ} = 25^\circ\text{C}$	$\leq 2$ V	
$V_{T0}$	For power-loss calculations only	1.1 V	
$r_T$	( $T_{VJ} = 125^\circ\text{C}$ )	30 m $\Omega$	
$V_{GT}$	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	$\leq 1.0$ V $\leq 1.2$ V	
$I_{GT}$	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	$\leq 65$ mA $\leq 80$ mA $\leq 50$ mA	
$V_{GD}$	$T_{VJ} = T_{VJM};$ $T_{VJ} = T_{VJM};$	$V_D = 2/3 V_{DRM}$ $V_D = 2/3 V_{DRM}$	$\leq 0.2$ V $\leq 5$ mA
$I_L$	$I_G = 0.3$ A; $t_G = 30$ $\mu\text{s}$ $di_G/dt = 0.3$ A/ $\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	$\leq 150$ mA $\leq 200$ mA $\leq 100$ mA
$I_H$	$T_{VJ} = 25^\circ\text{C}; V_D = 6$ V; $R_{GK} = \infty$	$\leq 100$ mA	
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/ $\mu\text{s}$	$\leq 2$ $\mu\text{s}$	
$t_q$	$T_{VJ} = 125^\circ\text{C}; I_T = 15$ A, $t_p = 300$ $\mu\text{s}$ , $-di/dt = 10$ A/ $\mu\text{s}$	typ. 150 $\mu\text{s}$	
$Q_r$	$V_R = 100$ V, $dv/dt = 20$ V/ $\mu\text{s}$ , $V_D = 2/3 V_{DRM}$	75 $\mu\text{C}$	
$R_{thJC}$	per thyristor (diode); DC current per module	2.5 K/W 0.42 K/W	
$R_{thJH}$	per thyristor (diode); DC current per module	3.1 K/W 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 <sup>2</sup>	