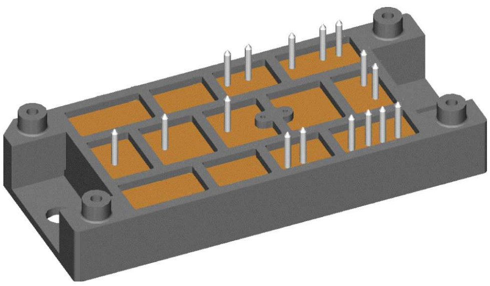
Standard Rectifier Module

3~ Rectifier			Brake Chopper		
V_{RRM}	=	1600 V	V_{CES}	=	1200 V
I_{DAV}	=	180 A	I_{C25}	=	180 A
I_{FSM}	=	1100 A	$V_{CE(sat)}$	=	1.7 V

3~ Rectifier Bridge + Brake Unit + NTC

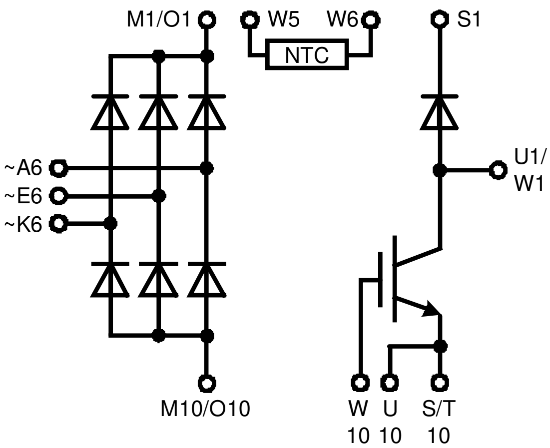
Part number

VUB120-16NOXT



Backside: isolated

E72873



Features / Advantages:

- Package with DCB ceramic base plate
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current
- NTC
- X2PT - 2nd generation Xtreme light Punch Through
- Rugged X2PT design results in:
  - short circuit rated for 10 µsec.
  - very low gate charge
  - low EMI
  - square RBSOA @ 2x Ic
- Thin wafer technology combined with X2PT design results in a competitive low VCE(sat) and low thermal resistance

Applications:

- 3~ Rectifier with brake unit for drive inverters

Package: V2-Pack

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 17 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

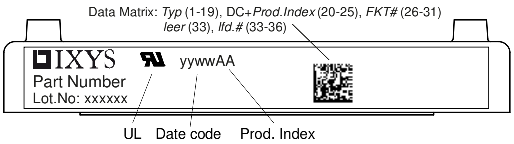
Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

Rectifier				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1700	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1600	V
I_R	*reverse current*	V_R = 1600 V	T_{VJ} = 25°C			100	µA
		V_R = 1600 V	T_{VJ} = 125°C			2	mA
V_F	*forward voltage drop*	I_F = 60 A	T_{VJ} = 25°C			1.16	V
		I_F = 180 A				1.55	V
		I_F = 60 A	T_{VJ} = 125°C			1.09	V
		I_F = 180 A				1.59	V
I_{DAV}	*bridge output current*	T_C = 90°C rectangular d = ⅓	T_{VJ} = 150°C			180	A
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.81	V
r_F	*slope resistance*					4.4	mΩ
R_{thJC}	*thermal resistance junction to case*					0.6	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.2		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			205	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			1.10	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.19	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			935	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.01	kA
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			6.05	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			5.89	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			4.37	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			4.25	kA²s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		37		pF

Brake IGBT + Diode				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{CES}	*collector emitter voltage*		T_{VJ} = 25°C			1200	V
V_{GES}	*max. DC gate voltage*					±20	V
V_{GEM}	*max. transient gate emitter voltage*					±30	V
I_{C25}	*collector current*		T_C = 25°C			180	A
I_{C80}			T_C = 80°C			140	A
P_{tot}	*total power dissipation*		T_C = 25°C			500	W
$V_{CE(sat)}$	*collector emitter saturation voltage*	I_C = 100 A; V_{GE} = 15 V	T_{VJ} = 25°C		1.7	2.1	V
			T_{VJ} = 125°C		1.9		V
$V_{GE(th)}$	*gate emitter threshold voltage*	I_C = 4 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	6	6.8	7.5	V
I_{CES}	*collector emitter leakage current*	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			0.1	mA
			T_{VJ} = 125°C		0.1		mA
I_{GES}	*gate emitter leakage current*	V_{GE} = ±20 V				500	nA
$Q_{G(on)}$	*total gate charge*	V_{CE} = 600 V; V_{GE} = 15 V; I_C =100 A			340		nC
$t_{d(on)}$	*turn-on delay time*	inductive load	T_{VJ} = 125°C		230		ns
t_r	*current rise time*	V_{CE} = 600 V; I_C = 100 A			70		ns
$t_{d(off)}$	*turn-off delay time*	V_{GE} = ±15 V; R_G = 6.8 Ω			380		ns
t_f	*current fall time*				230		ns
E_{on}	*turn-on energy per pulse*				12.5		mJ
E_{off}	*turn-off energy per pulse*				11.5		mJ
RBSOA	*reverse bias safe operating area*	V_{GE} = ±15 V; R_G = 6.8 Ω	T_{VJ} = 125°C				
I_{CM}		V_{CEK} = 1200 V				300	A
SCSOA	*short circuit safe operating area*	V_{CEK} = 1200 V					
t_{SC}	*short circuit duration*	V_{CE} = 720 V; V_{GE} = ±15	T_{VJ} = 125°C			10	µs
I_{SC}	*short circuit current*	R_G = 6.8 Ω; non-repetitive			450		A
R_{thJC}	*thermal resistance junction to case*					0.25	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.10		K/W

Brake Diode							
V_{RRM}	*max. repetitive reverse voltage*		T_{VJ} = 25°C			1200	V
I_{F25}	*forward current*		T_C = 25°C			48	A
I_{F80}			T_C = 80°C			32	A
V_F	*forward voltage*	I_F = 30 A	T_{VJ} = 25°C			2.75	V
			T_{VJ} = 125°C		1.60		V
I_R	*reverse current*	V_R = V_{RRM}	T_{VJ} = 25°C			0.25	mA
			T_{VJ} = 125°C			1	mA
Q_{rr}	*reverse recovery charge*	V_R = 600 V			5.2		µC
I_{RM}	*max. reverse recovery current*	$-di_F/dt$ = 1000 A/µs	T_{VJ} = 125°C		50		A
t_{rr}	*reverse recovery time*	I_F = 30 A; V_{GE} = 0 V			300		ns
E_{rec}	*reverse recovery energy*				1.9		mJ
R_{thJC}	*thermal resistance junction to case*					0.9	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W

Package V2-Pack				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal				100	A
T_{VJ}	*virtual junction temperature*			-40		150	°C
T_{op}	*operation temperature*			-40		125	°C
T_{stg}	*storage temperature*			-40		125	°C
Weight					76		g
M_D	*mounting torque*			2		2.5	Nm
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	6.0			mm
$d_{Spb/Apb}$			*terminal to backside*	12.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	VUB120-16NOXT	VUB120-16NOXT	Box	6	520468

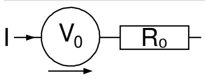
Similar Part	Package	Voltage class
VUB120-16NOX	V2-Pack	1600

Temperature Sensor NTC

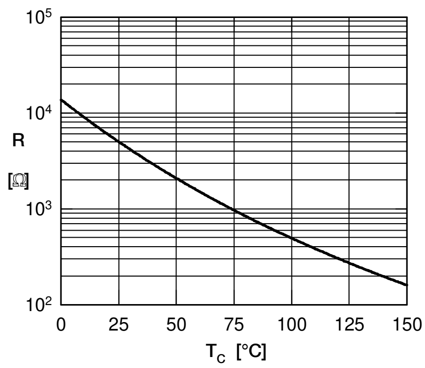
Symbol	Definition	Conditions	min.	typ.	max.	Unit
R_{25}	*resistance*	T_{VJ} = 25°	4.75	5	5.25	kΩ
$B_{25/50}$	*temperature coefficient*			3375		K

Equivalent Circuits for Simulation

** on die level* T_{VJ} = 150°C

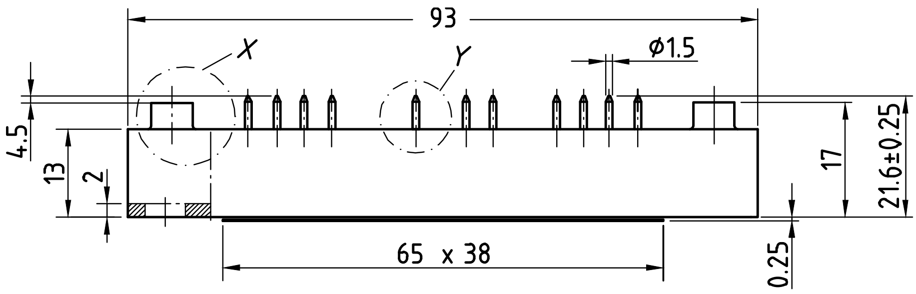


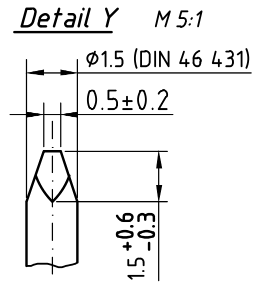
		Rectifier	Brake Diode	
$V_{0\,max}$	*threshold voltage*	0.81	1.31	V
$R_{0\,max}$	*slope resistance **	3.2	8	mΩ

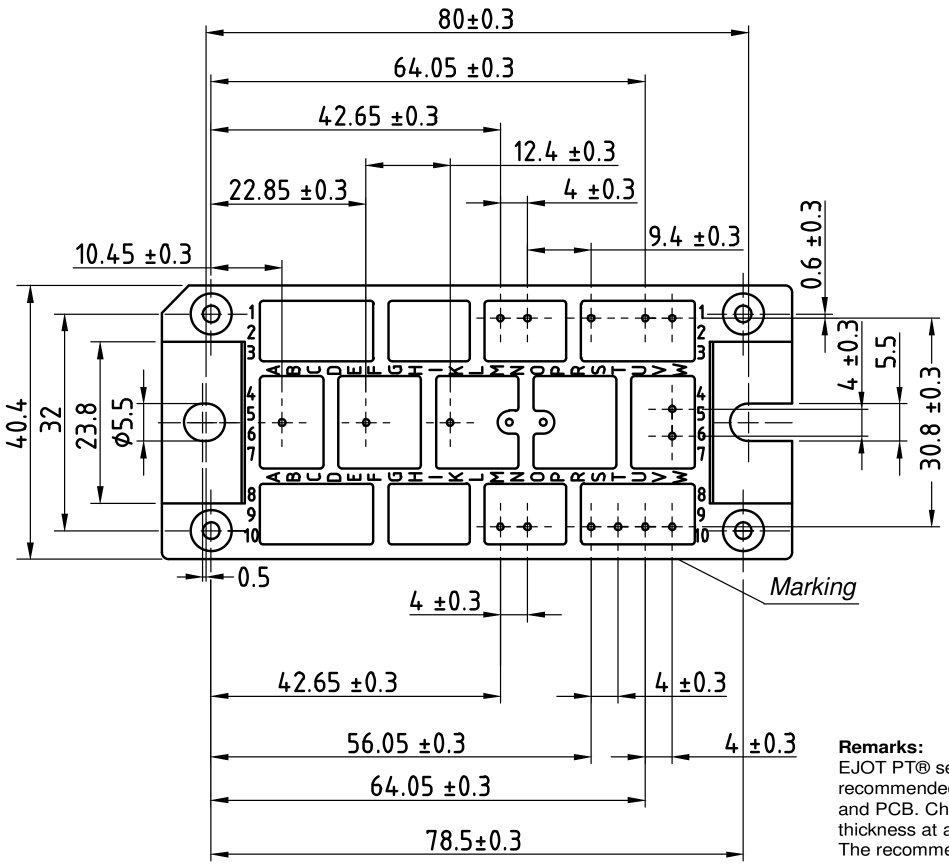


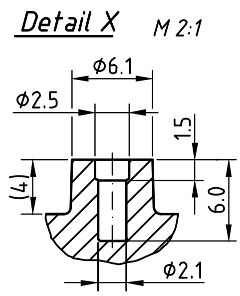
Typ. NTC resistance vs. temperature

Outlines V2-Pack

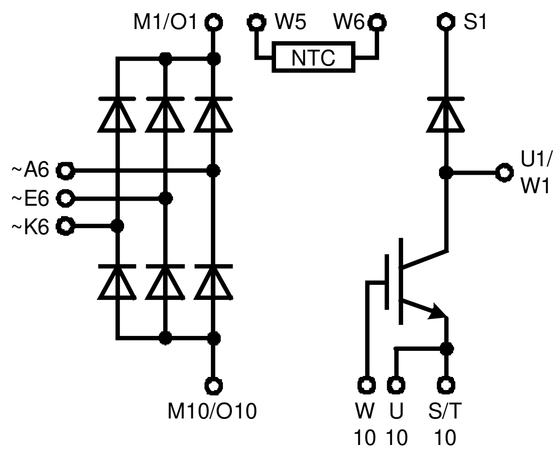








Remarks:
EJOT PT® self-tapping screws of the dimension K25 are recommended for the mechanical connection between module and PCB. Choose the right length according to your board thickness at a maximum depth of 6 mm of the module holes.
The recommended mounting torque is 1.5 Nm.



Rectifier

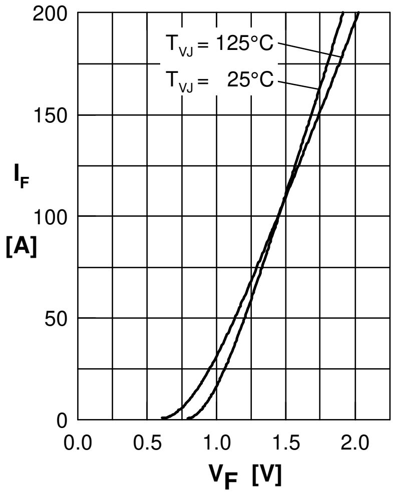


Fig. 1 Forward current vs. voltage drop per diode

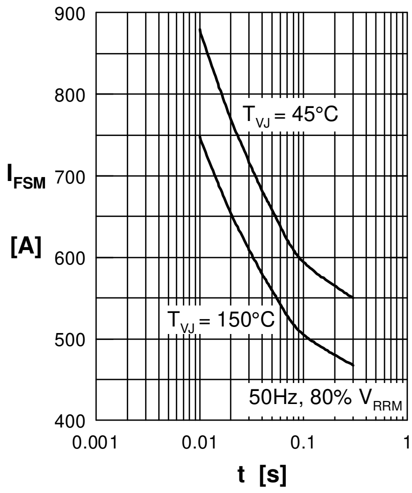


Fig. 2 Surge overload current vs. time per diode

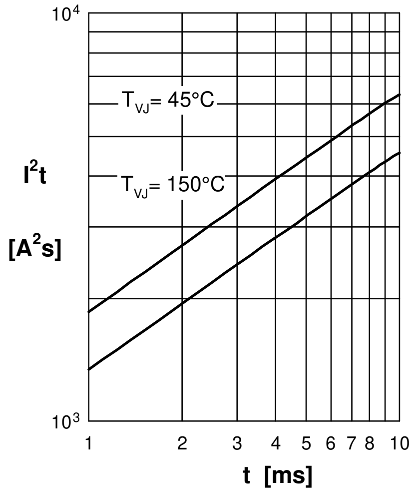


Fig. 3 I^2t vs. time per diode

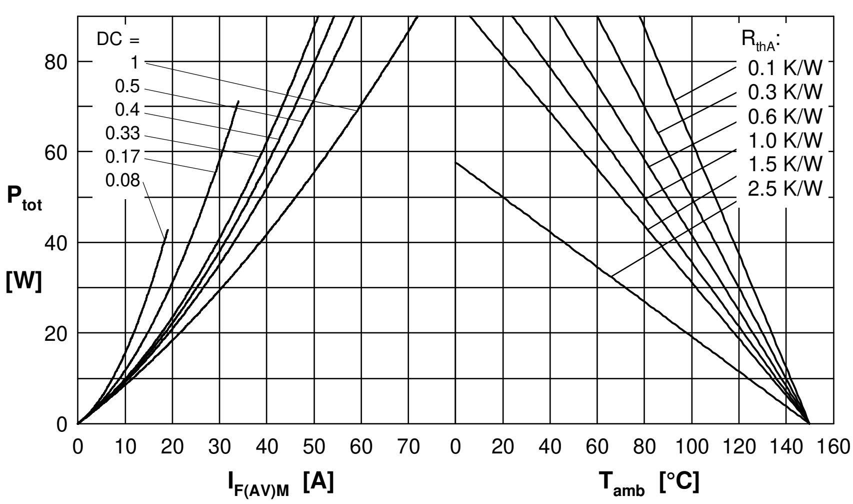


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

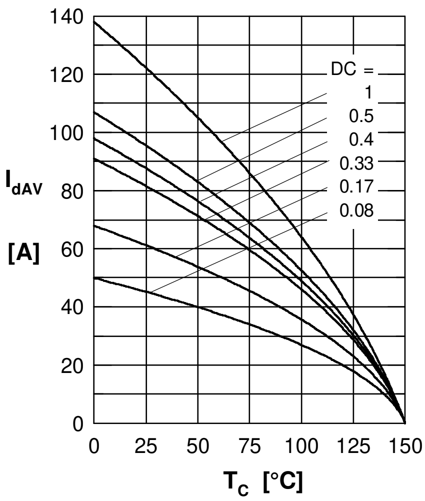


Fig. 5 Max. forward current vs. case temperature per diode

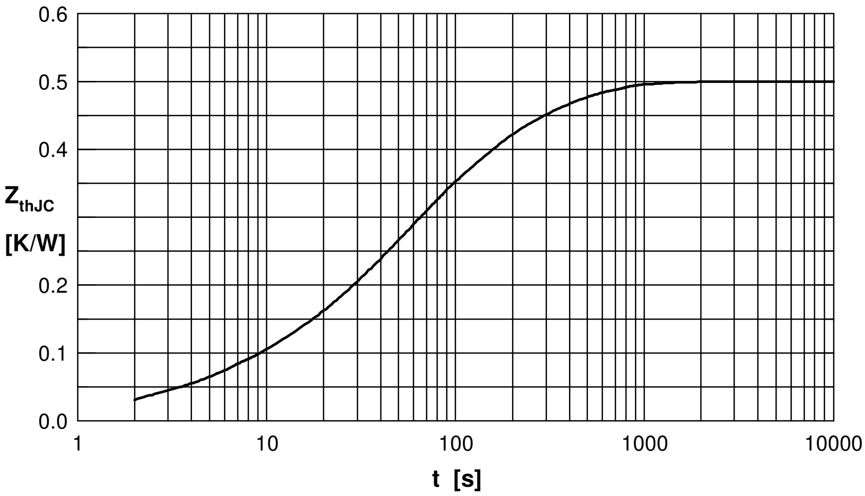


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.040	0.004
2	0.003	0.010
3	0.140	0.030
4	0.120	0.300
5	0.197	0.080

Brake IGBT + Diode

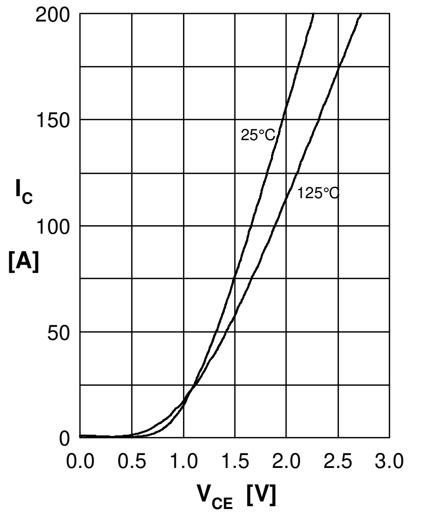


Fig.1 Output characteristics IGBT

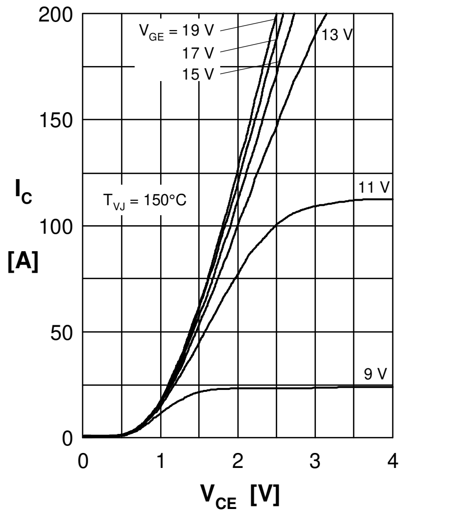


Fig.2 Typ. output characteristics IGBT

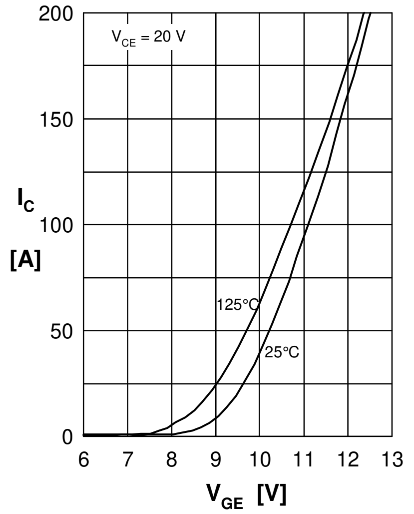


Fig. 3 Typ. transfer charact. IGBT

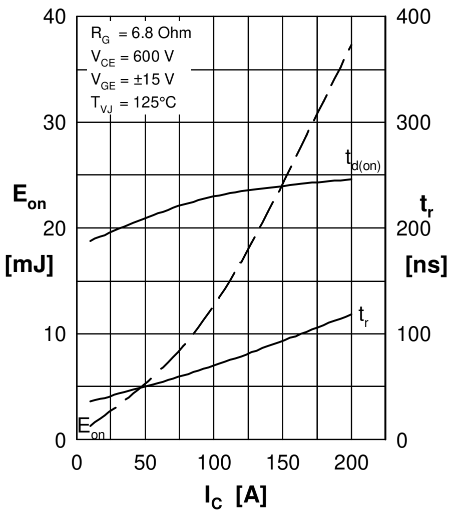


Fig. 4 Typ. turn-on energy & switch. times vs. collector current

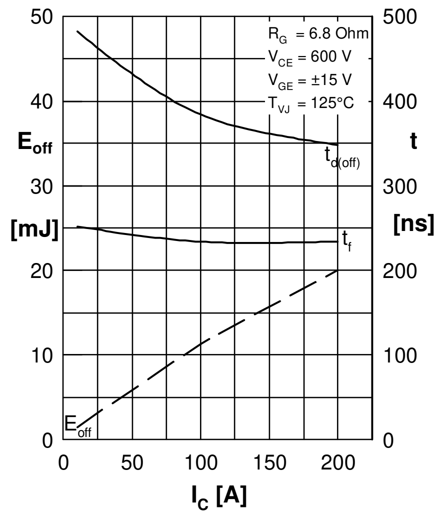


Fig. 5 Typ. turn-off energy & switch. times vs. collector current

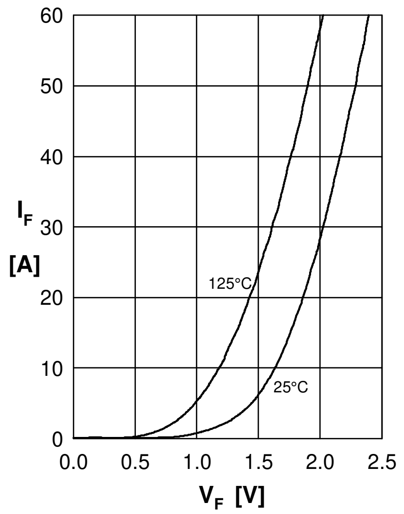


Fig. 6 Typ. forward characteristics Diode

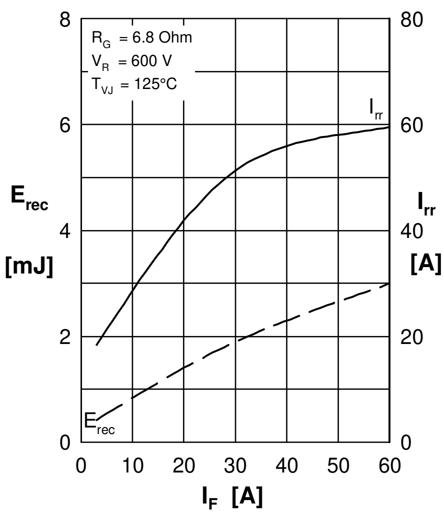


Fig. 7 Typ. reverse recovery characteristics Diode

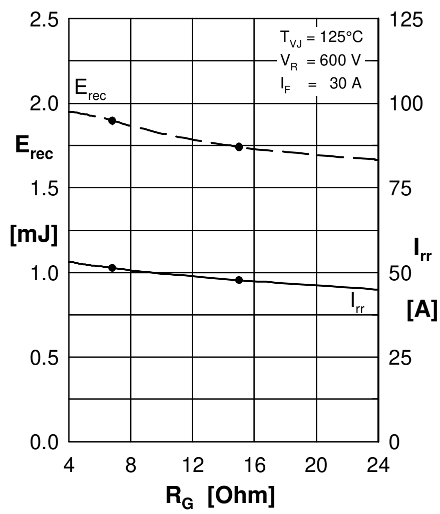


Fig. 8 Typ. reverse recovery characteristics Diode

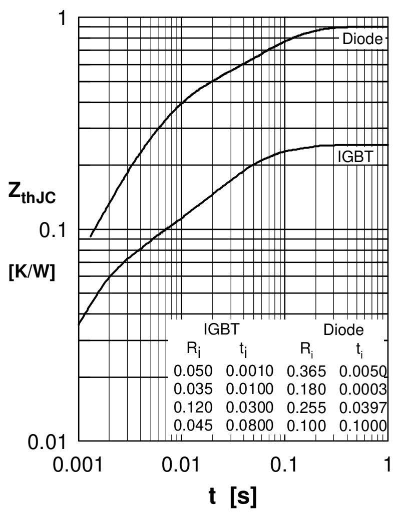


Fig. 9 Transient thermal resistance junction to case

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for IGBT Modules ***category:***

Click to view products by IXYS ***manufacturer:***

Other Similar products are found below :

F3L400R07ME4_B22 F4-50R07W2H3_B51 FB15R06W1E3 FB20R06W1E3_B11 FD1000R33HE3-K FD400R33KF2C-K FD401R17KF6C_B2 FD-DF80R12W1H3_B52 FF200R06YE3 FF300R12KE4_E FF450R12ME4P FF600R12IP4V FP10R06W1E3_B11 FP20R06W1E3 FP50R12KT3 FP75R07N2E4_B11 FS10R12YE3 FS150R07PE4 FS150R12PT4 FS200R12KT4R FS50R07N2E4_B11 FZ1000R33HE3 FZ1800R17KF4 DD250S65K3 DF1000R17IE4 DF1000R17IE4D_B2 DF1400R12IP4D DF200R12PT4_B6 DF400R07PE4R_B6 BSM75GB120DN2_E3223c-Se F3L300R12ME4_B22 F3L75R07W2E3_B11 F4-50R12KS4_B11 F475R07W1H3B11ABOMA1 FD1400R12IP4D FD200R12PT4_B6 FD800R33KF2C-K FF1200R17KP4_B2 FF300R17KE3_S4 FF300R17ME4_B11 FF401R17KF6C_B2 FF650R17IE4D_B2 FF900R12IP4D FF900R12IP4DV STGIF7CH60TS-L FP50R07N2E4_B11 FS100R07PE4 FS150R07N3E4_B11 FS150R17N3E4 FS150R17PE4