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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.

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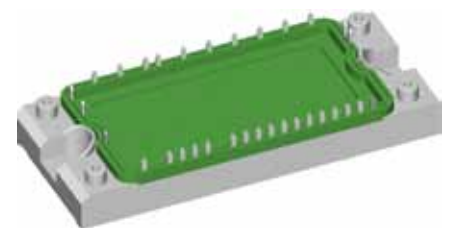
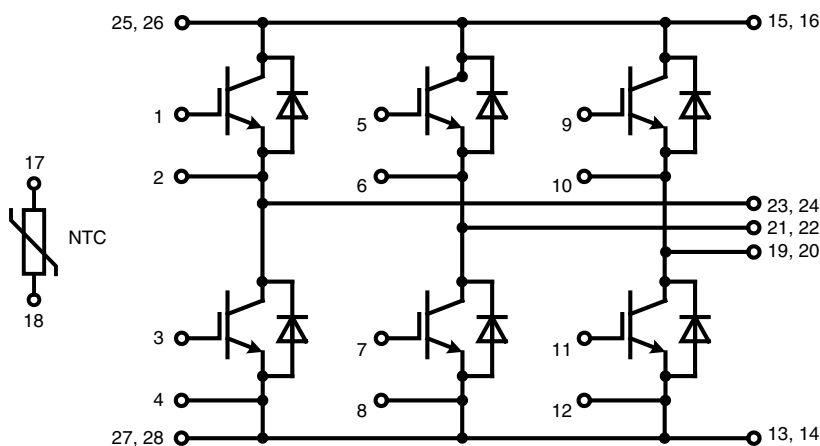


Six-Pack Trench IGBT

$I_{C25} = 80\text{ A}$
 $V_{CES} = 1200\text{ V}$
 $V_{CE(sat) \text{ typ.}} = 1.7\text{ V}$

Part name (Marking on product)

MWI 50-12T7T



E72873

Pin configuration see outlines.

Features:

- Trench IGBT technology
- low saturation voltage
- low switching losses
- square RBSOA, no latch up
- high short circuit capability
- positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- ultra fast free wheeling diodes
- solderable pins for PCB mounting
- package with copper base plate

Application:

- AC motor drives
- Solar inverter
- Medical equipment
- Uninterruptible power supply
- Air-conditioning systems
- Welding equipment
- Switched-mode and resonant-mode power supplies

Package:

- "E2-Pack" standard outline
- Insulated copper base plate
- Soldering pins for PCB mounting
- Temperature sense included

Output Inverter T1 - T6

Symbol	Definitions	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{CES}	collector emitter voltage		$T_{VJ} = 25^{\circ}\text{C}$		1200	V	
V_{GES}	max. DC gate voltage	continuous			± 20	V	
V_{GEM}	max. transient collector gate voltage	transient			± 30	V	
I_{C25}	collector current		$T_C = 25^{\circ}\text{C}$		80	A	
I_{C80}			$T_C = 80^{\circ}\text{C}$		50	A	
P_{tot}	total power dissipation		$T_C = 25^{\circ}\text{C}$		270	W	
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 50\text{ A}; V_{GE} = 15\text{ V}$ on chip level	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.7 2.0	2.15	V V	
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 2\text{ mA}; V_{GE} = V_{CE}$	$T_{VJ} = 25^{\circ}\text{C}$	5	5.8	6.5	V
I_{CES}	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2	2	mA mA
I_{GES}	gate emitter leakage current	$V_{GE} = \pm 20\text{ V}$			400	nA	
C_{ies}	input capacitance	$V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}; f = 1\text{ MHz}$			3500	pF	
$Q_{G(on)}$	total gate charge	$V_{CE} = 600\text{ V}; V_{GE} = \pm 15\text{ V}; I_C = 50\text{ A}$			470	nC	
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{ V}; I_C = 50\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 18\ \Omega$ $L_S = 70\text{ nH}$	$T_{VJ} = 125^{\circ}\text{C}$		90	ns	
t_r	current rise time				50	ns	
$t_{d(off)}$	turn-off delay time				520	ns	
t_f	current fall time				90	ns	
E_{on}	turn-on energy per pulse				5	mJ	
E_{off}	turn-off energy per pulse				6.5	mJ	
RBSOA	reverse bias safe operating area	$V_{GE} = \pm 15\text{ V}; R_G = 18\ \Omega$	$T_{VJ} = 125^{\circ}\text{C}$ $V_{CEK} = 1150\text{ V}$		100	A	
SCSOA	short circuit safe operating area		$T_{VJ} = 125^{\circ}\text{C}$				
t_{SC}	short circuit duration	$V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V};$			10	μs	
I_{SC}	short circuit current	$R_G = 18\ \Omega; \text{non-repetitive}$		200		A	
R_{thJC}	thermal resistance junction to case	(per IGBT)			0.46	K/W	

Output Inverter D1 - D6

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
V_{RRM}	max. repetitive reverse voltage		$T_{VJ} = 25^{\circ}\text{C}$		1200	V
I_{F25}	forward current		$T_C = 25^{\circ}\text{C}$		85	A
I_{F80}			$T_C = 80^{\circ}\text{C}$		57	A
V_F	forward voltage	$I_F = 60\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	1.95 1.95	2.2	V V
Q_{rr}	reverse recovery charge	$V_R = 600\text{ V}$ $di_F/dt = -1200\text{ A}/\mu\text{s}$ $I_F = 60\text{ A}; V_{GE} = 0\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		8	μC
I_{RM}	max. reverse recovery current				60	A
t_{rr}	reverse recovery time				350	ns
E_{rec}	reverse recovery energy				2.5	mJ
R_{thJC}	thermal resistance junction to case	(per diode)			0.6	K/W

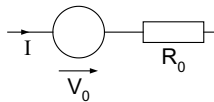
 $T_C = 25^{\circ}\text{C}$ unless otherwise stated

Temperature Sensor NTC

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
R_{25}	resistance	$T_C = 25^\circ\text{C}$	4.75	5.0	5.25	k Ω
$B_{25/50}$				3375		K

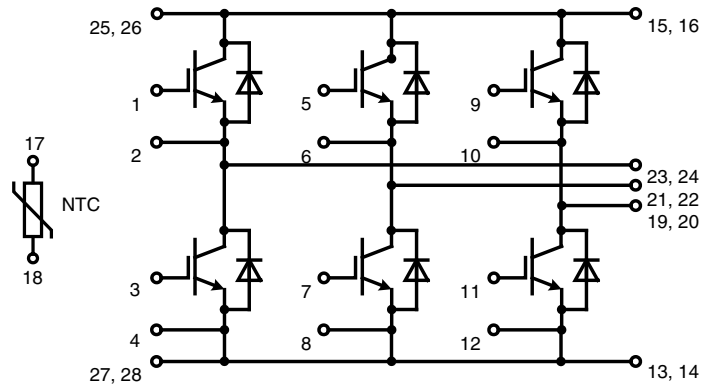
Module

Symbol	Definitions	Conditions	Ratings			Unit
			min.	typ.	max.	
T_{VJ}	operating temperature		-40		125	$^\circ\text{C}$
T_{VJM}	max. virtual junction temperature				150	$^\circ\text{C}$
T_{stg}	storage temperature		-40		125	$^\circ\text{C}$
V_{ISOL}	isolation voltage	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$			2500	V~
CTI	comparative tracking index				200	
M_d	mounting torque (M5)		2.7		3.3	Nm
d_S	creep distance on surface		6			mm
d_A	strike distance through air		6			mm
$R_{pin-chip}$	resistance pin to chip			5		m Ω
R_{thCH}	thermal resistance case to heatsink	with heatsink compound		0.02		K/W
Weight				180		g

Equivalent Circuits for Simulation

Ratings

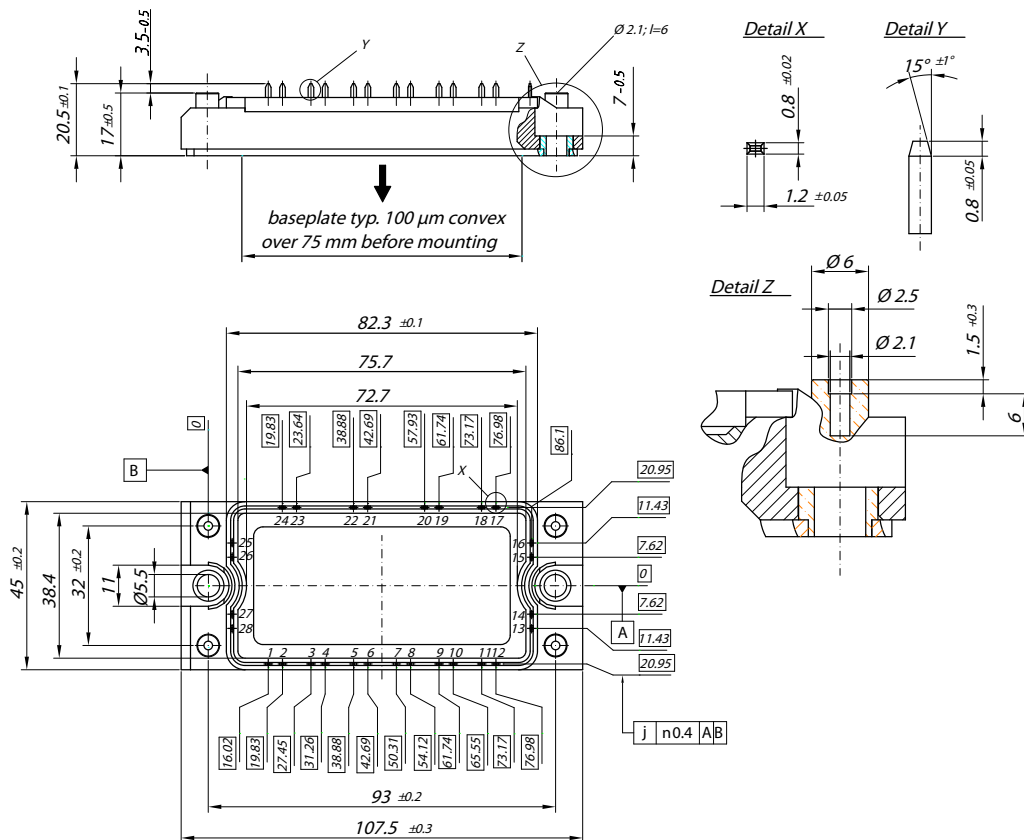
Symbol	Definitions	Conditions	min.	typ.	max.	Unit
V_0 R_0	IGBT	T1 - T6		1.0 20		V m Ω
V_0 R_0	Diode	D1 - D6		1.1 14.2		V m Ω

Circuit Diagram

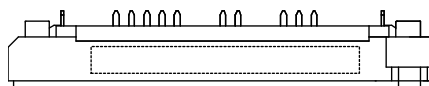


Outline Drawing

Dimensions in mm (1 mm = 0.0394")



Product Marking



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MWI 50-12T7T	MWI50-12T7T	Box	6	501972

Inverter T1 - T6

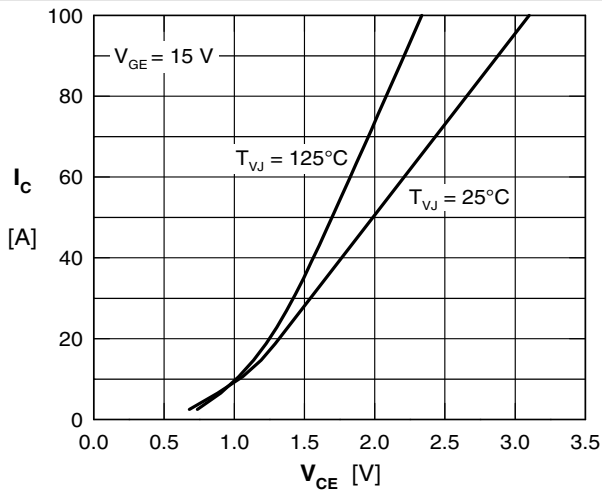


Fig. 1 Typ. output characteristics

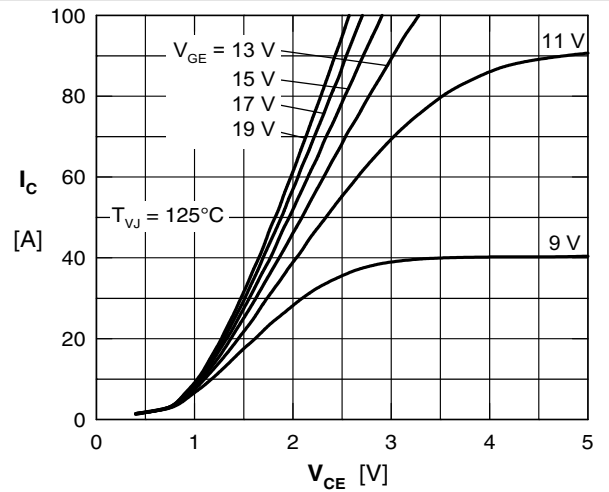


Fig. 2 Typ. output characteristics

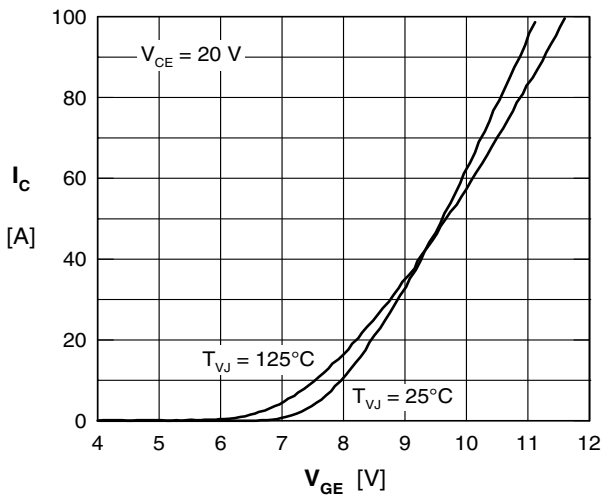


Fig. 3 Typ. transfer characteristics

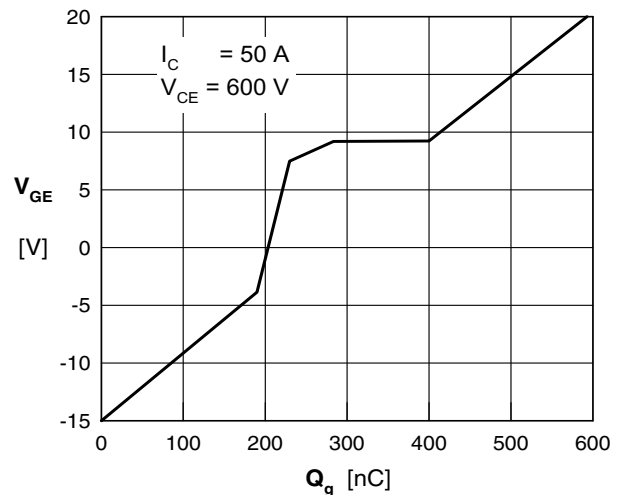


Fig. 4 Typ. turn-on gate charge

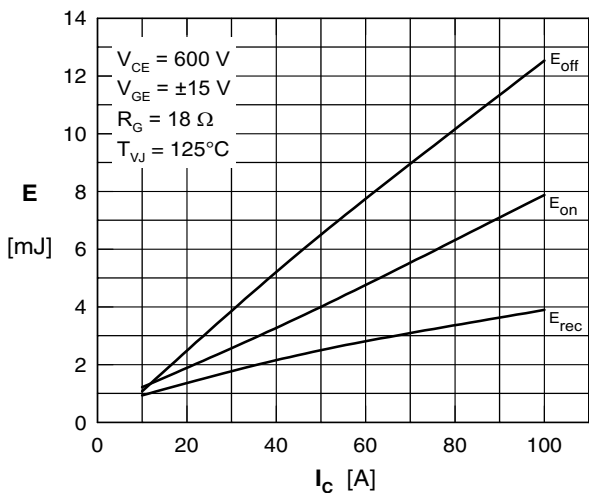


Fig. 5 Typical switching losses versus collector current impedance

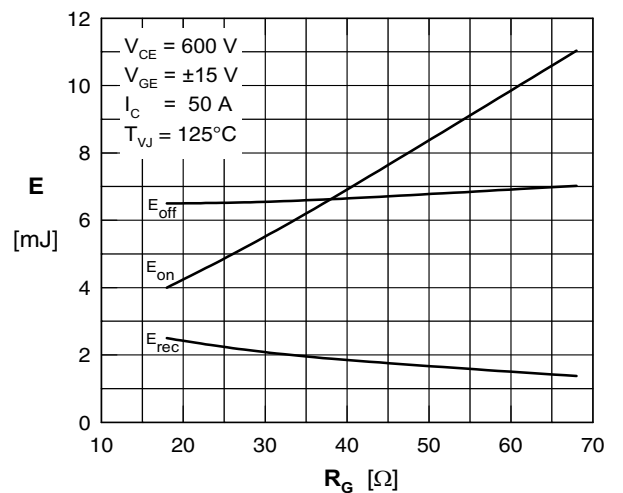


Fig. 6 Typical switching losses versus gate resistance

Inverter T1 - T6

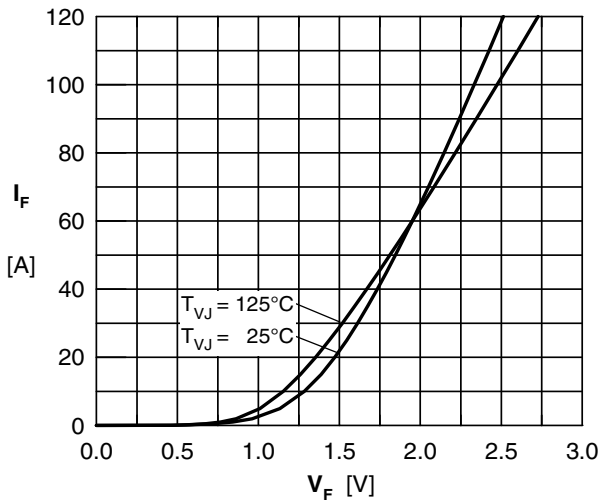


Fig. 7 Typ. Forward current versus V_F

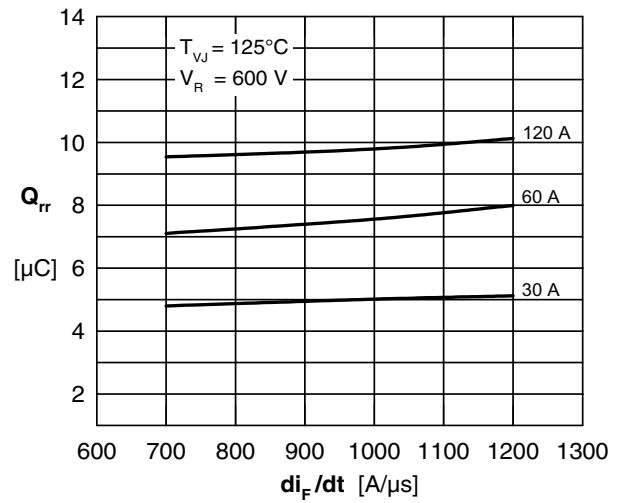


Fig. 8 Typ. reverse recovery charge Q_{rr} vs. di/dt

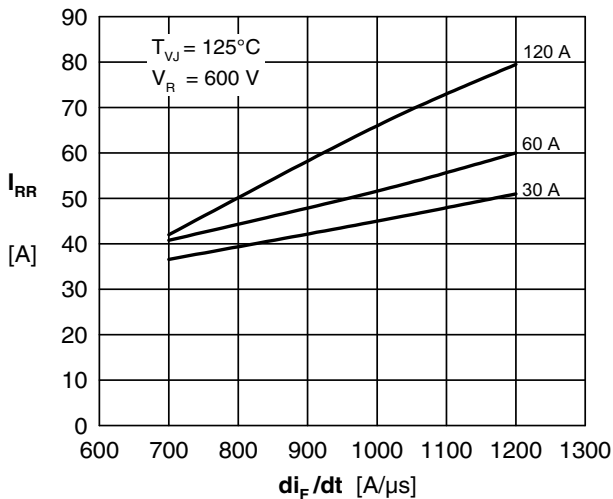


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

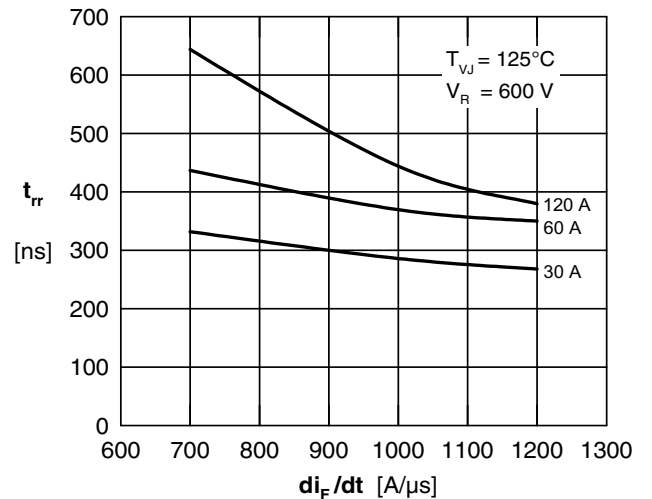


Fig. 10 Typ. recovery time t_{rr} versus di/dt

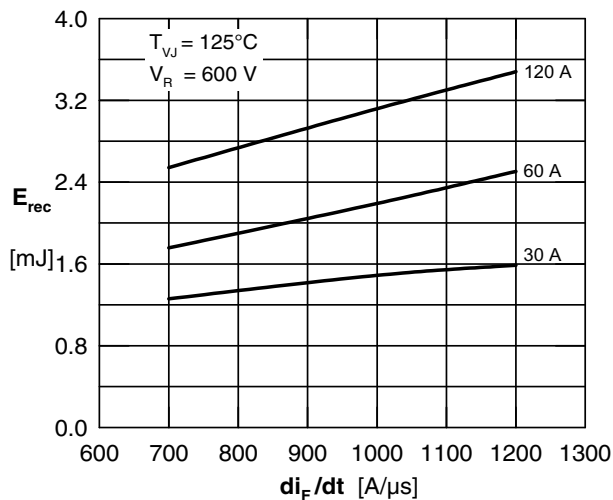


Fig. 11 Typ. recovery energy E_{rec} versus di/dt

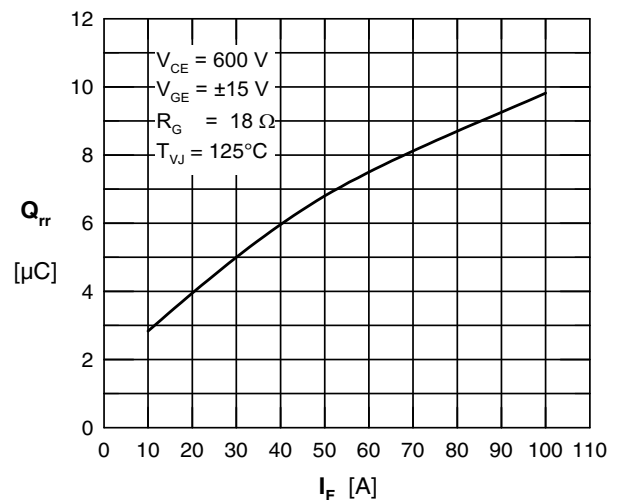


Fig. 12 Typ. reverse recovery charge Q_{rr} versus I_F

NTC **Module**

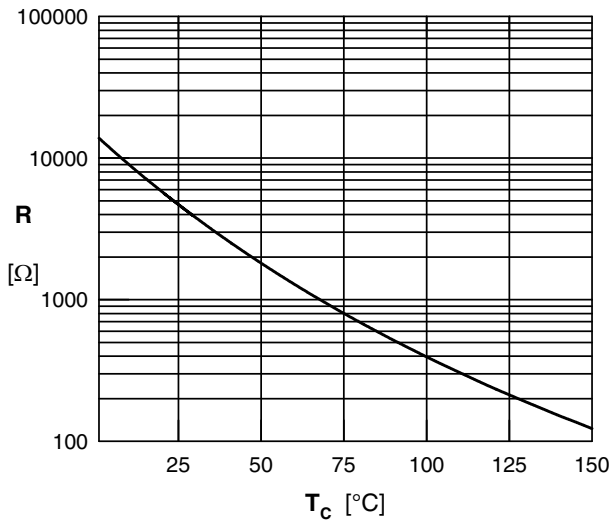


Fig. 13 Typ. NTC resistance vs. temperature

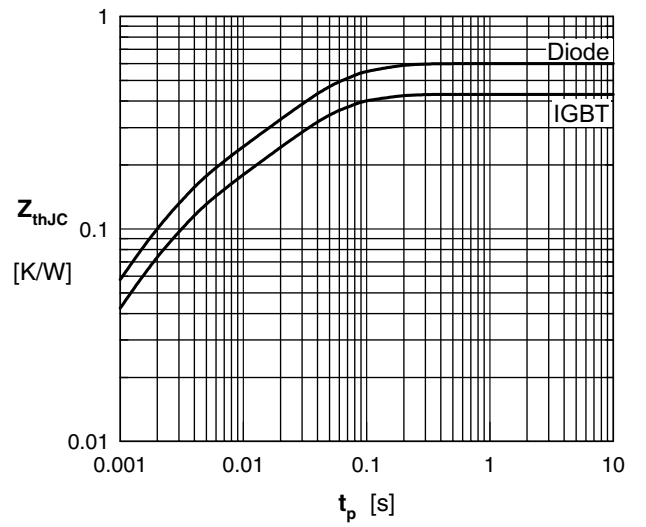


Fig. 14 Typ. transient thermal impedance