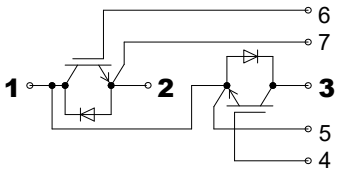
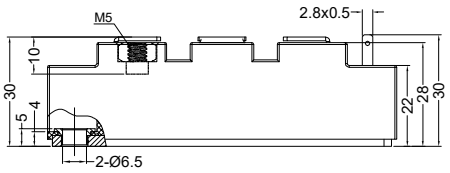
SGG145T170UC1

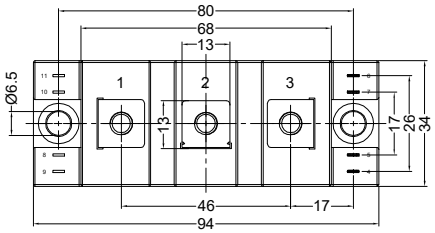
IGBT Modules

SGG145T170UC1
(Half Bridge)

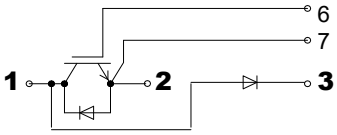


Dimensions in mm

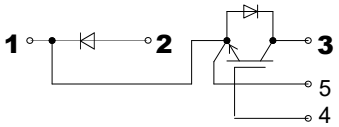




SGD145T170UC1
(Boost Chopper)



SDG145T170UC1
(Buck Chopper)



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	T_C= 25(100)°C	300(150)	A
I_{CRM}	T_C= 25°C, t_P =1ms	300	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
V_{RRM}	T_C= 25(100)°C	1700	V
I_F = -I_C		300(150)	A
I_{FRM}	T_C= 25°C, t_P =1ms	300	A
I_{FSM}	t_P =10ms; sin.;T_j=150°C	670	A
Module			
I_{CRM}	t_P = 1 ms	300	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V

Features

- Trench FS technology•
- Low switching losses
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- Soft swithcing FWD Technology
- Package with copper base plate
- Isolation voltage 4000 V
- RoHS Compliant

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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SGG145T170UC1

IGBT Modules

Characteristics $T_C = 25^oC$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C =6mA	5.0	5.5	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		7.2(10.5)	8.2(11.4)	mΩ
$V_{CE(sat)}$	I_C =150A; V_{GE} = 15V; chip level		1.95	2.40	V
C_{ies}	under following conditions		18.0		
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		0.59		nF
C_{res}			0.49		
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.26(0.6)		mΩ
$t_{d(on)}$	under following conditions:		235		ns
t_r	V_{CC} = 600V, I_C = 150A		62		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 1Ω , T_j = 150°C		500		ns
t_f	V_{GE} = ± 15V		430		ns
E_{on}(E_{off})			44.7(38.1)		mJ
Inverse Diode					
V_{RRM}	under following conditions:	1700			V
V_F = V_{EC}	I_F =150A; V_{GE} = 0V; T_j = 25°C		2.98	3.50	V
$V_{(FO)}$	T_j = 25(150)°C		1.5(1.25)	1.9(1.55)	V
r_F	T_j = 25(150)°C		6.3(8.8)	6.9(9.6)	mΩ
I_{RRM}	I_F = 150A; T_j = 150°C		110		A
Q_{rr}	di/dt = 3100A/us		39		uC
E_{rr}	V_{GE} =±15V		22		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.26	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.41	K/W
$R_{th(c-s)}$	per module			0.079	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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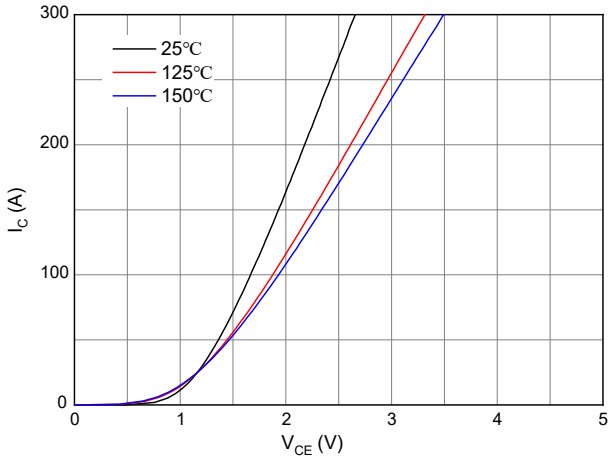

Figure 1. Typical output characteristics (V_{GE}=15V)

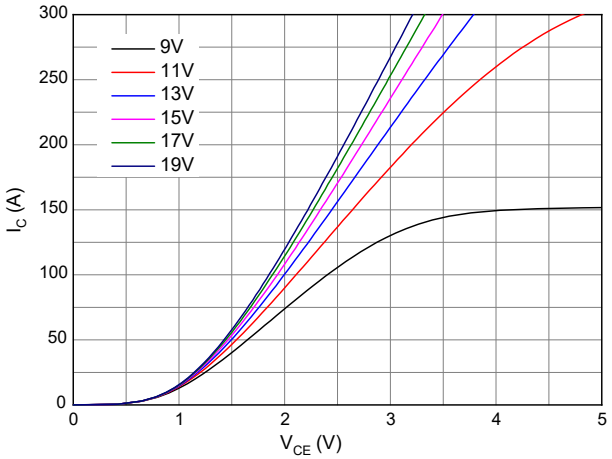

Figure 2. Typical output characteristics (T_{vj}=150℃)

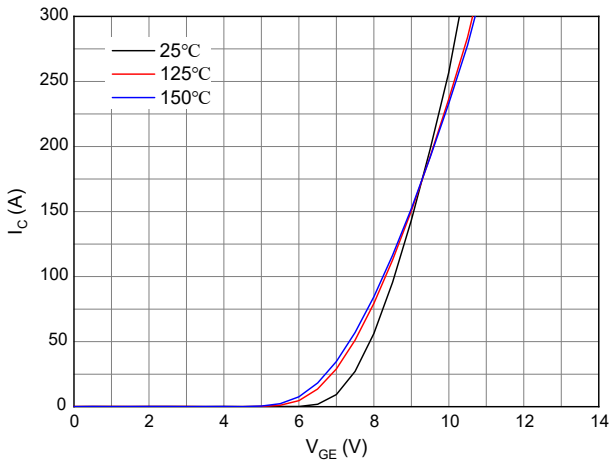

Figure 3. Typical transfer characteristic(V_{CE}=20V)

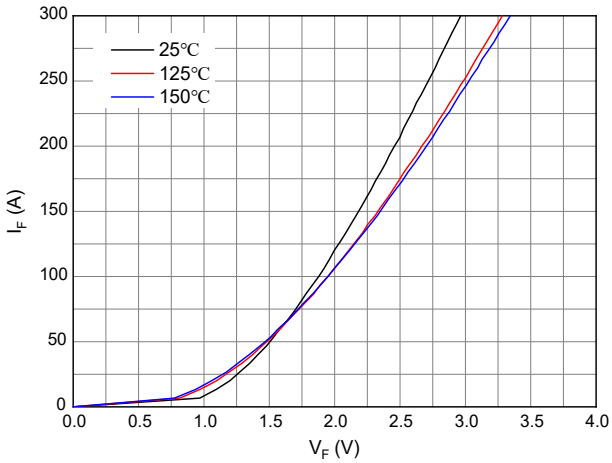

Figure 4. Forward characteristic of Diode

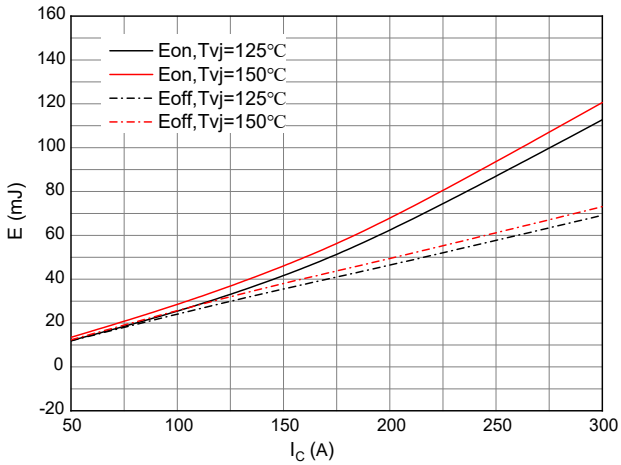

Figure 5. Switching losses of IGBT

VGE=±15V, RGon=4.8Ω, RGoff=4.8Ω, VCE=900V

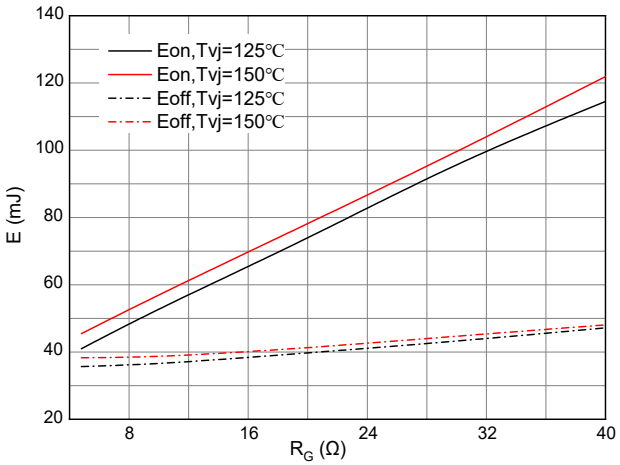

Figure 6. Switching losses of IGBT

VGE=±15V, IC=150A, VCE=900V

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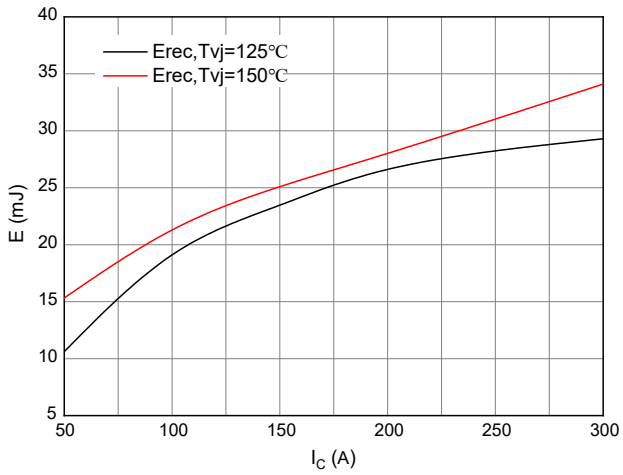

Figure 7. Switching losses of Diode

RGon=4.8Ω, VCE=900V

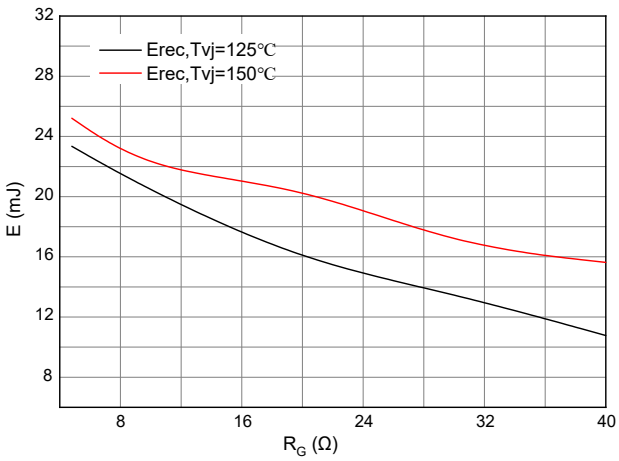

Figure 8. Switching losses of Diode

IF=150A, VCE=900V

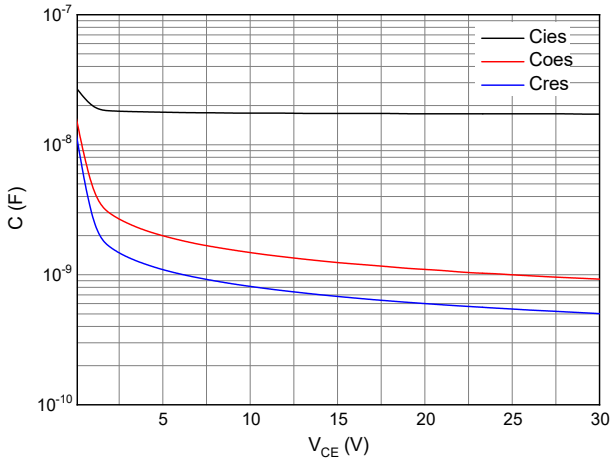

Figure 9. Capacitance characteristic

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