



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



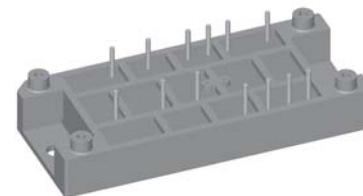
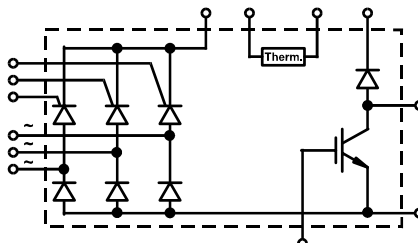
Three Phase Half Controlled Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

$V_{RRM} = 1200/1600 \text{ V}$
 $I_{dAV} = 120 \text{ A}$

Preliminary data

V_{RRM} V	Type
1200	VVZB 120-12 io2(T)
1600	VVZB 120-16 io2(T)

(T) = NTC optional



Symbol	Conditions	Maximum Ratings		
I_{dAV}	$T_{case} = 80^\circ\text{C}$, sinusoidal 120°	120	A	
I_{FRMS}/I_{TRMS}	$T_{case} = 80^\circ\text{C}$, per leg	77	A	
I_{FSM}/I_{TSM}	$T_{VJ} = 25^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	750	A	
	$T_{VJ} = 150^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	670	A	
I^2t	$T_{VJ} = 25^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	2810	A	
	$T_{VJ} = 150^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	2240	A	
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 150 \text{ A}$ $f = 50 \text{ Hz}$, $t_p = 200 \mu\text{s}$	150	A/ μs	
	$V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.45 \text{ A}$, non repetitive, $I_T = I_{d(AV)}/3$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	500	A/ μs	
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_{DR} = \frac{2}{3} V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise)	1000	V/ μs	
P_{GM}	$T_{VJ} = T_{VJM}$ $t_p = 30 \mu\text{s}$	10	W	
	$I_T = I_{d(AV)}/3$ $t_p = 300 \mu\text{s}$	5	W	
	$t_p = 10 \text{ ms}$	1	W	
P_{GAVM}		0.5	W	
V_{CES} V_{GE}	$T_{VJ} = 25^\circ\text{C}$ to 150°C	1200	V	
	Continuous	± 20	V	
I_{C25} I_{C80} I_{CM} P_{tot}	IGBT	$T_{case} = 25^\circ\text{C}$, DC	140	A
		$T_{case} = 80^\circ\text{C}$, DC	100	A
		$t_p = \text{Pulse width limited by } T_{VJM}$	280	A
		$T_{case} = 80^\circ\text{C}$	570	W
V_{RRM}	Fast Recovery Diode		1200	V
$I_{F(AV)}$		$T_{case} = 80^\circ\text{C}$, rectangular $d = 0.5$	27	A
$I_{F(RMS)}$		$T_{case} = 80^\circ\text{C}$, rectangular $d = 0.5$	38	A
I_{FRM}		$T_{case} = 80^\circ\text{C}$, $t_p = 10 \mu\text{s}$, $f = 5 \text{ kHz}$	tbd	A
I_{FSM}		$T_{VJ} = 45^\circ\text{C}$, $t = 10 \text{ ms}$	200	A
		$T_{VJ} = 150^\circ\text{C}$, $t = 10 \text{ ms}$	180	A
P_{tot}	$T_{case} = 80^\circ\text{C}$	64	W	

Features

- Soldering connections for PCB mounting
- Isolation voltage 3600 V~
- Ultrafast freewheel diode
- Convenient package outline
- Optional NTC

Applications

- Drive Inverters with brake system

Advantages

- 2 functions in one package
- No external isolation
- Easy to mount with two screws
- Suitable for wave soldering
- High temperature and power cycling capability

Data according to IEC 60747

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

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
I_R, I_D	$V_R = V_{RRM}/V_{DRM}$ $V_R = V_{RRM}/V_{DRM}, T_{VJ} = 150^{\circ}\text{C}$			0.3 mA 5 mA
V_F, V_T	$I_F = 100 \text{ A}$,			1.47 V
V_{T0} r_T	For power-loss calculations only $T_{VJ} = 150^{\circ}\text{C}$			0.85 V 5 m Ω
V_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = -40^{\circ}\text{C}$			1.5 V 1.6 V
I_{GT}	$V_D = 6 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = -40^{\circ}\text{C}$			100 mA 200 mA
V_{GD} I_{GD}	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$ $T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$			0.2 V 10 mA
I_L		$V_D = 6 \text{ V}; t_G = 30 \mu\text{s}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}; I_G = 0.45 \text{ A}$		
I_H	$T_{VJ} = T_{VJM}; V_D = 6 \text{ V}; R_{GK} = \infty$			200 mA
t_{gd}	$V_D = 1/2 V_{DRM}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}; I_G = 0.45 \text{ A}$			2 μs
t_q	$T_{VJ} = T_{VJM}; V_R = 100 \text{ V}; V_D = 2/3 V_{DRM}; t_p = 200 \mu\text{s}$ $dv/dt = 10 \text{ V}/\mu\text{s}; I_T = 120 \text{ A}; -di/dt = 10 \text{ A}/\mu\text{s}$			150 μs
Q_S I_{RM}	$T_{VJ} = T_{VJM}$ $-di/dt = 0.64 \text{ A}/\mu\text{s}; I_T/I_F = 50 \text{ A}$			90 μC 11 A
R_{thJC} R_{thJH}		per thyristor / diode; sine 120° el. per thyristor / diode; sine 120° el.		
$V_{BR(CES)}$ $V_{GE(th)}$	$V_{GS} = 0 \text{ V}, I_C = 1 \text{ mA}$ $I_C = 4 \text{ mA}$	1200 4.5		V 6.5 V
I_{GES}	$V_{GE} = \pm 20 \text{ V}$			500 nA
I_{CES}	$V_{CE} = V_{CES}$ $V_{CE} = V_{CES}, T_{VJ} = 125^{\circ}\text{C}$			0.2 mA 1 mA
V_{CESat}	$V_{GE} = 15 \text{ V}, I_C = 50 \text{ A}$			2.1 V
t_{sc} (SCSOA)	$V_{GE} = 15 \text{ V}, V_{CE} = 900 \text{ V}, T_{VJ} = 125^{\circ}\text{C}$, $R_G = 15 \Omega$, non repetitive			10 μs
RBSOA	$V_{GE} = 15 \text{ V}, V_{CE} = 1200 \text{ V}, T_{VJ} = 125^{\circ}\text{C}$, $R_G = 15 \Omega$, Clamped Inductive load, $L = 100 \mu\text{H}$			150 A
C_{ies}	$V_{CE} = 25 \text{ V}, f = 1 \text{ MHz}, V_{GE} = 0 \text{ V}$		5.7	nF
$t_{d(on)}$ $t_{d(off)}$ E_{on} E_{off}	$V_{CE} = 600 \text{ V}, I_C = 50 \text{ A}$ $V_{GE} = 15 \text{ V}, R_G = 15 \Omega$ Inductive load; $L = 100 \mu\text{H}$ $T_{VJ} = 125^{\circ}\text{C}$		170 680 11 8	ns ns mJ mJ
R_{thJC} R_{thCH}			0.1	0.22 K/W K/W

Symbol	Conditions	Characteristic Values		
		(T _{VJ} = 25°C, unless otherwise specified)		
		min.	typ.	max.
I _R	V _R = V _{RRM} , T _{VJ} = 25°C			0.75 mA
	V _R = 0.8 V _{RRM} , T _{VJ} = 150°C		3	7 mA
V _F	I _F = 30 A, T _{VJ} = 25°C			2.55 V
V _{T0}	For power-loss calculations only T _{VJ} = 150°C			1.65 V
r _T				18.2 mΩ
I _{RM}	I _F = 30 A, -di _F /dt = 240 A/μs V _R = 100 V		16	18 A
t _{rr}	I _F = 1 A, -di _F /dt = 100 A/μs V _R = 30 V		40	60 ns
R _{thJC}				1.1 K/W
R _{thJH}				1.5 K/W

Common Specification		Maximum Ratings		
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) (10-32 unf)		2-2.5 18-22	Nm lb.in.
Weight	typ.		80	g
d _s	Creep distance on surface		12.7	mm
d _A	Strike distance in air		11	mm
a	Maximum allowable acceleration		50	m/s ²
		min.	typ.	max.
R ₂₅	Thermistor	4.75	5.0	5.25 kΩ
B _{25/100}			3375	K

Dimensions in mm (1 mm = 0.0394")

