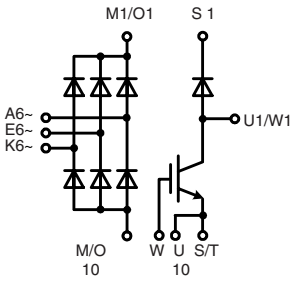
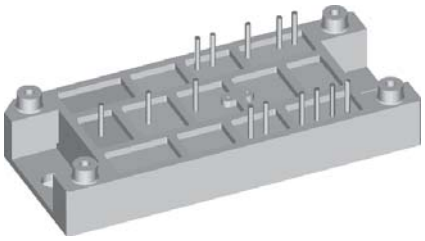
Three Phase Rectifier Bridge
with IGBT and Fast Recovery Diode for Braking System

V_{RRM} = 1200/1600 V
I_{dAVM} = 188 A

Preliminary Data

V_{RRM} V	Type	V_{RRM} V	Type
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}	Rectifier Diodes			1200/1600		V
I_{dAVM}		T_C = 80°C, rect., d = $^1/_3$		188		A
I_{FSM}		T_{VJ} = 45°C,	t = 10 ms, V_R = 0 V	1100		A
		T_{VJ} = 150°C,	t = 10 ms, V_R = 0 V	960		A
I^2t		T_{VJ} = 45°C,	t = 10 ms, V_R = 0 V	6050		A
		T_{VJ} = 150°C,	t = 10 ms, V_R = 0 V	4610		A
P_{tot}		T_C = 25°C per diode		160		W
	IGBT			**VUB 120**	**VUB160**	
V_{CES}		T_{VJ} = 25°C to 150°C		1200	1200	V
V_{GE}		Continuous		± 20	± 20	V
I_{C25}		T_C = 25°C, DC		140	177	A
I_{C80}		T_C = 80°C, DC		100	125	A
		T_C = 80°C, d = 0.5		95	95	A
I_{CM}		t_p = Pulse width limited by T_{VJM}		280	350	A
P_{tot}		T_C = 25°C		570	690	W
V_{RRM}	Fast Recovery Diode			1200		V
I_{FAV}		T_C = 80°C, rect. d = ½		34		A
I_{FRMS}		T_C = 80°C, rect. d = ½		48		A
I_{FSM}		T_{VJ} = 45°C,	t = 10 ms	200		A
		T_{VJ} = 150°C,	t = 10 ms	180		A
P_{tot}		T_C = 25°C		140		W
T_{VJ}	Module			-40...+150		°C
T_{VJM}				150		°C
T_{stg}				-40...+125		°C
V_{ISOL}		50/60 Hz	t = 1 min	3000		V~
		$I_{ISOL} \leq$ 1 mA	t = 1 s	3600		V~
M_d		Mounting torque	(M5)	2-2.5		Nm
			(10-32 UNF)	18-22		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

Data according to IEC 60747

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

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

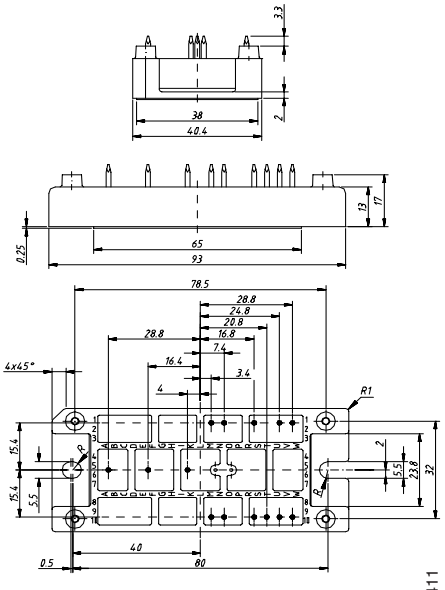
Applications

- 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")



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Symbol		Conditions		Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
I_R	Rectifier Diodes	$V_R = V_{RRM}$, T_{VJ} = 25°C				0.3	mA
		$V_R = V_{RRM}$, T_{VJ} = 150°C				5	mA
V_F		I_F = 150 A, T_{VJ} = 25°C				1.46	V
V_{T0}		For power-loss calculations only				0.87	V
r_T		T_{VJ} = 150°C				4.0	mΩ
R_{thJC}		per diode				0.6	K/W
R_{thCH}					0.2		K/W
$V_{BR(CES)}$	IGBT	V_{GS} = 0 V, I_C = 1 mA		1200			V
$V_{GE(th)}$		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}		V_{CE} = 25 V, f = 1 MHz, V_{GE} = 0 V	VUB 120		5.7		nF
			VUB 160		7.4		nF
$t_{d(on)}$		V_{CE} = 600 V, I_C = 50/75 A; V_{GE} = 15 V, R_G = 15/10 Ω; Inductive load; L = 100 µH; T_{VJ} = 125°C	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}						0.9	K/W
R_{thCH}					0.3		K/W