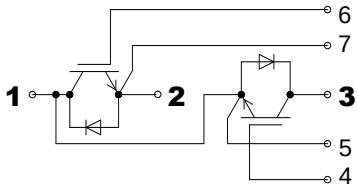
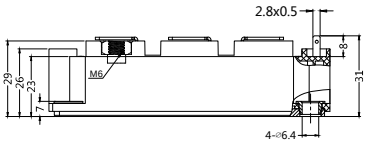
SGG400T120UC2

IGBT Modules

SGG400T120UC2



Dimensions in mm (1mm = 0.0394")



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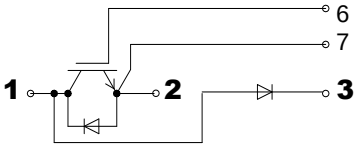

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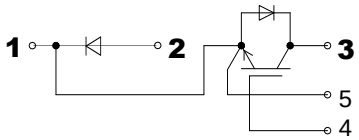

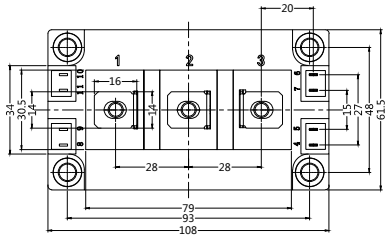

T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{Cnom}	T_C=25(100)°C	800(400)	A
I_{CRM}	T=25°C,t_P=1ms	1200	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F	T_C= 25(100)°C	800(400)	A
I_{FRM}	T_C= 25°C, t_P =1ms	1200	A
I_{FSM}	t_P =10ms; sin.;T_j=150°C	1980	A
Module			
$I_{t(RMS)}$	$T_{teminal}$ = 80°C	500	A
T_{stg}		-40~125	°C
V_{Isol}	AC,1min	4000	V

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
- Soft switching FRD 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

RoHS Compliant

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SGG400T120UC2

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=15.2mA	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°C		0.8	0.9	V
r_{CE}	V_{GE}=15V,T_j=25(150)°C		2.50(3.75)	2.88(4.00)	mΩ
$V_{CE(sat)}$	I_C=400A;V_{GE}=15V;chip level		1.80	2.05	V
C_{ies}	under following conditions		24.6		nF
C_{oes}	V_{GE}=0,V_{CE}=25V,f=1MHz		1.62		
C_{res}			1.38		
L_{CE}			15		nH
$R_{CC'+EE'}$	res.,terminal-chip T_C=25(125)°C		0.25(0.55)		mΩ
$t_{d(on)}$	under following conditions:		220		ns
t_r	V_{CC}=600V,I_C=400A		49		ns
$t_{d(off)}$	R_{Gon}=R_{Goff}=1Ω,T_j=150°C		505		ns
t_f	V_{GE}=±15V		78		ns
E_{on}(E_{off})			33(42)		mJ
Inverse Diode	under following conditions:				
V_F = V_{EC}	I_F=400A;V_{GE}=0V;T_j=25°C		2.20	2.52	V
$V_{(FO)}$	T_j=25(150)°C		1.3(0.9)	1.5(1.1)	V
r_F	T_j=25(150)°C		2.3(3.1)	2.5(3.4)	mΩ
I_{RRM}	I_F=400A;T_j=150°C		450		A
Q_{rr}	di/dt=8800A/us		68		uC
E_{rr}	V_{GE}=15V		30		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.072	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.14	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			325	g

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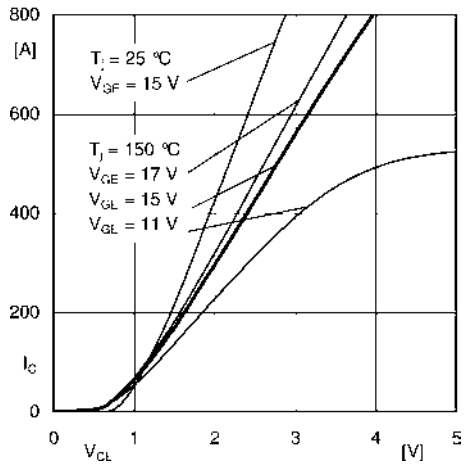

Fig. 1:Typ. output characteristic, inclusive $R_{CC'+EE'}$

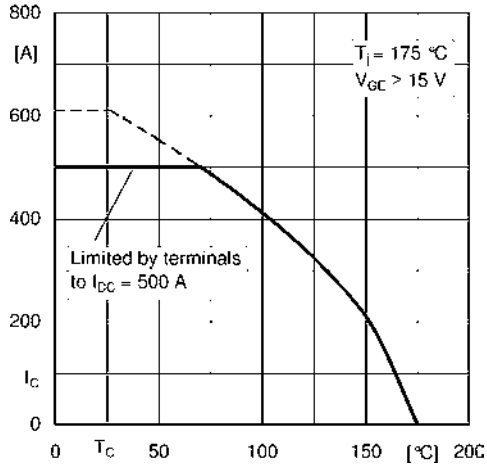

Fig. 2:Rated current vs. temperature $I_C=f(T_C)$

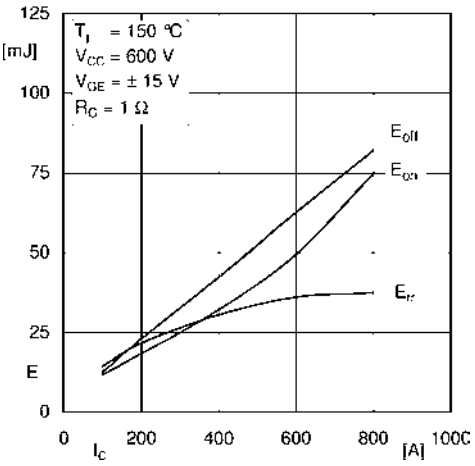

Fig. 3:Typ. turn-on /-off energy=f(I_C)

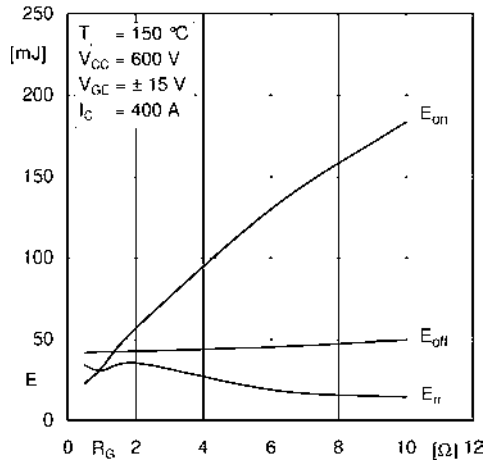

Fig. 4:Typ. turn-on /-off energy=f(R_G)

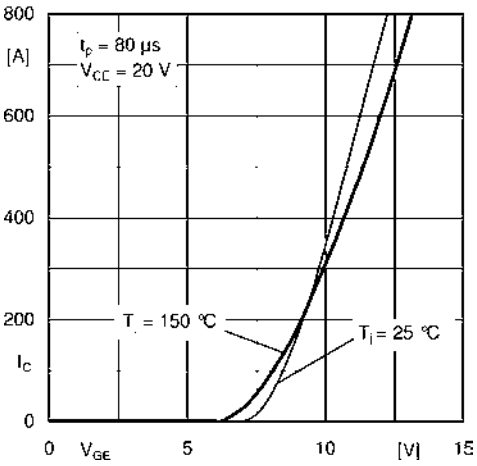

Fig. 5:Typ. transfer characteristic

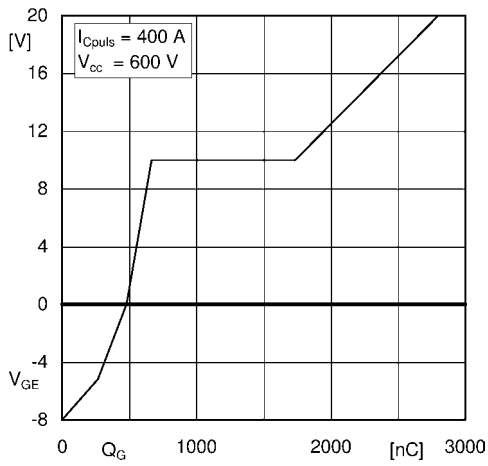

Fig. 6:Typ. gate charge characteristic

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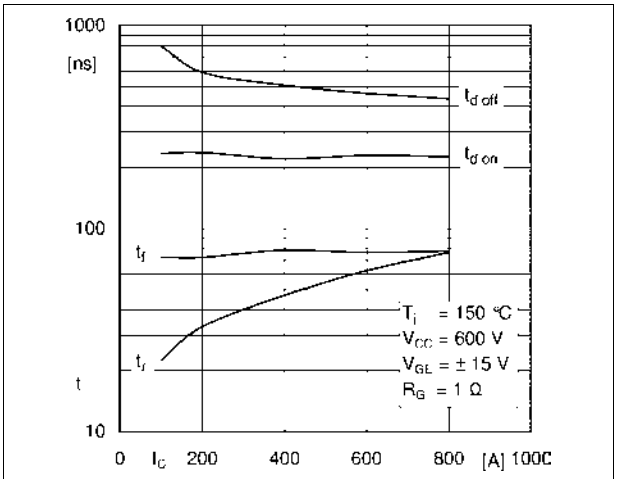

Fig.7:Typ. switching times vs. I_C

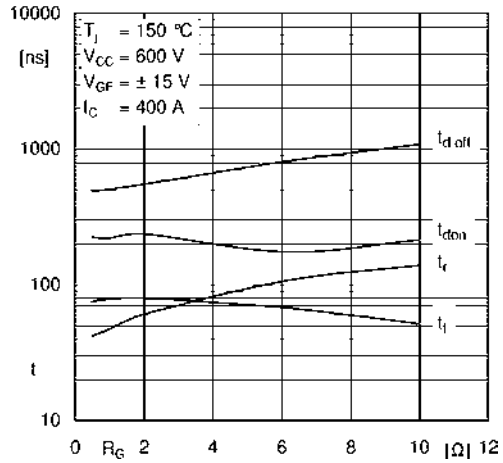

Fig.8:Typ. switching times vs. gate resistor R_G

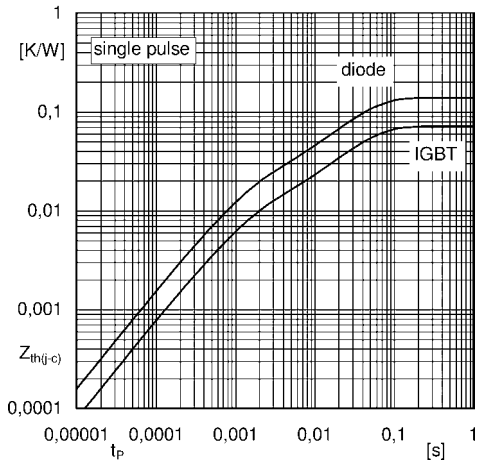

Fig.9:Transient thermal impedance

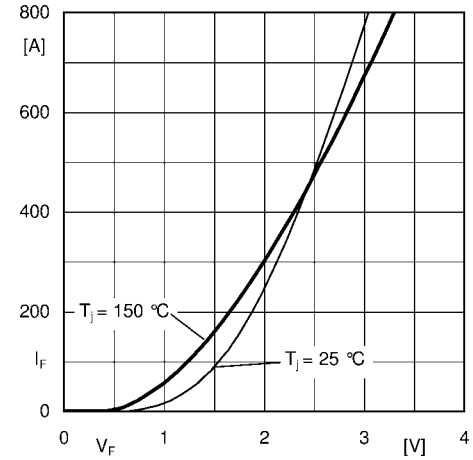

Fig.10:Typ. FRD diode forward charact., incl. $R_{CC'+\,EE'}$

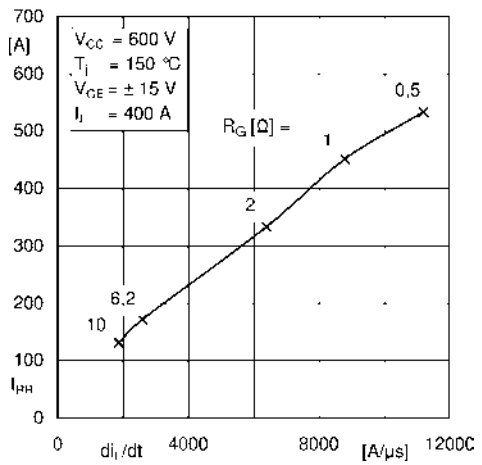

Fig.11:FRD diode peak reverse recovery current

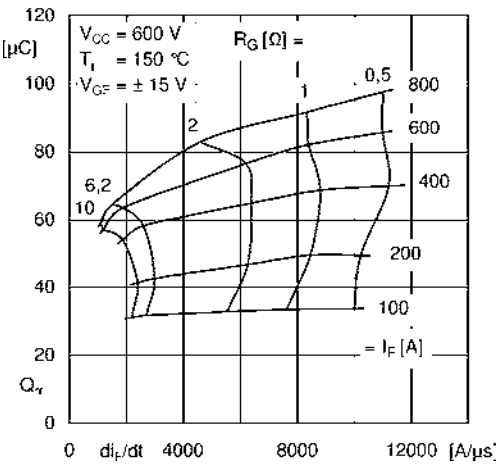

Fig.12:Typ. FRD diode peak reverse recovery charge

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