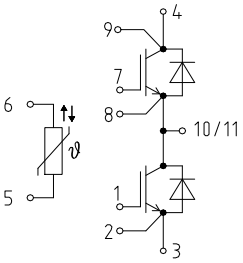
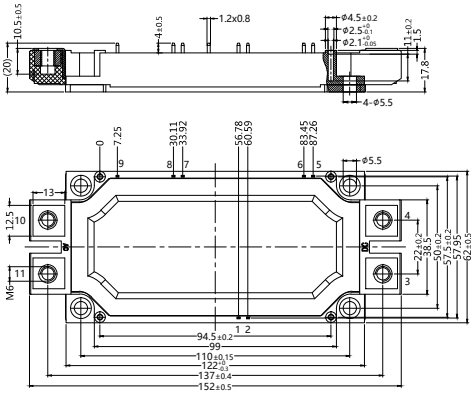
SGG300T170UC5

IGBT Modules



Dimensions in mm (1mm = 0.0394")



Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_{Cnom} (I_C)	T_C= 25(100)°C	375(300)	A
I_{CRM}	T_C= 25°C,t_P =1ms	600	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F	T_C=25(100)°C	350(300)	A
I_{FRM}	T_C= 25°C,t_P =1ms	600	A
I_{FSM}	t_P =10ms;sin.;T_j=150°C	600	A
Module			
$I_{t(RMS)}$	$T_{teminal}$=80°C	300	A
T_{stg}		-40~125	°C
V_{Isol}	AC,1min	4000	V

Features

- Trench FS technology
- Low switching losses
- Switching frequency upto 20kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Soft switching FRD 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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Characteristics

T_C = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE}=V_{CE},I_C=12mA	5.0	5.85	6.2	V
I_{CES}	V_{GE}=0;V_{CE}=V_{CES};T_j=25°C			2.0	mA
$V_{CE(TO)}$	T_j=25°C		0.86	0.96	V
r_{CE}	V_{GE}=15V,T_j=25(150)°C		7.00(10.1)	7.90(10.7)	mΩ
$V_{CE(sat)}$	I_C=300A;V_{GE}=15V;chip level		2.05	2.50	V
C_{ies}	under following conditions		21.0		nF
C_{oes}	V_{GE}=0,V_{CE}=25V,f=1MHz		1.19		
C_{res}			0.86		
L_{CE}				20	nH
$R_{CC'+EE'}$	res.,terminal-chip T_C=25(125)°C		0.26(0.60)		mΩ
$t_{d(on)}$	under following conditions:		295		ns
t_r	V_{CC}=900V,I_C=300A		72		ns
$t_{d(off)}$	R_{Gon}=R_{Goff}=1Ω,T_j=150°C		500		ns
t_f	V_{GE}=±15V		380		ns
E_{on}(E_{off})			54.7(58.1)		mJ
Inverse Diode under following conditions:					
V_{RRM}		1700			V
V_F = V_{EC}	I_F=300A;V_{GE}=0V;T_j=25°C		2.98	3.50	
$V_{(FO)}$	T_j=25(150)°C		1.4(1.15)	1.8(1.45)	V
r_F	T_j=25(150)°C		6.0(8.4)	6.6(9.0)	mΩ
I_{RRM}	I_F=300AT_j=50°C		170		A
Q_{rr}	di/dt=3100A/us		79		uC
E_{rr}	V_{GE}=15V		52		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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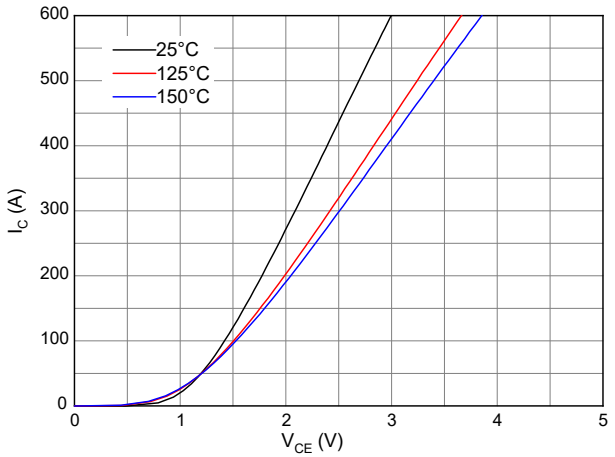

Figure 1. Typical output characteristics (V_{GE}=15V)

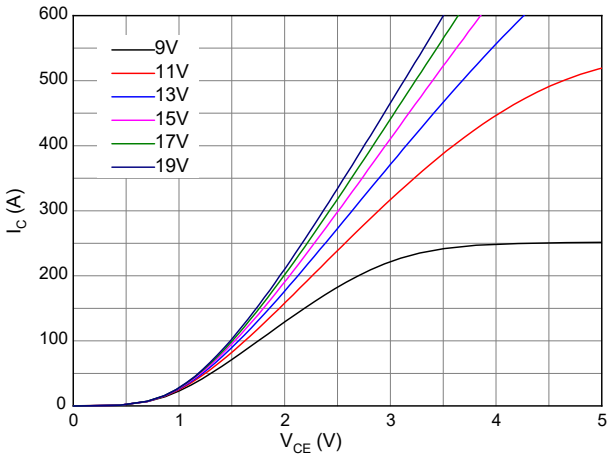

Figure 2. Typical output characteristics (T_{vj}=150°C)

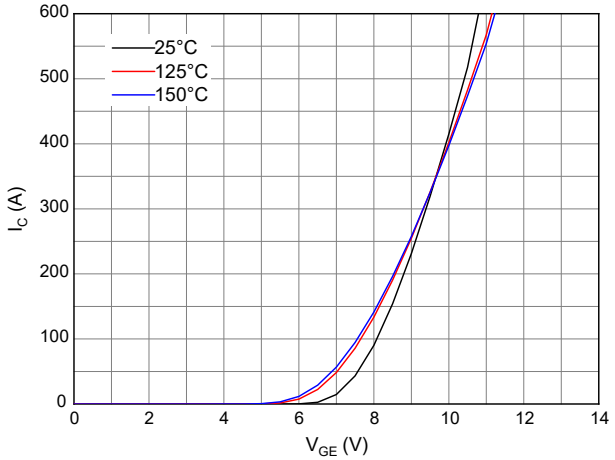

Figure 3. Typical transfer characteristic(V_{CE}=20V)

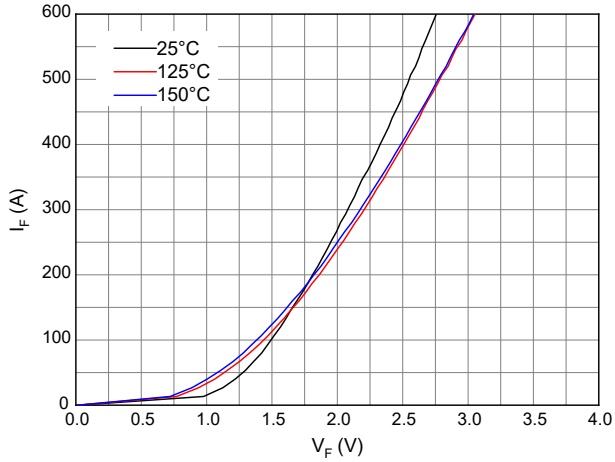

Figure 4. Forward characteristic of Diode

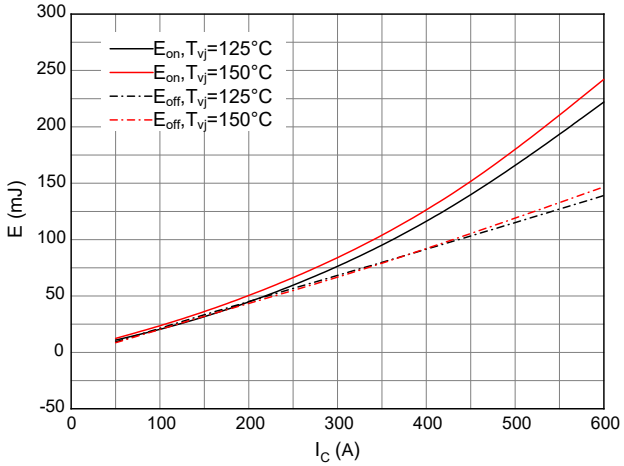

Figure 5. Switching losses of IGBT

VGE=±15V,RGon=2.5Ω,RGoff=2.5Ω,VCE=900V

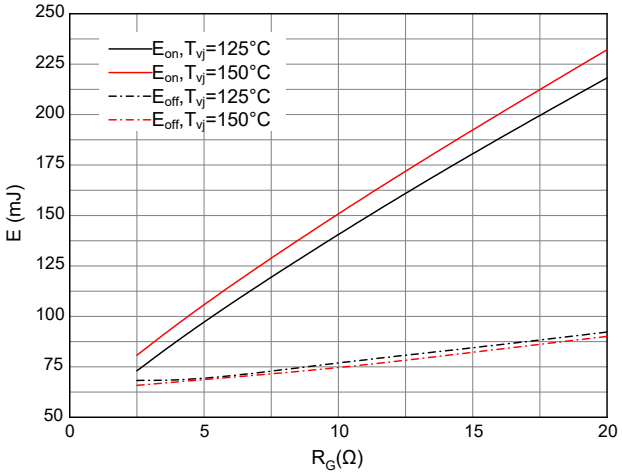

Figure 6. Switching losses of IGBT

VGE=±15V,IC=300A,VCE=900V

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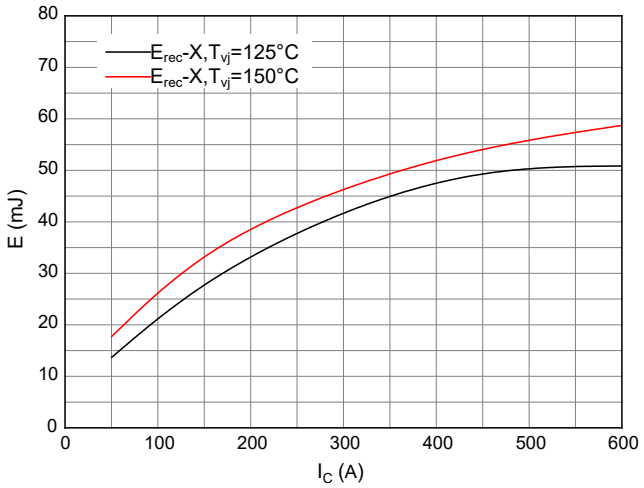

Figure 7. Switching losses of Diode

R_{Gon}=2.5Ω, V_{CE}=900V

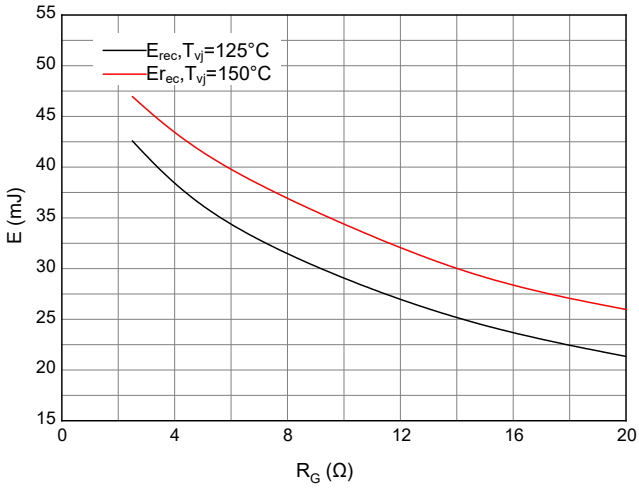

Figure 8. Switching losses of Diode

I_F=300A, V_{CE}=900V

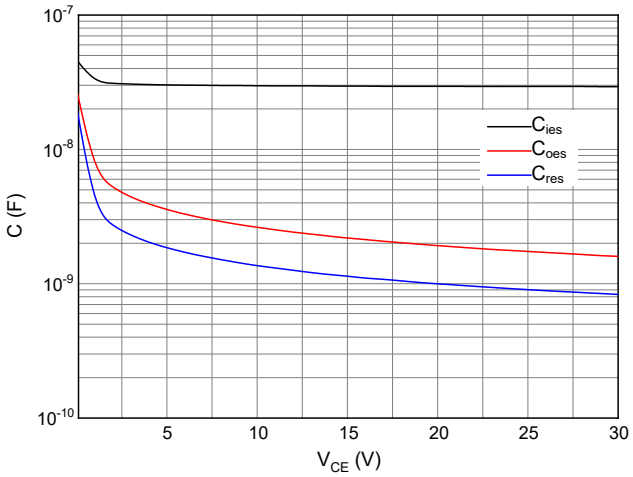

Figure 9. Capacitance characteristic

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