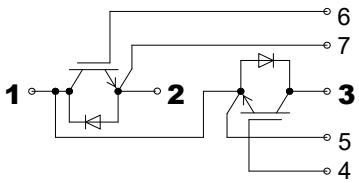
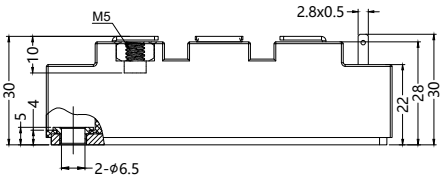
SGG100T120UC1

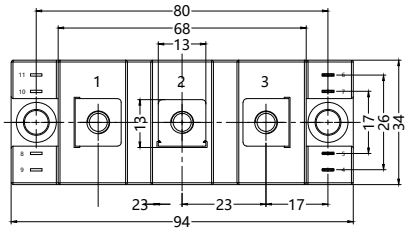
IGBT Modules

SGG100T120UC1



Dimensions in mm (1mm = 0.0394")





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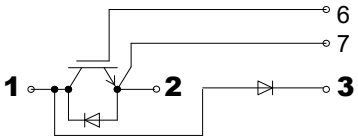

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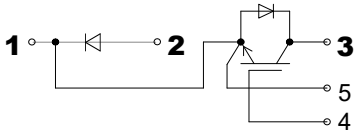

T_C=25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	T_C=25(80)°C	160(123)	A
I_{CRM}	T_C=25°C,t_P=1ms	300	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F =-I_C	T_C=25(80)°C	125(100)	A
I_{FRM}	T_C=25°C,t_P=1ms	300	A
I_{FSM}	t_P=10ms;sin.;T_j=150°C	550	A
Module $I_{t(RMS)}$	$T_{teminal}$=80°C	200	A
T_{stg}		-40~125	°C
V_{Isol}	AC,1min	4000	V

Features

- Trench Field Stop IGBT4 technology
- Low switchinglosses
- Switchingfrequencyupto20kHz
- SquareRBSOA,nolatchup
- Highshortcircuitcapability
- Positivetemperaturecoefficientfor easy parallelling
- MOSinput,voltagecontrolled
- Soft swithcing 4.0 generation FRD diode Technology
- Packagewithcopperbaseplate
- Isolationvoltage4000V

Application

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

Advantages

- Space and weight savings
- Reduced protectioncircuits

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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=6mA	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		0.8	0.9	V
r_{CE}	V_{GE}=15V,T_j=25(150)°C		10.0(15.0)	11.5(16.0)	mΩ
$V_{CE(sat)}$	I_C=100A;V_{GE}=15V;chip level		1.80	2.05	V
C_{ies} C_{oes} C_{res}	under following conditions V_{GE}=0,V_{CE}=25V,f=1MHz		6.15 0.40 0.345		nF
L_{CE}				30	nH
$R_{CC'+EE'}$	res.,terminal-chip T_C=25(125)°C		0.65(1.0)		mΩ
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	under following conditions: V_{CC}=600V,I_C=100A R_{Gon}= R_{Goff}=1Ω, T_j=150°C V_{GE}=±15V		165 47 400 75		ns ns ns ns
E_{on}(E_{off})			15(10.2)		mJ
Inverse Diode under following conditions:					
V_F = V_{EC}	I_F=100A;V_{GE}=0V;T_j=25°C		2.18	2.50	V
$V_{(FO)}$	T_j=25(150)°C		1.3(0.95)	1.5(1.1)	V
r_F	T_j=25(150)°C		9.0(12.5)	10.2(13.7)	mΩ
I_{RRM} Q_{rr} E_{rr}	I_F=100A;T_j=150°C di/dt =1600A/us V_{GE}=±15V		54 15.7 5.9		A uC mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.27	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.48	K/W
$R_{th(c-s)}$	per module			0.05	K/W
Mechanical Data					
M_s	to heatsink M5	3		5	Nm
M_t	to terminals M5	2.5		5	Nm
Weight	typical			160	g

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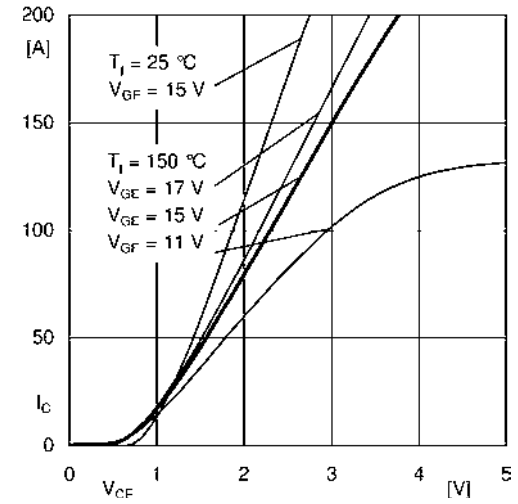

Fig. 1: Typ. output characteristic, inclusive RCC'+ EE'

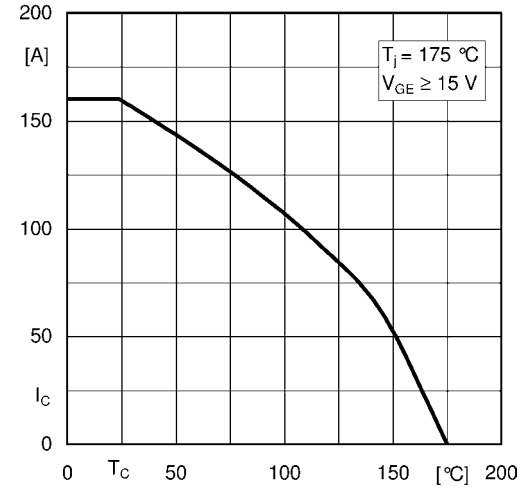

Fig. 2: Rated current vs. temperature $I_C=f(T_C)$

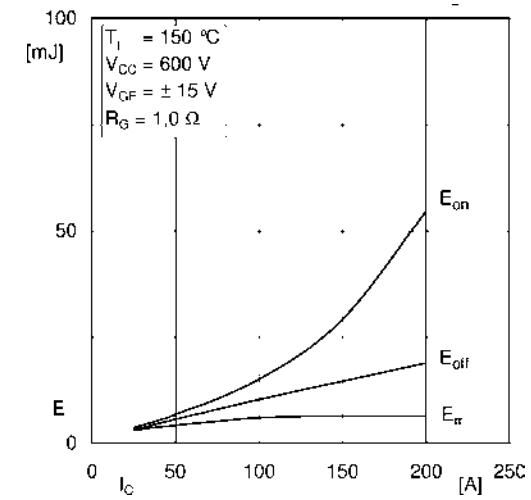

Fig. 3: Typ. turn-on /-off energy=f (I_C)

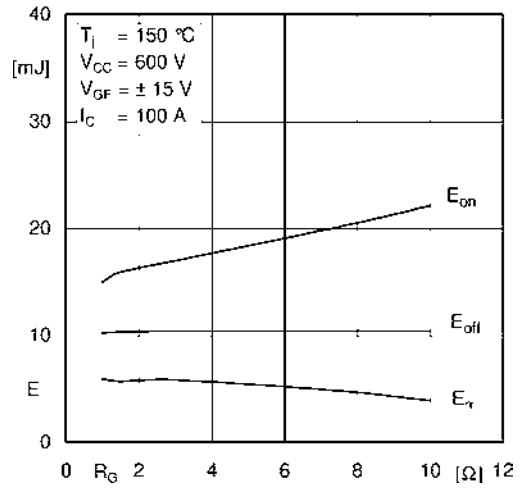

Fig. 4: Typ. turn-on /-off energy=f(R_G)

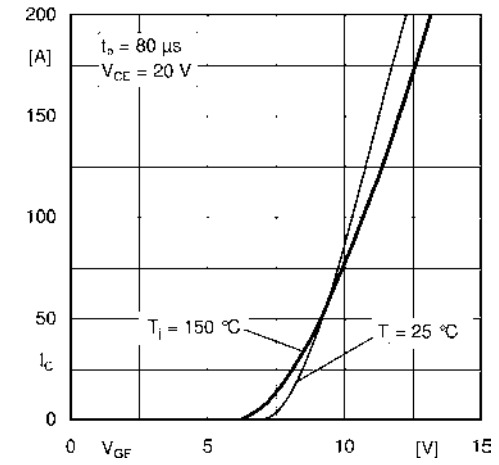

Fig. 5: Typ. transfer characteristic

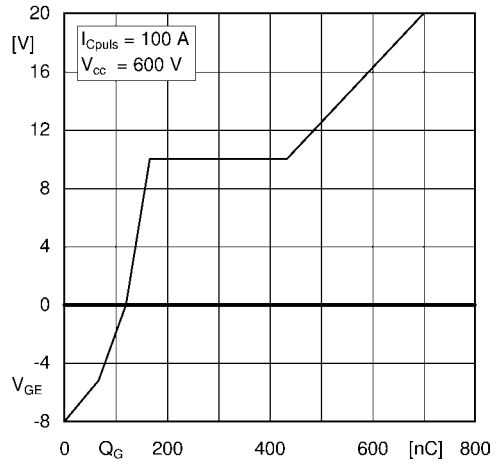

Fig. 6: Typ. gate charge characteristic

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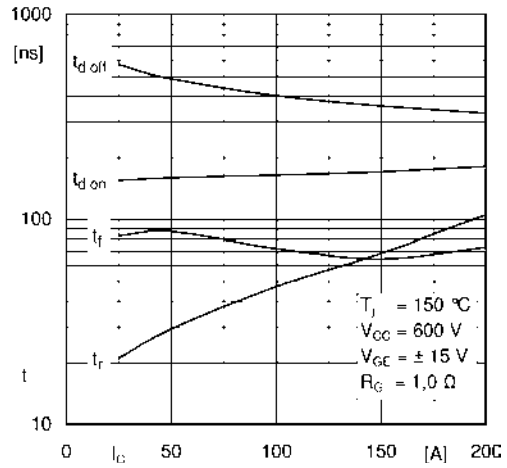

Fig. 7: Typ. switching times vs. I_C

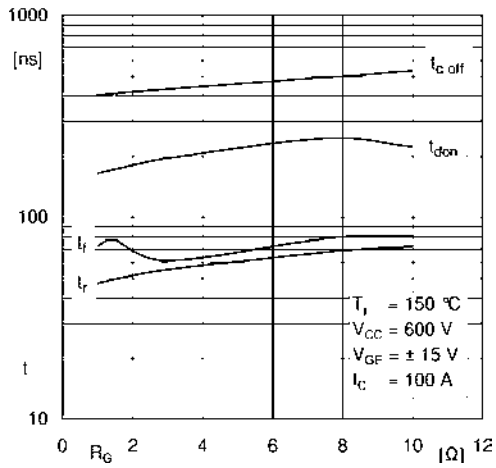

Fig. 8: Typ. switching times vs. gate resistor R_G

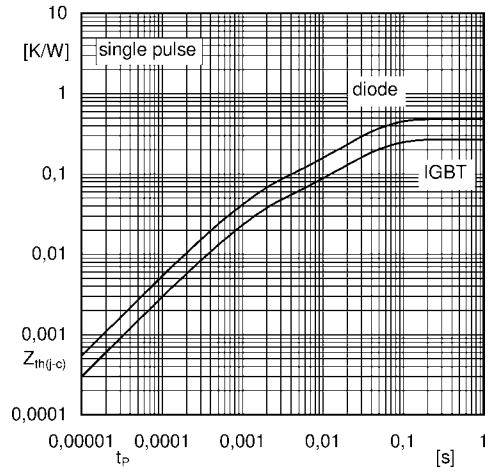

Fig. 9: Transient thermal impedance

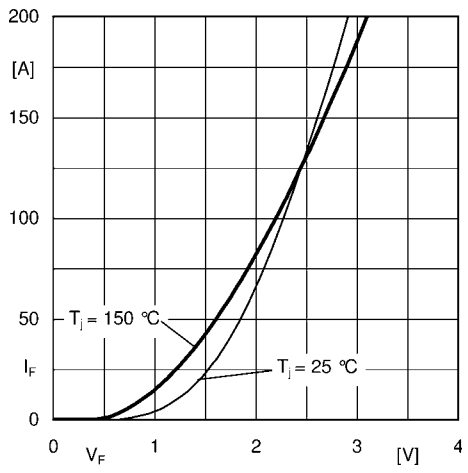

Fig. 10: Typ. FRD diode forward charact., incl. $R_{CC'+EE'}$

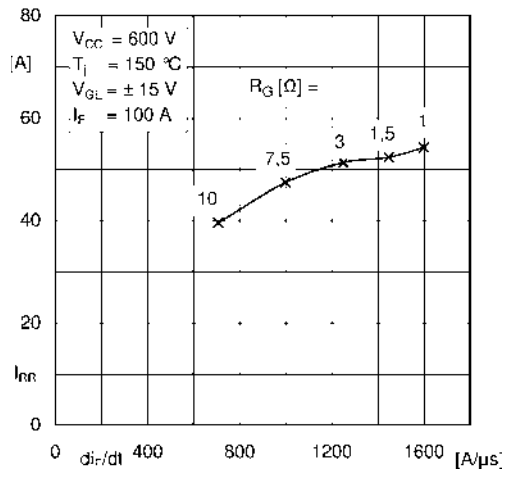

Fig. 11: FRD diode peak reverse recovery current

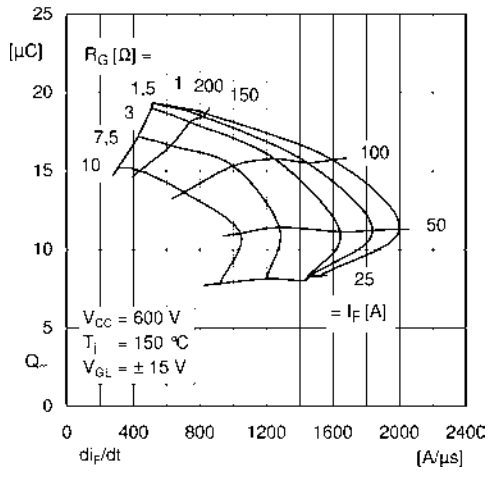

Fig. 12: Typ. FRD diode peak reverse recovery charge

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