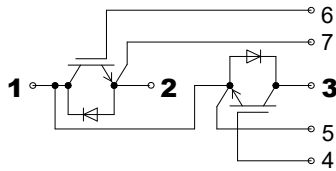


SGG145T170UC1

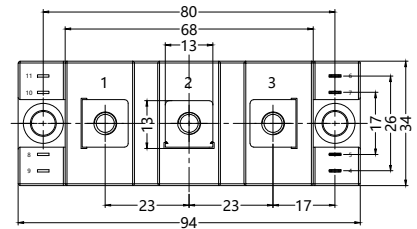
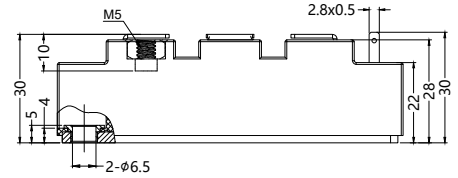
IGBT Modules



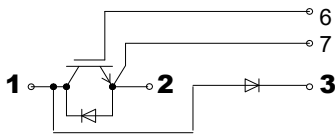
**SGG145T170UC1
(Half Bridge)**



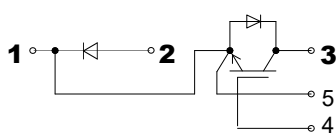
Dimensions in mm (1mm = 0.0394")



**SGD145T170UC1
(Boost Chopper)**



**SDG145T170UC1
(Buck Chopper)**



$T_C = 25^\circ\text{C}$, unless otherwise specified

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



Sirectifier®

SGG145T170UC1

IGBT Modules

Characteristics

$T_c = 25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE}=V_{CE}, I_c=6\text{mA}$	5.0	5.5	6.2	V
I_{CES}	$V_{GE}=0; V_{CE}=V_{CES}; T_j=25^{\circ}\text{C}$			2.0	mA
$V_{CE(TO)}$	$T_j=25^{\circ}\text{C}$		0.86	0.96	V
r_{CE}	$V_{GE}=15\text{V}, T_j=25(150)^{\circ}\text{C}$		7.2(10.5)	8.2(11.4)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_c=150\text{A}; V_{GE}=15\text{V}; \text{chip level}$		1.95	2.40	V
C_{ies}	under following conditions		18.0		nF
C_{oes}	$V_{GE}=0, V_{CE}=25\text{V}, f=1\text{MHz}$		0.59		
C_{res}			0.49		
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c=25(125)^{\circ}\text{C}$		0.26(0.6)		$\text{m}\Omega$
$t_{d(on)}$	under following conditions:		235		ns
t_r	$V_{CC}=600\text{V}, I_c=150\text{A}$		62		ns
$t_{d(off)}$	$R_{Gon}=R_{Goff}=1\Omega, T_j=150^{\circ}\text{C}$		500		ns
t_f	$V_{GE}=\pm 15\text{V}$		430		ns
$E_{on}(E_{off})$			44.7(38.1)		mJ
Inverse Diode					
V_{RRM}	under following conditions:	1700			V
$V_F = V_{EC}$	$I_F=150\text{A}; V_{GE}=0\text{V};$ $T_j=25^{\circ}\text{C}$		2.98	3.50	V
$V_{(FO)}$	$T_j=25(150)^{\circ}\text{C}$		1.5(1.25)	1.9(1.55)	V
r_F	$T_j=25(150)^{\circ}\text{C}$		6.3(8.8)	6.9(9.6)	$\text{m}\Omega$
I_{RRM}	$I_F=150\text{A}; T_j=150^{\circ}\text{C} \text{ di/}$		110		A
Q_{rr}	$dt=3100\text{A/us}$		39		μC
E_{rr}	$V_{GE}=\pm 15\text{V}$		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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IGBT Modules

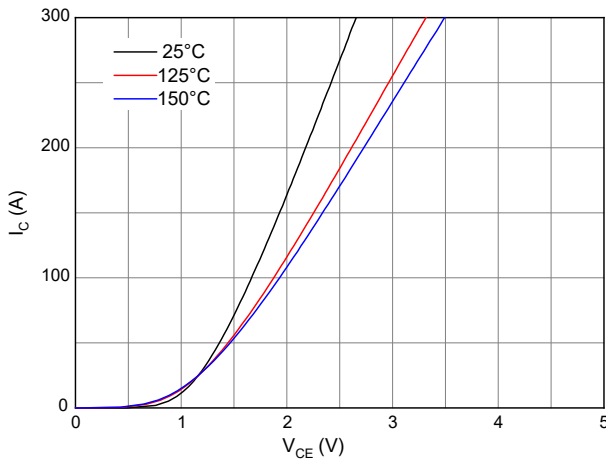


Figure 1. Typical output characteristics ($V_{GE}=15V$)

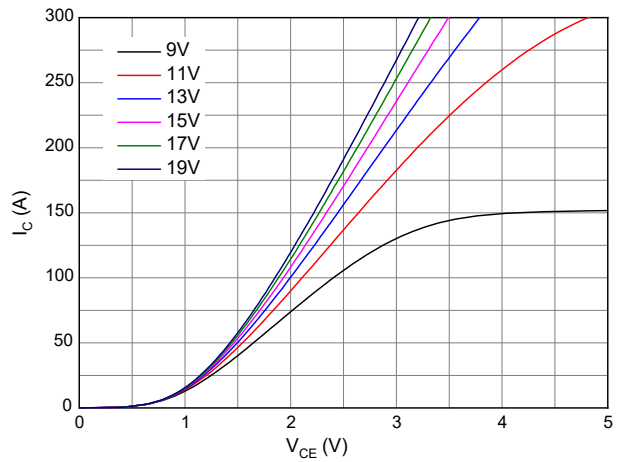


Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)

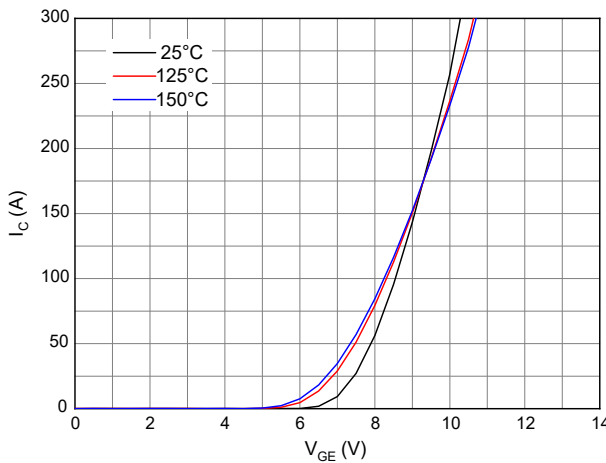


Figure 3. Typical transfer characteristic ($V_{CE}=20V$)

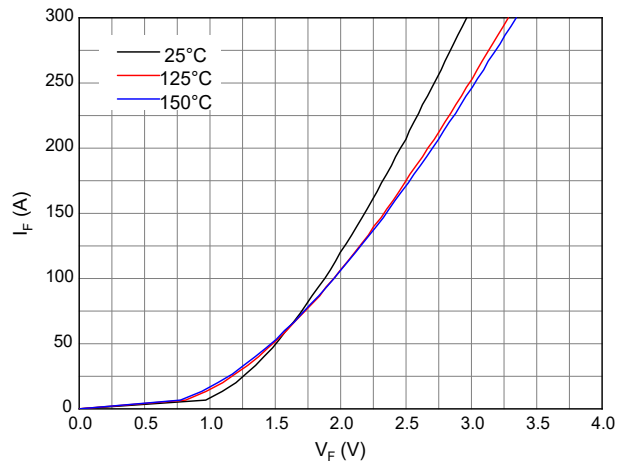


Figure 4. Forward characteristic of Diode

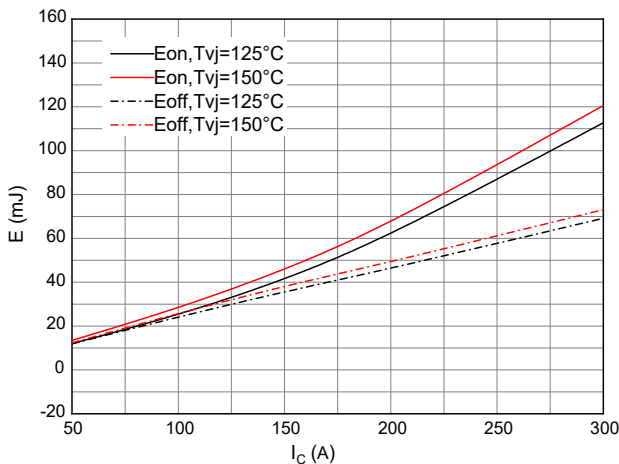


Figure 5. Switching losses of IGBT

$V_{GE}=\pm 15V$, $R_{Gon}=4.8\Omega$, $R_{Goff}=4.8\Omega$, $V_{CE}=900V$

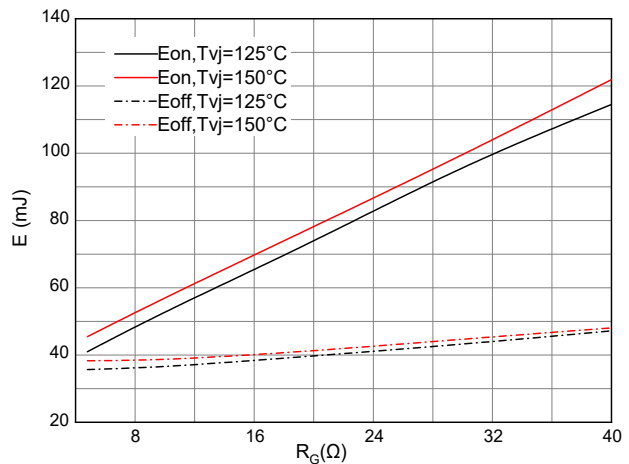


Figure 6. Switching losses of IGBT

$V_{GE}=\pm 15V$, $I_C=150A$, $V_{CE}=900V$

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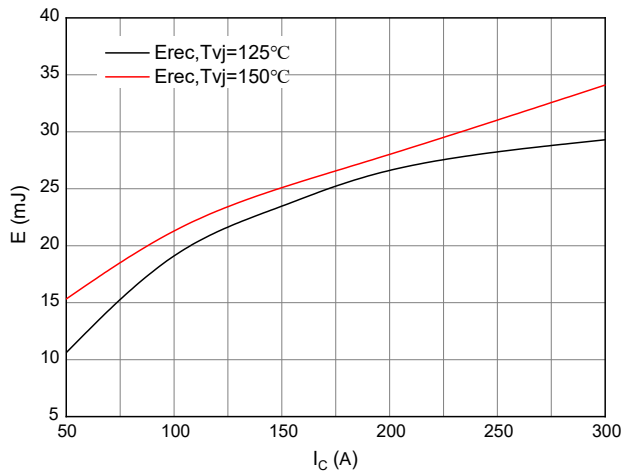


Figure 7. Switching losses of Diode
 $R_{Gon}=4.8\Omega$, $V_{CE}=900V$

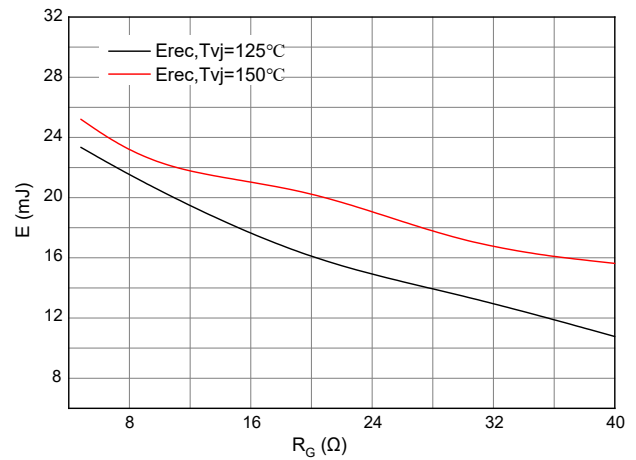


Figure 8. Switching losses of Diode
 $I_F=150A$, $V_{CE}=900V$

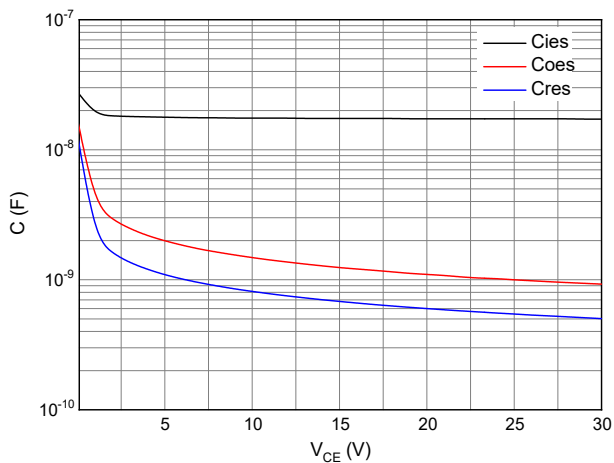


Figure 9. Capacitance characteristic