

# Three Phase Rectifier Bridge

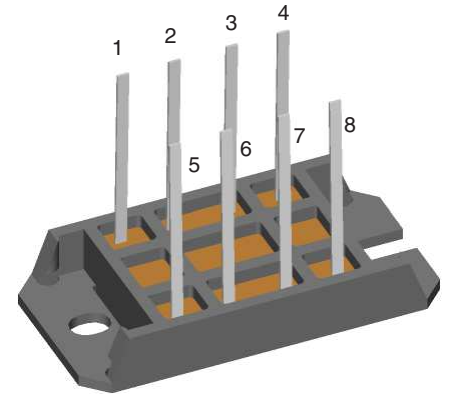
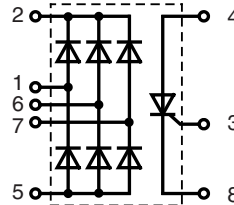
with Fast Diodes and "Softstart" Thyristor

$$I_{dAVM} = 39 \text{ A}$$

$$I_{TAVM} = 31 \text{ A}$$

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

$V_{RSM}$ V	$V_{RRM}$ V	Type
1300	1200	VUC 36-12go2
1700	1600	VUC 36-16go2



Symbol	Conditions	Maximum Ratings			
		Diode	Thyristor		
$I_{dAV}$	$T_K = 85^\circ\text{C}$ , module	34	-	A	
$I_{dAVM}$	module	39	-	A	
$I_{TAVM}$	$T_K = 85^\circ\text{C}$ , DC	-	31	A	
$I_{FSM}^*, I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	300 330	400 440	A A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	270 300	360 400	A A
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	450 460	800 810	$\text{A}^2\text{s}$ $\text{A}^2\text{s}$
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz), sine t = 8.3 ms (60 Hz), sine	365 380	650 670	$\text{A}^2\text{s}$ $\text{A}^2\text{s}$
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ f = 400 Hz, $t_p = 200 \mu\text{s}$ $V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.3 \text{ A}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$	repetitive, $I_T = 50 \text{ A}$		150	$\text{A}/\mu\text{s}$
	$T_{VJ} = T_{VJM}$ ; $V_{DR} = \frac{2}{3} V_{DRM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)	non repetitive, $I_T = I_{TAVM}$		500	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$				200	$\text{V}/\mu\text{s}$
$V_{RGM}$				10	V
$P_{GM}$	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	$\leq$	10	W
	$I_T = I_{TAVM}$	$t_p = 10 \text{ ms}$	$\leq$	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 min		3000	V~
	$I_{ISOL} \leq 1 \text{ mA}$	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

## 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 & power cycling
- Up to 10 dB lower EMI/RFI compared to standard rectifier

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.

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Symbol	Conditions	Characteristic Values	
		Diode	Thyristor
$I_R, I_D$	$V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$	$\leq 5$ $\leq 0.3$	$\leq 5$ mA $\leq 0.3$ mA
$V_F, V_T$	$I_F = 55$ A; $I_T = 45$ A $T_{VJ} = 25^\circ\text{C}$	$\leq 1.85$	$\leq 1.4$ V
$V_{T0}$	For power-loss calculations only	1.2	0.85 V
$r_T$	$T_{VJ} = 125^\circ\text{C}$	16	10 m $\Omega$
$V_{GT}$	$V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$		$\leq 1.5$ V
$I_{GT}$	$V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$		$\leq 80$ mA
$V_{GD}$	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = T_{VJM}$		$\leq 0.2$ V
$I_{GD}$	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = T_{VJM}$		$\leq 5$ mA
$I_L$	$t_G = 30$ $\mu\text{s}$ ; $I_G = 0.3$ A $di_G/dt = 0.3$ A/ $\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$		$\leq 300$ mA
$I_H$	$V_D = 6$ V; $R_{GK} = \infty$ $T_{VJ} = 25^\circ\text{C}$		$\leq 100$ mA
$t_{gd}$	$V_D = \frac{1}{2} V_{DRM}$ ; $I_G = 0.3$ A $di_G/dt = 0.3$ A/ $\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$		$\leq 2.5$ $\mu\text{s}$
$t_q$	$I_T = 15$ A; $t_p = 300$ $\mu\text{s}$ ; $-di/dt = 10$ A/ $\mu\text{s}$ ; $T_{VJ} = 125^\circ\text{C}$ $V_R = 100$ V; $dv/dt = 20$ V/ $\mu\text{s}$ ; $V_D = \frac{2}{3} V_{DRM}$		typ. 130 $\mu\text{s}$
$t_{rr}$	$I_F = 10$ A; $V_R = \frac{1}{2} V_{RRM}$ $-di/dt = 10$ A/ $\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$	$\leq 1.5$	- $\mu\text{s}$
$R_{thJC}$	per thyristor (diode); DC current per module	1.4 0.233	0.9 K/W - K/W
$R_{thJH}$	per thyristor (diode); DC current per module	2.0 0.333	1.1 K/W - 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>

Dimensions in mm (1 mm = 0.0394")

