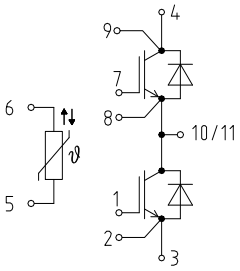
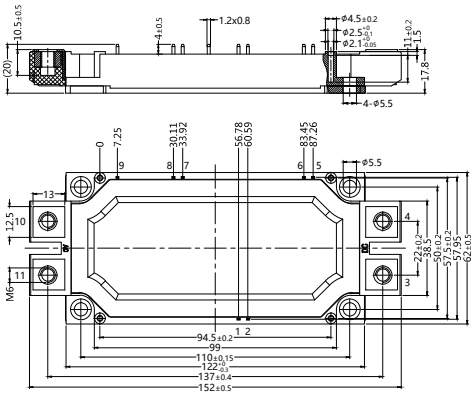
SGG600T120UC5

IGBT Modules



Dimensions in mm (1mm = 0.0394")



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{Cnom}	T_C= 100°C	600	A
I_{CRM}	T_C= 25°C, t_P =1ms	1200	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F	T_C= 100°C	600	A
I_{FRM}	T_C= 25°C, t_P =1ms	1200	A
I_{FSM}	t_P =10ms; sin180° ; T_j=25°C	2730	A
Module			
$I_{t(RMS)}$	$T_{teminal}$ = 80°C	600	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V

Features

- Trench FS technology
- Low switching losses
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- Soft swithcing FWD Technology
- Package with copper base plate
- Isolation voltage 4000 V
- RoHS Compliant

Application

- AC and DC motor control
- AC servo and robot drives
- Power supplies
- Welding inverters

Advantages

- Space and weight savings
- Reduced protection circuits

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IGBT Modules

Characteristics

T_C = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C =15mA	5.3	5.8	6.3	V
I_{CES}	V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25°C			5.0	mA
$V_{CE(TO)}$	T_j = 25(150)°C		0.8(0.7)	0.9(0.8)	V
r_{CE}	V_{GE} = 15V, T_j = 25(150)°C		1.60(2.50)	1.90(2.70)	mΩ
$V_{CE(sat)}$	I_C =600A; V_{GE} = 15V; chip level		1.85	2.10	V
C_{ies}	under following conditions		116		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		22		
C_{res}			14		
L_{CE}			15		nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.55(0.85)		mΩ
	under following conditions:				
$t_{d(on)}$	V_{CC} = 600V, I_C = 600A		444		ns
t_r	R_{Gon} = R_{Goff} = 1Ω, T_j = 150°C		169		ns
$t_{d(off)}$	V_{GE} = ± 15V		705		ns
t_f			231		ns
E_{on}(E_{off})			55(36)		mJ
Inverse Diode under following conditions:					
V_F = V_{EC}	I_F =600A; V_{GE} = 0V; T_j = 25°C		1.75	2.10	V
$V_{(FO)}$	T_j = 25(150)°C		1.3(0.9)	1.5(1.1)	V
r_F	T_j = 25(150)°C		1.6(2.3)	1.8(2.5)	mΩ
I_{RRM}	I_F = 600A; T_j = 150°C		460		A
Q_{rr}	di/dt = 2600A/us		105		uC
E_{rr}	V_{GE} =15V		31		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.040	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.065	K/W
$R_{th(c-s)}$	per module			0.0125	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2.5		5	Nm
Weight	typical			350	g
Temperature Sensor					
R_{100}	T_C=100°C (R_{25}=5 kΩ)		493 ± 5%		Ω
$B_{100/125}$	$R_{(T)}=R_{100}\exp[B_{100/125}(1/T-1/T_{100})]$; T[K];		3550 ±2%		K

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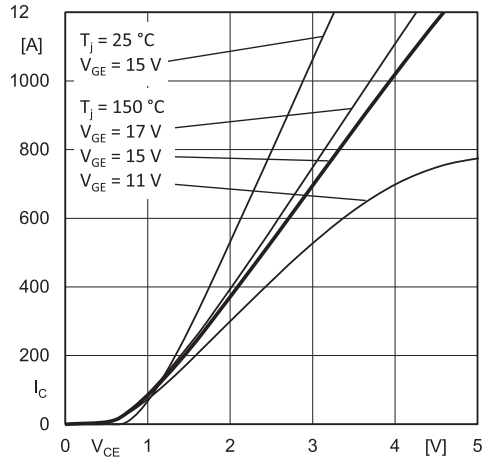

Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

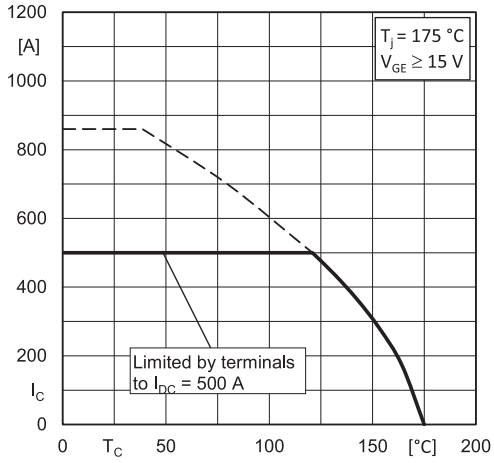

Fig. 2: Rated current vs. temperature $I_C = f(T_C)$

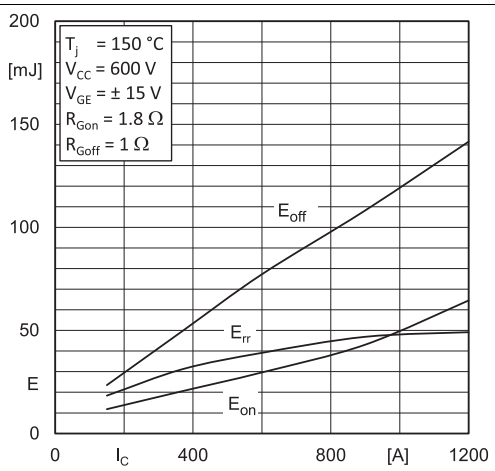

Fig. 3: Typ. turn-on /-off energy = f (I_C)

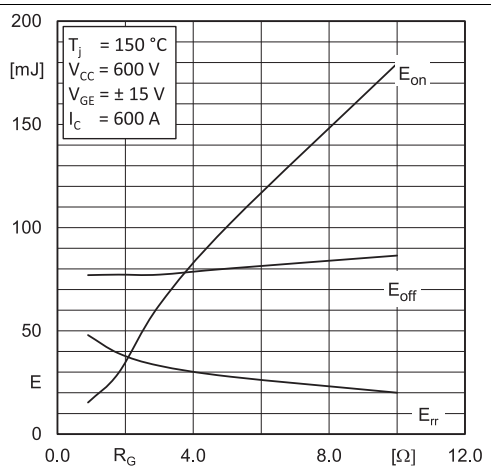

Fig. 4: Typ. turn-on /-off energy = f (R_G)

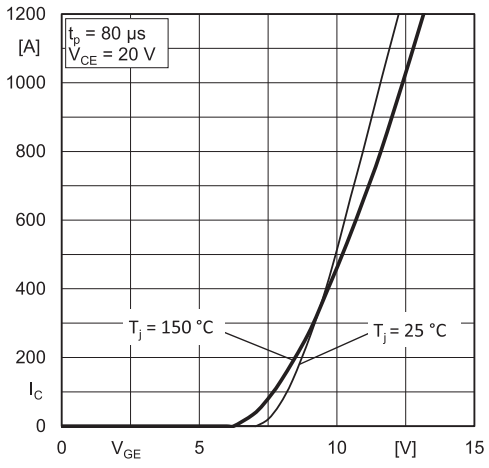

Fig. 5: Typ. transfer characteristic

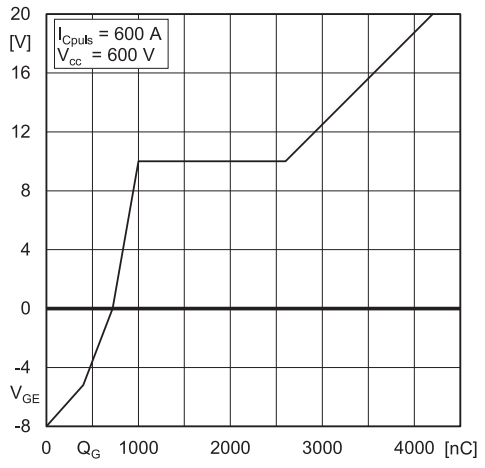

Fig. 6: Typ. gate charge characteristic

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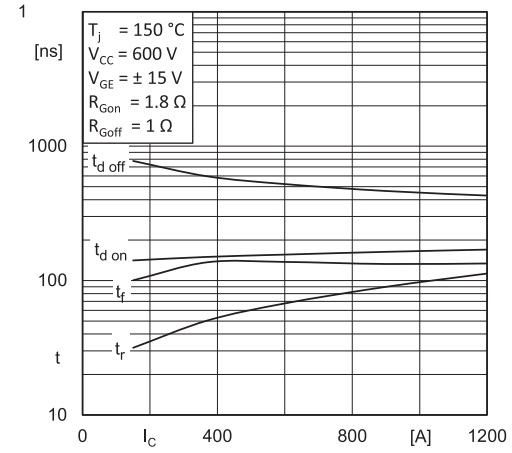

Fig. 7: Typ. switching times vs. I_C

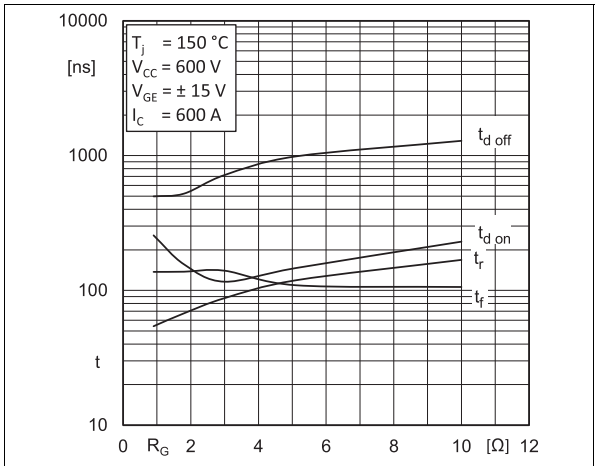

Fig. 8: Typ. switching times vs. gate resistor R_G

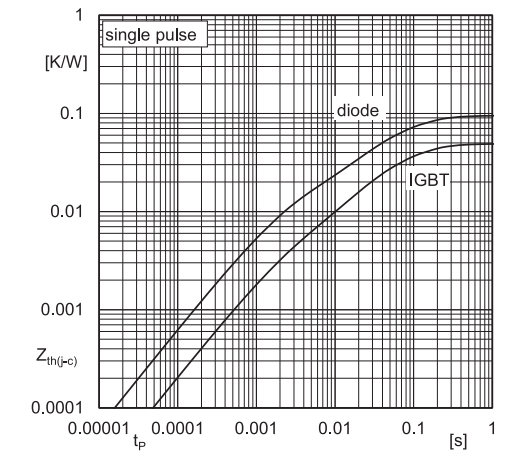

Fig. 9: Transient thermal impedance

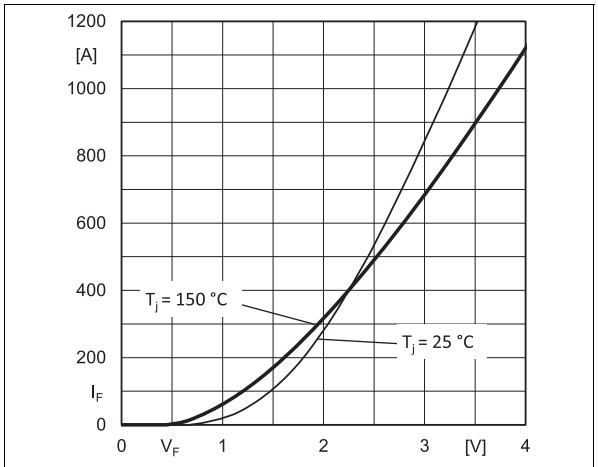

Fig. 10: Typ. FWD diode forward charact., incl. $R_{CC'+EE'}$

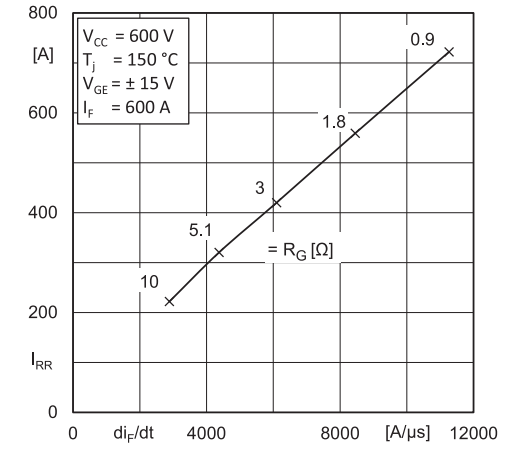

Fig.11: Typ. FWD diode peak reverse recovery current

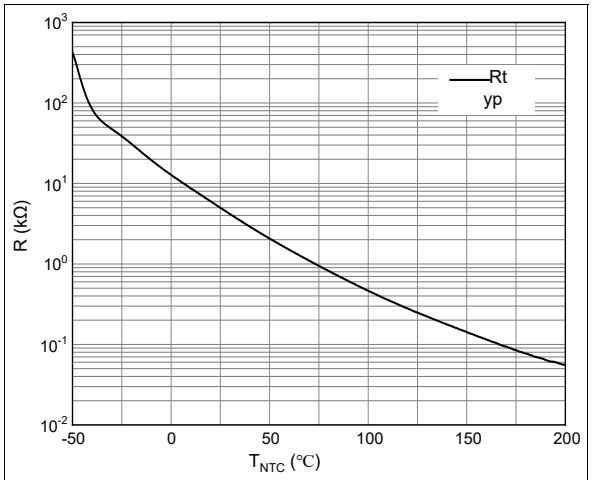

Figure 10. NTC-Themistor-temperature characteristic

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