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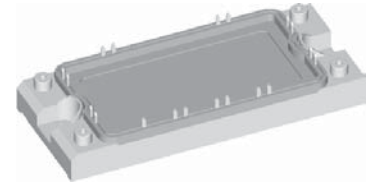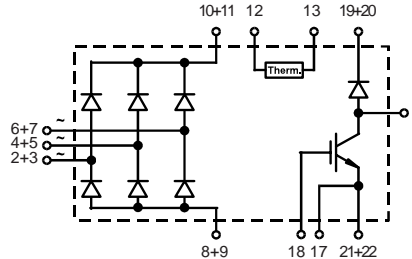## with IGBT and Fast Recovery Diode
for Braking System

V_{RRM} = **1600 V**
I_{dAVM} = **116/145 A**

V_{RRM}	Type
V	
1600	**VUB 116-16 NO1**
1600	**VUB 145-16 NO1**

Symbol		Conditions	Maximum Ratings		
			VUB 116	**VUB 145**	
V_{RRM}			1600	1600	V
I_{dAVM}	Rectifier Diodes	T_C = 100°C, sinusoidal 120°	116	145	A
I_{FSM}		T_{VJ} = 45°C, t = 10 ms, V_R = 0 V	650	900	A
		T_{VJ} = 150°C, t = 10 ms, V_R = 0 V	570	780	A
I^2t		T_{VJ} = 45°C, t = 10 ms, V_R = 0 V	2110	4050	A
		T_{VJ} = 150°C, t = 10 ms, V_R = 0 V	1620	3040	A
P_{tot}		T_C = 25°C per diode	190	250	W
V_{CES}		T_{VJ} = 25°C to 150°C	1200	1200	V
V_{GE}		Continuous	± 20	± 20	V
I_{C25}	IGBT	T_C = 25°C, DC	95	141	A
I_{C80}		T_C = 80°C, DC	67	100	A
I_{CM}		t_p = Pulse width limited by T_{VJM}	100	150	A
P_{tot}		T_C = 25°C	380	570	W
V_{RRM}	Fast Recovery Diode		1200		V
I_{FAV}		T_C = 80°C, rectangular d = 0.5	27		A
I_{FRMS}		T_C = 80°C, rectangular d = 0.5	38		A
I_{FRM}		T_C = 80°C, t_P = 10 µs, f = 5 kHz	tbd		A
I_{FSM}		T_{VJ} = 45°C, t = 10 ms	200		A
P_{tot}		T_C = 25°C	130		W
T_{VJ}			-40...+150		°C
T_{VJM}			150		°C
T_{stg}			-40...+125		°C
V_{ISOL}	Module	50/60 Hz, t = 1 min	2500		V~
		I_{ISOL} ≤ 1 mA, t = 1 s	3000		V~
M_d		Mounting torque	2.25...2.75		Nm
			20...25		lb.in.
d_S		Creep distance on surface	12.7		mm
d_A		Strike distance in air	9.6		mm
a		Maximum allowable acceleration	50		m/s²
Weight		typ.	180		g

Data according to IEC 60747

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

Features

- Soldering connections for PCB mounting
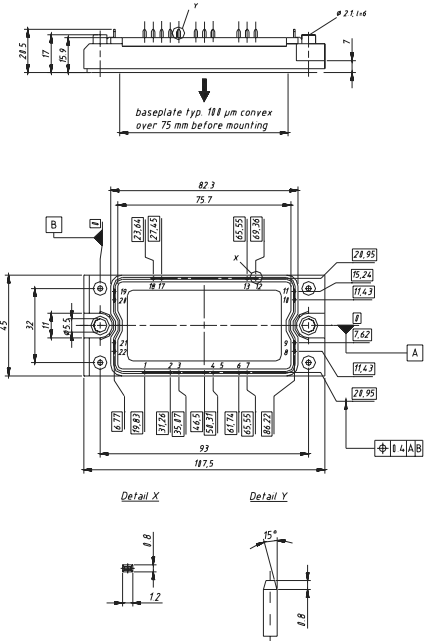- Convenient package outline
- Thermistor

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")

Symbol	Conditions		Characteristic Values $(T_{VJ} = 25°C$, unless otherwise specified)			
			min.	typ.	max.	
I_R	$V_R = V_{RRM}$, $T_{VJ} = 25°C$				0.1	mA
	$V_R = V_{RRM}$, $T_{VJ} = 150°C$				2	mA
V_F	$I_F = 80$ A, $T_{VJ} = 25°C$	VUB 116			1.43	V
	$I_F = 150$ A, $T_{VJ} = 25°C$	VUB 145			1.68	V
V_{T0}	for power-loss calculations only	VUB 116			0.85	V
		VUB 145			0.85	V
r_T	$T_{VJ} = 150°C$	VUB 116			7.1	mΩ
		VUB 145			5.9	mΩ
R_{thJC}	per diode	VUB 116			0.65	K/W
		VUB 145			0.5	K/W
R_{thCH}		VUB 116			0.1	K/W
		VUB 145			0.1	K/W
$V_{BR(CES)}$	$V_{GS} = 0$ V, $I_C = 0.1$ mA		1200			V
$V_{GE(th)}$	$I_C = 8$ mA	VUB 116	4.5		6.45	V
	$I_C = 3$ mA	VUB 145	4.5		6.45	V
I_{CES}	$T_{VJ} = 25°C$, $V_{CE} = 1200$ V				0.1	mA
	$T_{VJ} = 125°C$, $V_{CE} = 0.8 • V_{CES}$				0.5	mA
V_{CEsat}	$V_{GE} = 15$ V, $I_C = 100$ A	VUB 116			3.5	V
	$V_{GE} = 15$ V, $I_C = 150$ A	VUB 145			3.7	V
$t_{SC (SCSOA)}$	$V_{GE} = 15$ V, $V_{CE} = 720$ V, $T_{VJ} = 125°C$,				10	µs
RBSOA	$V_{GE} = 15$ V, $V_{CE} = 1200$ V, $T_{VJ} = 125°C$, clamped inductive load, $L = 100$ µH					
	$R_G = 22$ Ω	VUB 116			100	A
	$R_G = 15$ Ω	VUB 145			150	A
C_{ies}	$V_{CE} = 25$ V, $f = 1$ MHz, $V_{GE} = 0$ V	VUB 116		3.8		nF
		VUB 145		5.7		nF
$t_{d(on)}$				150		ns
$t_{d(off)}$	$V_{CE} = 720$ V, $I_C = 50/75$ A			680		ns
E_{on}	$V_{GE} = 15$ V, $R_G = 32/15$ Ω	VUB 116		6		mJ
	Inductive load; $L = 100$ µH	VUB 145		9		mJ
E_{off}	$T_{VJ} = 125°C$	VUB 116		5		mJ
		VUB 145		7.5		mJ
R_{thJC}		VUB 116			0.33	K/W
		VUB 145			0.22	K/W
R_{thJH}		VUB 116			0.66	K/W
		VUB 145			0.44	K/W
I_R	$V_R = V_{RRM}$, $T_{VJ} = 25°C$				0.25	mA
	$V_R = 1200$ V, $T_{VJ} = 125°C$			1		mA
V_F	$I_F = 30$ A, $T_{VJ} = 25°C$				2.76	V
V_{T0}	For power-loss calculations only				1.3	V
r_T	$T_{VJ} = 150°C$				16	mΩ
I_{RM}	$I_F = 50$ A, -$di_F/dt = 100$ A/µs, $V_R = 100$ V		5.5		11	A
t_{rr}	$I_F = 1$ A, -$di_F/dt = 200$ A/µs, $V_R = 30$ V			40		ns
R_{thJC}					0.9	K/W
R_{thCH}					0.1	K/W
R_{25}			4.75	5.0	5.25	kΩ
$B_{25/50}$				3375		K

Side labels (top to bottom): Rectifier Diodes · IGBT · Fast Recovery Diode · NTC

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