

IXYS

VUB 120 / 160

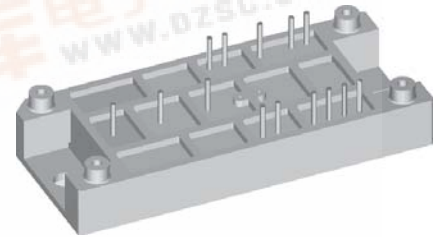
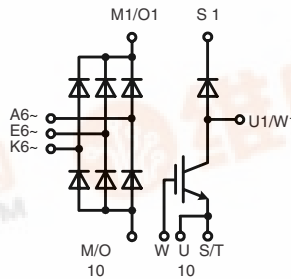
Three Phase Rectifier Bridge with IGBT and Fast Recovery Diode for Braking System

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

$$I_{dAVM} = 188 \text{ A}$$

Preliminary Data

V_{RRM}	Type	V_{RRM}	Type
V		V	
1200	VUB 120-12 NO2	1600	VUB 120-16 NO2
1200	VUB 160-12 NO2	1600	VUB 160-16 NO2



Symbol	Conditions	Maximum Ratings	
V_{RRM}	$T_C = 80^\circ\text{C}$, rect., $d = 1/3$	1200/1600	V
I_{dAVM}		188	A
I_{FSM}		1100	A
I^2t	$T_{VJ} = 45^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	6050	A
	$T_{VJ} = 150^\circ\text{C}$, $t = 10 \text{ ms}$, $V_R = 0 \text{ V}$	4610	A
P_{tot}	$T_C = 25^\circ\text{C}$ per diode	160	W
V_{CES}	$T_{VJ} = 25^\circ\text{C}$ to 150°C Continuous	VUB 120 1200	V
V_{GE}		± 20	V
I_{C25}	$T_C = 25^\circ\text{C}$, DC	140	A
I_{C80}		100	A
		95	A
I_{CM}	$t_p = \text{Pulse width limited by } T_{VJM}$	280	A
P_{tot}	$T_C = 25^\circ\text{C}$	570	W
V_{RRM}	$T_C = 80^\circ\text{C}$, rect. $d = 1/2$ $T_C = 80^\circ\text{C}$, rect. $d = 1/2$	1200	V
I_{FAV}		34	A
I_{FRMS}		48	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}	$T_C = 25^\circ\text{C}$	140	W
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+125	$^\circ\text{C}$
V_{ISOL}	50/60 Hz $t = 1 \text{ min}$	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 18-22	Nm lb.in.
d_s	Creep distance on surface	12.7	mm
d_A	Strike distance in air	9.4	mm
a	Maximum allowable acceleration	50	m/s^2
Weight	typ.	80	g

Features

- Soldering connections for PCB mounting
- Isolation voltage 3600 V~
- Ultrafast diode
- Convenient package outline
- UL registered E 72873
- Case and potting UL94 V-0

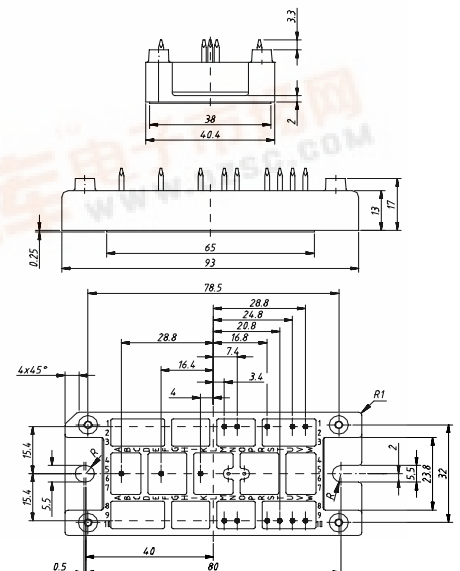
Applications

- Drive Inverters with brake system

Advantages

- 2 functions in one package
- Easy to mount with two screws
- Suitable for wave soldering
- High temperature and power cycling capability

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747

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

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Symbol	Conditions	Characteristic Values		
		(T _{VJ} = 25°C, unless otherwise specified)		
		min.	typ.	max.
I_R V_F V_{T0} r_T R_{thJC} R_{thCH}	Rectifier Diodes	V _R = V _{RRM} , T _{VJ} = 25°C		0.3 mA
		V _R = V _{RRM} , T _{VJ} = 150°C		5 mA
		I _F = 150 A, T _{VJ} = 25°C		1.46 V
		For power-loss calculations only		0.87 V
		T _{VJ} = 150°C		4.0 mΩ
		per diode		0.6 K/W
			0.2	K/W
V_{BR(CES)} V_{GE(th)}		V _{GS} = 0 V, I _C = 1 mA	1200	V
		I _C = 4 mA	4.5	6.5 V
I_{CES}		V _{CE} = 1200 V, T _{VJ} = 25°C		0.2 mA
		T _{VJ} = 125°C		1 mA
V_{CEsat}		V _{GE} = 15 V, I _C = 50 A	VUB 120	2.1 V
		I _C = 75 A	VUB 160	2.2 V
t_{SC} (SCSOA)		V _{GE} = 15 V, V _{CE} = 900 V, T _{VJ} = 125°C, R _G = 15/10 Ω, non repetitive		10 μs
RBSOA		V _{GE} = 15 V, V _{CE} = 1200 V, T _{VJ} = 125°C, Clamped Inductive load, L = 100 μH		
		R _G = 15 Ω	VUB 120	150 A
		R _G = 10 Ω	VUB 160	200 A
C_{ies}	IGBT	V _{CE} = 25 V, f = 1 MHz, V _{GE} = 0 V	VUB 120	5.7 nF
			VUB 160	7.4 nF
t_{d(on)}		$\left. \begin{array}{l} V_{CE} = 600 \text{ V, } I_C = 50/75 \text{ A} \\ V_{GE} = 15 \text{ V, } R_G = 15/10 \text{ } \Omega \\ \text{Inductive load; } L = 100 \text{ } \mu\text{H} \\ T_{VJ} = 125^\circ\text{C} \end{array} \right\}$	VUB 120	170 ns
t_{d(on)}			VUB 160	330 ns
t_{d(off)}			VUB 120	680 ns
t_{d(off)}			VUB 160	750 ns
E_{on}			VUB 120	11 mJ
			VUB 160	12 mJ
E_{off}			VUB 120	8 mJ
			VUB 160	10 mJ
R_{thJC}		VUB 120		0.22 K/W
		VUB 160		0.18 K/W
R_{thCH}		VUB 120	0.1	K/W
		VUB 160	0.1	K/W
I_R	Fast Recovery Diode	V _R = V _{RRM} , T _{VJ} = 25°C		0.5 mA
		T _{VJ} = 125°C	0.75	1 mA
V_F		I _F = 30 A, T _{VJ} = 25°C		2.7 V
V_{T0}		For power-loss calculations only		1.3 V
r_T		T _{VJ} = 150°C		15 mΩ
I_{RM}		I _F = 50 A, -di _F /dt = 100 A/μs, V _R = 100 V	8	12 A
t_{rr}		I _F = 1 A, -di _F /dt = 100 A/μs, V _R = 30 V	40	60 ns
R_{thJC} R_{thCH}			0.3	0.9 K/W K/W