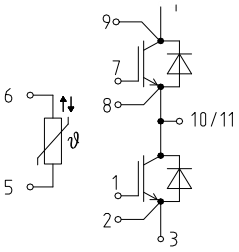
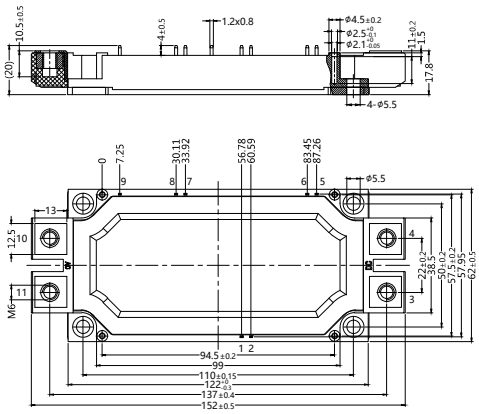
SGG600T170UC5

IGBT Modules



Dimensions in mm (1mm = 0.0394")



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	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 = -I_C	T_C= 100°C	600	A
I_{FRM}	T_C= 25°C, t_P =1ms	1200	A
I_{FSM}	t_P =10ms; sin.;T_j=150°C	1200	A
Module			
$I_{t(RMS)}$	Tteminal = 100°C	600	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V
P_{tot}	T_C = 25°C, Tvj max = 175°C	2500	W

Features

- Trench Field Stop IGBT technology
- Low switching losses
- Switching frequency up to 20KHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Ultra fast free wheeling diodes
- Package with copper baseplate
- Isolation voltage 4000V

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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SGG600T170UC5

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 =24mA	5.0	5.8	6.5	V
I_{CES}	V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25°C			1.0	mA
$V_{CE(TO)}$	T_j = 25°C		0.82	0.92	V
r_{CE}	V_{GE} = 15V, T_j = 25(125)°C		3.40(5.10)	3.90(5.40)	mΩ
$V_{CE(sat)}$	I_C =600A; V_{GE} = 15V; chip level		1.90	2.25	V
C_{ies}	under following conditions		64.00		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		2.30		
C_{res}			3.08		
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		1.4(1.75)		mΩ
	under following conditions:				
$t_{d(on)}$	V_{CC} = 900V, I_C = 450A		250		ns
t_r	R_{Gon} = R_{Goff} = 3Ω, T_j = 125°C		108		ns
$t_{d(off)}$	V_{GE} = ± 15V		610		ns
t_f			510		ns
E_{on}(E_{off})			133(118)		mJ
InverseDiode	under following conditions:				
V_F = V_{EC}	I_F =450A; V_{GE} = 0V; T_j = 25°C		2.40	2.92	V
$V_{(FO)}$	T_j = 25°C		1.40	1.60	V
r_F	T_j = 25°C		3.6	3.9	mΩ
I_{RRM}	I_F = 450A; T_j = 125°C		230		A
Q_{rr}	di/dt = 3300A/us		80		uC
E_{rr}	V_{GE} = ±15V		43		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.094	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.150	K/W
$R_{th(c-s)}$	per module			0.011	K/W
Mechanical Data					
M_s	to heatsink M5	3		6	Nm
M_t	to terminals M6	3		6	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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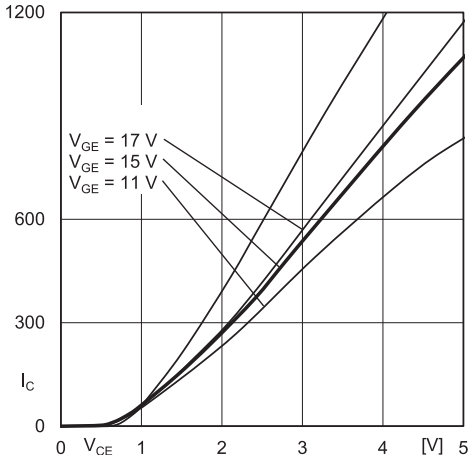

Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

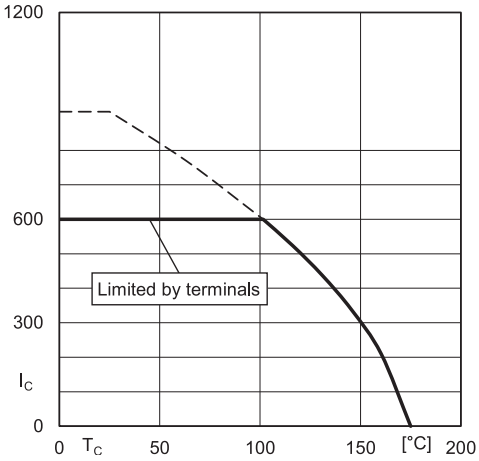

Fig. 2: Rated current vs. temperature $I_C = f(T_C)$

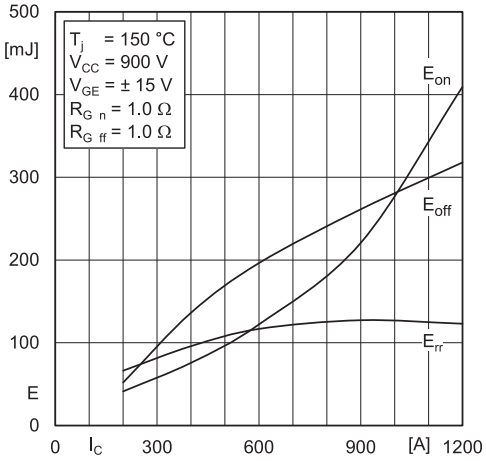

Fig. 3: Typ. turn-on /-off energy = f (I_C)

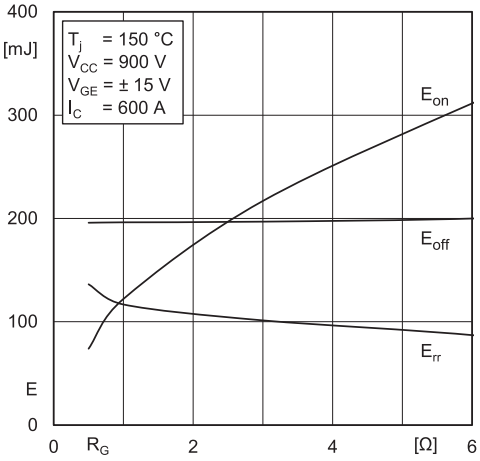

Fig. 4: Typ. turn-on /-off energy = f (R_G)

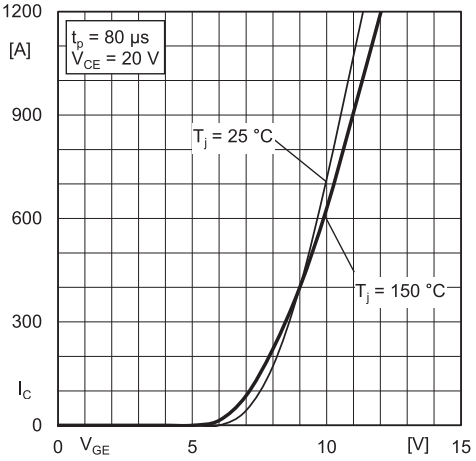

Fig. 5: Typ. transfer characteristic

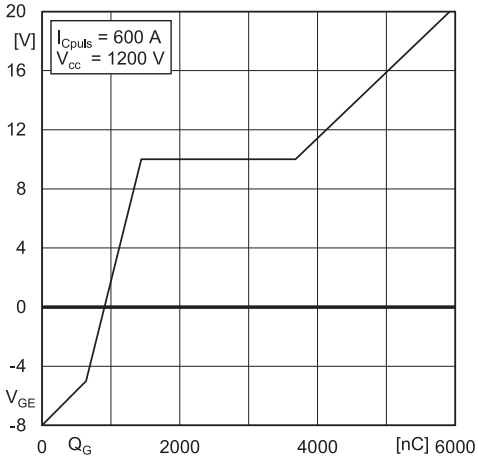

Fig. 6: Typ. gate charge characteristic

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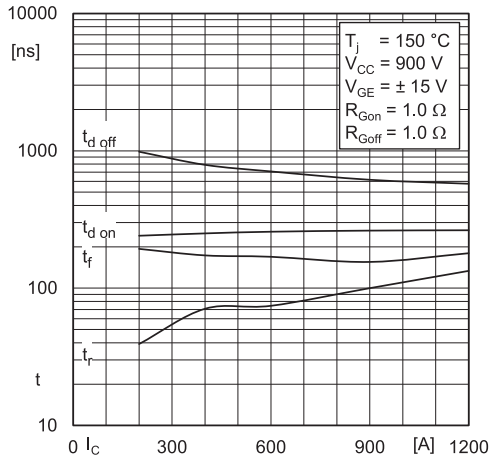

Fig. 7: Typ. switching times vs. I_C

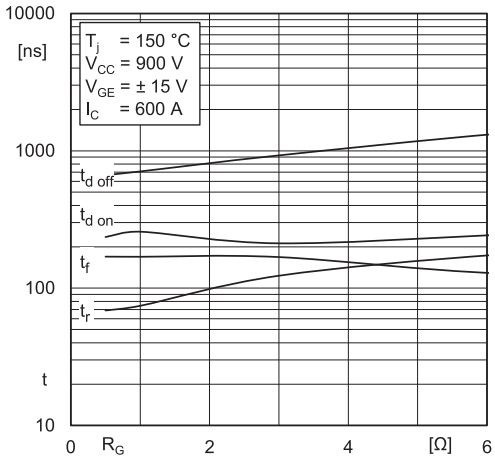

Fig. 8: Typ. switching times vs. gate resistor R_G

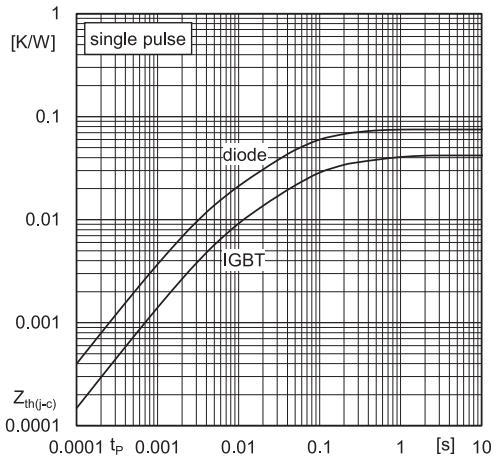

Fig. 9: Transient thermal impedance

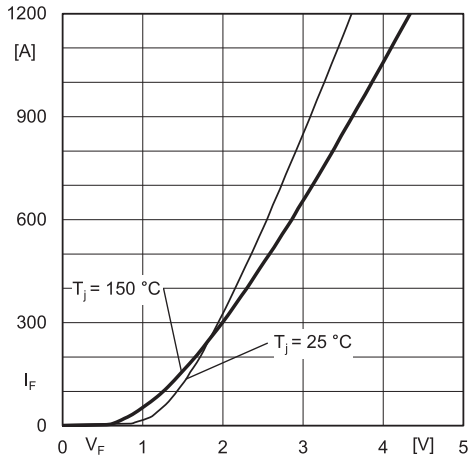

Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'+\ EE'}$

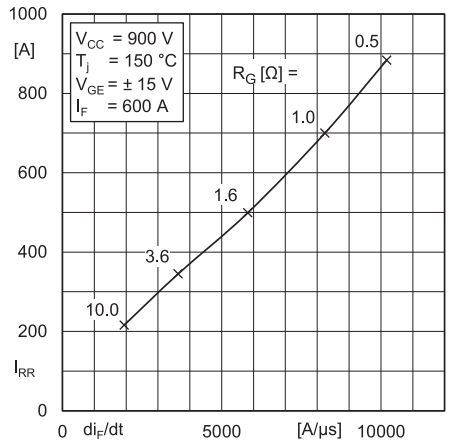

Fig. 11: Typ. CAL diode peak reverse recovery current

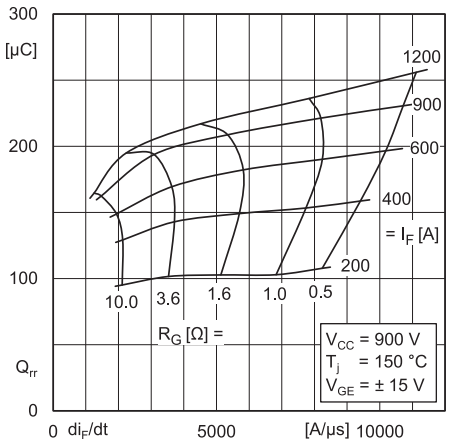

Fig. 12: Typ. CAL diode recovery charge

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