

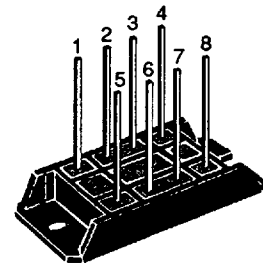
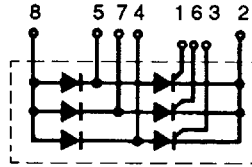
Three-Phase Half Controlled Rectifier Bridges

VVZ 24

$$I_{dAVM} = 27 \text{ A}$$

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

V_{RSM}	V_{RRM}	Type
V_{DSM}	V_{DRM}	
V	V	
1300	1200	VVZ 24-12Io1
1500	1400	VVZ 24-14Io1
1700	1600	VVZ 24-16Io1



Symbol	Test Conditions		Maximum Ratings	
I_{dAV}	$T_K = 100^\circ\text{C}$; module module per leg		21	A
I_{dAVM}			27	A
I_{FRMS}, I_{TRMS}			16	A
I_{FSM}, I_{TSM}	$T_{VJ} = 45^\circ\text{C}$;	$t = 10\text{ ms}$ (50 Hz), sine	300	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	330	A
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	270	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	300	A
I^2t	$T_{VJ} = 45^\circ\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	450	A^2s
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	460	A^2s
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	365	A^2s
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	380	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 50\text{ A}$		150	$\text{A}/\mu\text{s}$
	$f = 400\text{ Hz}$, $t_p = 200\text{ }\mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3\text{ A}$, non repetitive, $I_T = 1/3 \cdot I_{dAV}$ $di_G/dt = 0.3\text{ A}/\mu\text{s}$		500	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise)		1000	$\text{V}/\mu\text{s}$
V_{ROM}			10	V
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30\text{ }\mu\text{s}$	≤ 10	W
		$t_p = 500\text{ }\mu\text{s}$	≤ 5	W
		$t_p = 10\text{ ms}$	≤ 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	$t = 1\text{ min}$	3000	V~
	$I_{ISOL} \leq 1\text{ mA}$	$t = 1\text{ s}$	3600	V~
M_g	Mounting torque	(M5) (10-32 UNF)	2-2.5 18-22	Nm lb.in.
Weight	typ.		28	g

Data according to DIN/IEC 747 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
- Separate thyristor for softstart
- UL registered E 72873

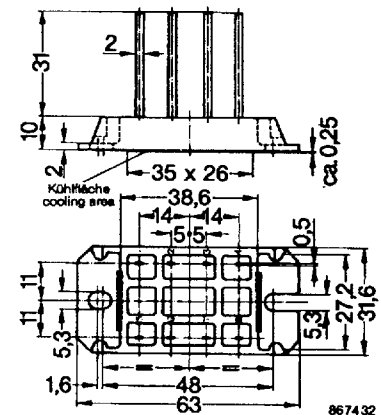
Applications

- 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	$V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$	$\leq 5 \text{ mA}$ $\leq 0.3 \text{ mA}$
V_F, V_T	$I_F, I_T = 30 \text{ A}, T_{VJ} = 25^\circ\text{C}$	$\leq 1.45 \text{ V}$
V_{TO} r_T	For power-loss calculations only ($T_{VJ} = 125^\circ\text{C}$)	1 V $16 \text{ m}\Omega$
V_{GT}	$V_D = 6 \text{ V};$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$	$\leq 1.0 \text{ V}$ $\leq 1.2 \text{ V}$
I_{GT}	$V_D = 6 \text{ V};$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	$\leq 65 \text{ mA}$ $\leq 80 \text{ mA}$ $\leq 50 \text{ mA}$
V_{GD} I_{GD}	$T_{VJ} = T_{VJM};$ $T_{VJ} = T_{VJM};$ $V_D = 2/3 V_{DRM}$ $V_D = 2/3 V_{DRM}$	$\leq 0.2 \text{ V}$ $\leq 5 \text{ mA}$
I_L	$I_G = 0.3 \text{ A}; t_G = 30 \mu\text{s}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$	$\leq 150 \text{ mA}$ $\leq 200 \text{ mA}$ $\leq 100 \text{ mA}$
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	$\leq 100 \text{ mA}$
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.3 \text{ A}; di_G/dt = 0.3 \text{ A}/\mu\text{s}$	$\leq 2 \mu\text{s}$
t_g Q_r	$T_{VJ} = 125^\circ\text{C}; I_T = 15 \text{ A}, t_p = 300 \mu\text{s}, -di/dt = 10 \text{ A}/\mu\text{s}$ $V_R = 100 \text{ V}, dv/dt = 20 \text{ V}/\mu\text{s}, V_D = 2/3 V_{DRM}$	typ. $150 \mu\text{s}$ $75 \mu\text{C}$
R_{thJC}	per thyristor (diode); DC current per module	2.1 K/W 0.35 K/W
R_{thJK}	per thyristor (diode); DC current per module	2.7 K/W 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

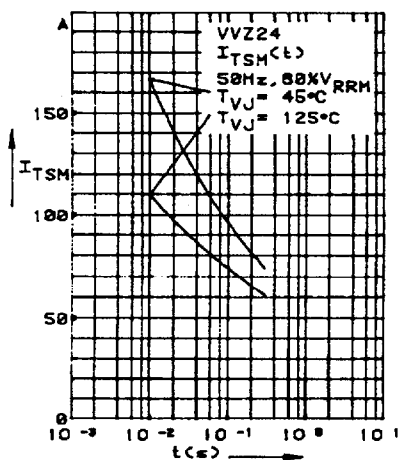


Fig. 1 Surge overload current per chip
 I_{FSM} : Crest value, t : duration

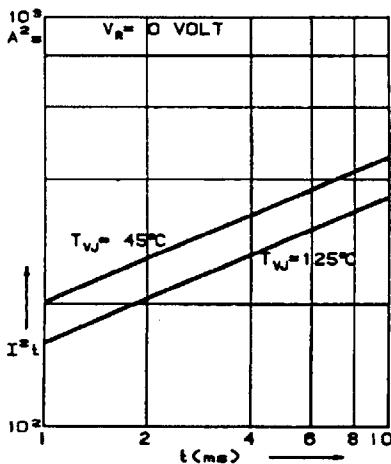


Fig. 2 j^2dt versus time (1-10 ms)
per chip

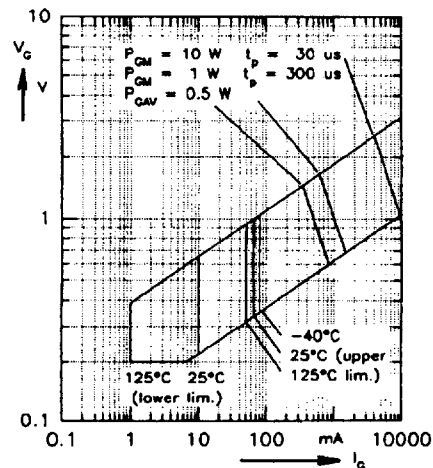


Fig. 3 Gate trigger characteristics
Triggering:

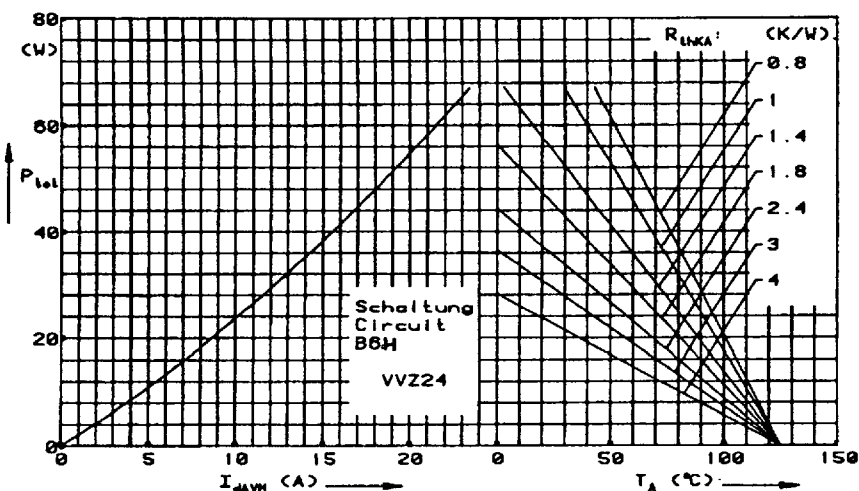


Fig. 4 Power dissipation versus direct output current and ambient temperature

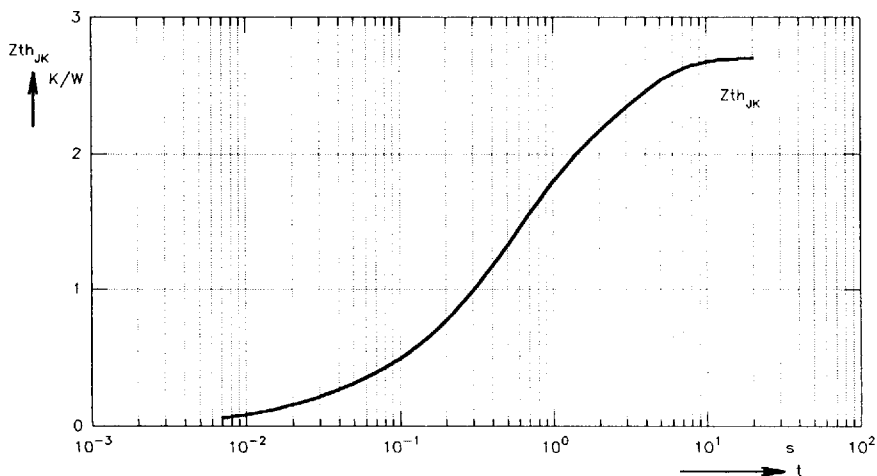


Fig. 5 Transient thermal impedance junction to heatsink

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