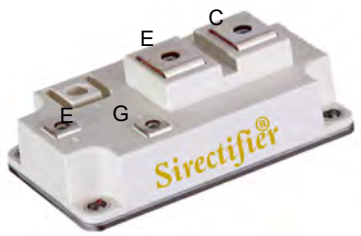
SGO800T120UC3

IGBT Modules



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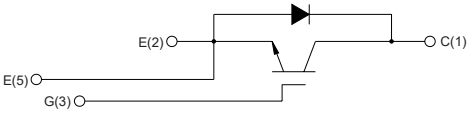
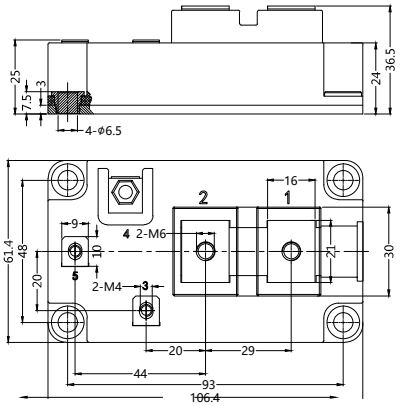


Dimensions in mm (1mm = 0.0394")



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{Cnom}		800	A
I_{CRM}	T_C= 25°C, t_P =1ms	1600	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F	T_C= 25(80)°C	920(800)	A
I_{FRM}	T_C= 25°C, t_P =1ms	1600	A
I_{FSM}	t_P =10ms; sin.;T_j=150°C	9360	A
Module			
$I_{t(RMS)}$	$T_{teminal}$ = 80°C	800	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V

Features

- Trench Field Stop IGBT4 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
- Soft switching free wheeling diode Technology
- Package with copper base plate
- 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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SGO800T120UC3

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 =8mA	5.0	5.8	6.5	V
I_{CES}	V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25(125)°C			5.0	mA
$V_{CE(TO)}$	T_j = 25°C		0.8	0.9	V
r_{CE}	V_{GE} = 15V, T_j = 25(150°C)		1.0(0.9)	1.2(1.1)	mΩ
$V_{CE(sat)}$	I_C =800A; V_{GE} = 15V		1.90	2.15	V
C_{ies}	under following conditions		43		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		2.25		
C_{res}			1.95		
L_{CE}			20		nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.18(0.22)		mΩ
$t_{d(on)}$	under following conditions:		220		ns
t_r	V_{CC} = 600V, I_C = 800A		100		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 3Ω, T_j = 150°C		860		ns
t_f	V_{GE} = ± 15V		135		ns
E_{on}(E_{off})			65(95)		mJ
Inverse Diode	under following conditions:				
V_F = V_{EC}	I_F =800A; V_{GE} = 0V; T_j = 25(150)°C		2.20(2.15)	2.52(2.47)	V
$V_{(FO)}$	T_j = 25(150)°C		1.00(0.80)	1.10(0.90)	V
r_F	T_j = 25(150)°C		1.00(1.33)	1.17(1.50)	mΩ
I_{RRM}	I_F = 800A; T_j = 125°C		544		A
Q_{rr}	di/dt = 4450A/us		123		uC
E_{rr}	V_{GE} = 15V		59		mJ
FWD	under following conditions:				
V_F = V_{EC}	I_F = 800A; V_{GE} = 0V; T_j = 25(150)°C		2.20(2.15)	2.52(2.47)	V
$V_{(FO}$	T_j = 25(150)°C		1.00(0.80)	1.10(0.90)	V
r_F	T_j = 25(150)°C		1.00(1.33)	1.17(1.50)	mΩ
I_{RRM}	I_F = 800A; T_j = 125°C		544		A
Q_{rr}	di/dt = 4450A/us		123		uC
E_{rr}	V_{GE} =15V		59		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.042	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.090	K/W
$R_{th(c-s)}$	per module			0.038	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2.5		5	Nm
Weight	typical			330	g

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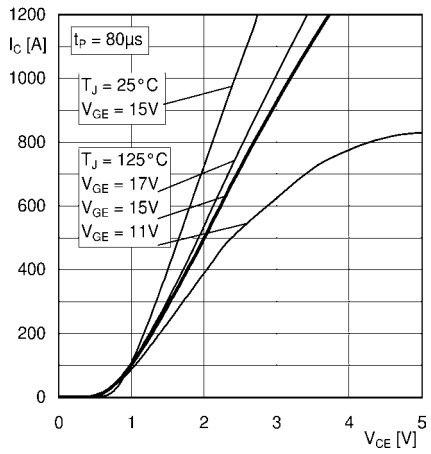

Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

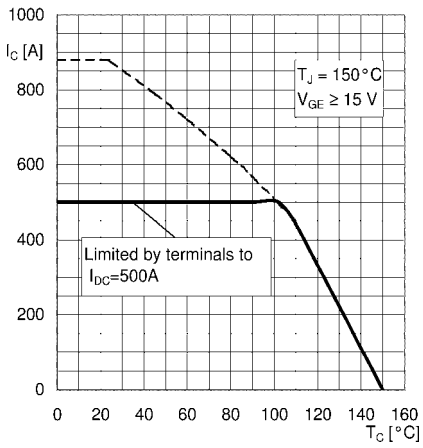

Fig. 2: Rated current vs. temperature $I_C = f(T_C)$

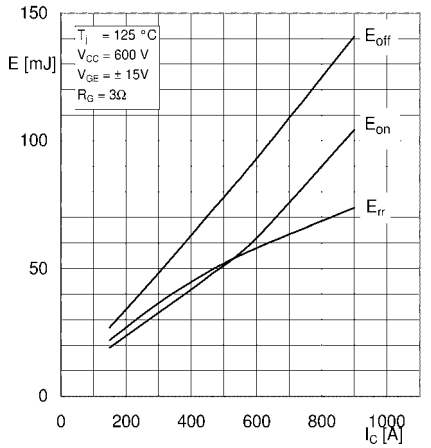

Fig. 3: Typ. turn-on /-off energy = f (I_C)

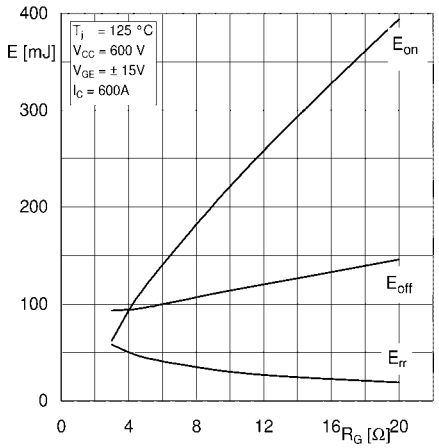

Fig. 4: Typ. turn-on /-off energy = f (R_G)

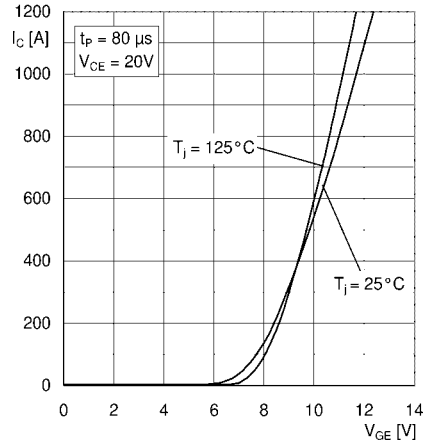

Fig. 5: Typ. transfer characteristic

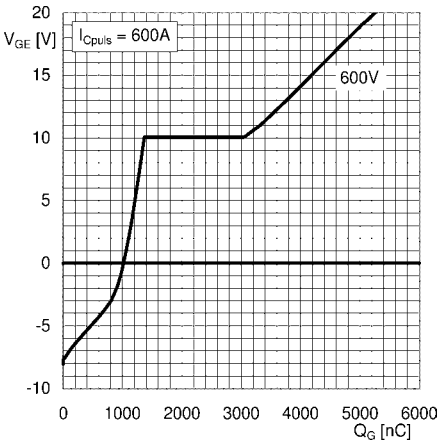

Fig. 6: Typ. gate charge characteristic

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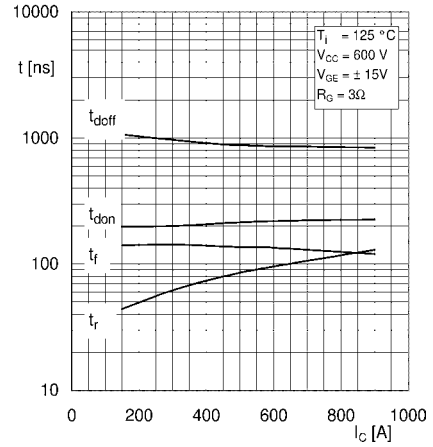

Fig. 7: Typ. switching times vs. I_C

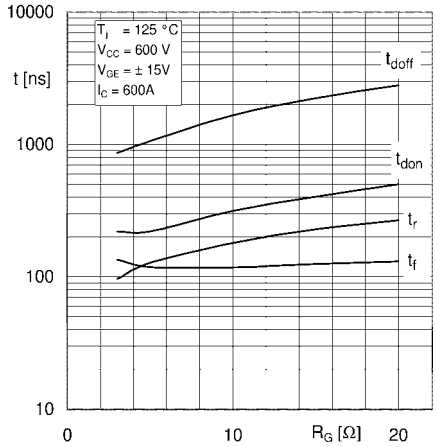

Fig. 8: Typ. switching times vs. gate resistor R_G

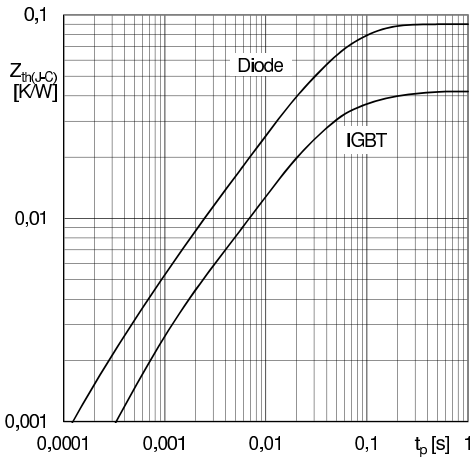

Fig. 9: Transient thermal impedance

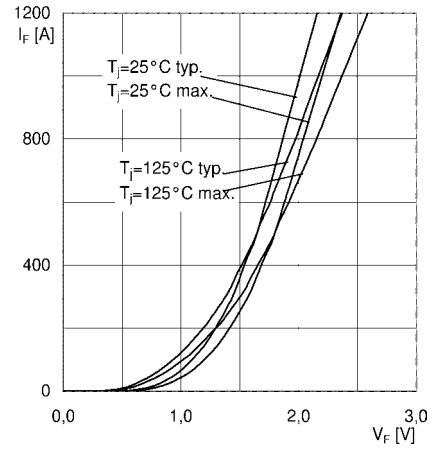

Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'+EE'}$

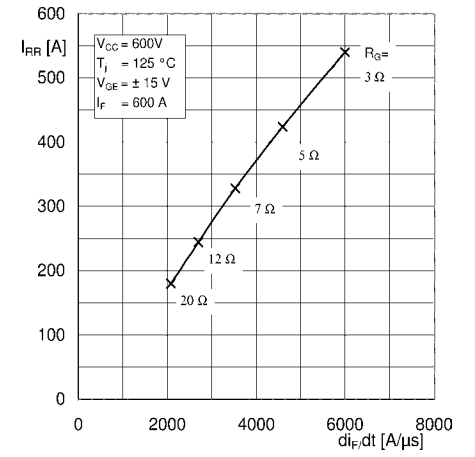

Fig. 11: Typ. CAL diode peak reverse recovery current

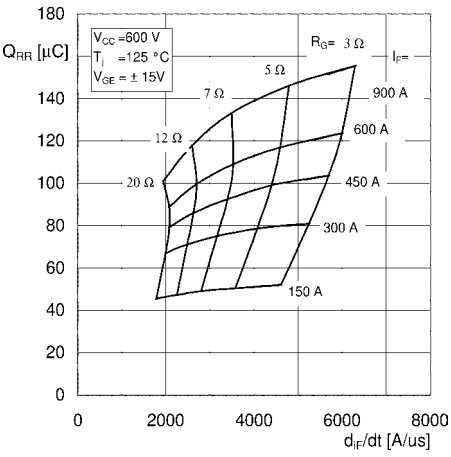

Fig. 12: Typ. CAL diode peak reverse recovery charge

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