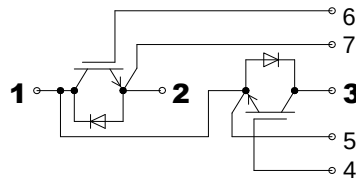


SGG145T60UC1

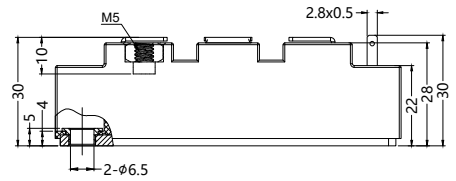
IGBT Modules



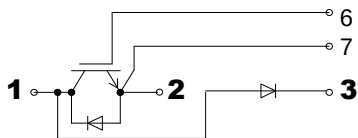
**SGG145T60UC1
(Half Bridge)**



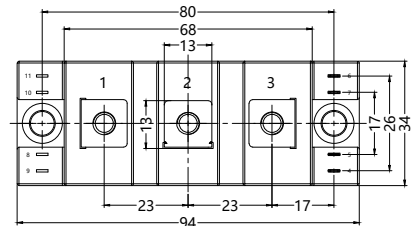
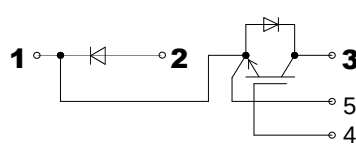
Dimensions in mm (1mm = 0.0394")



**SGD145T60UC1
(Boost Chopper)**



**SDG145T60UC1
(Buck Chopper)**



Absolute Maximum Ratings

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

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_C=25(80)^\circ\text{C}$	290(145)	A
I_{CRM}	$T_C=25^\circ\text{C}, t_P=1\text{ms}$	290	A
V_{GES}		± 20	V
T_{Vj}		$-40 \dots +175$	$^\circ\text{C}$
Inverse Diode $I_F = -I_C$	$T_C=25(80)^\circ\text{C}$	290(145)	A
I_{FRM}	$T_C=25^\circ\text{C}, t_P=1\text{ms}$	290	A
I_{FSM}	$t_P=10\text{ms}; \sin.; T_J=150^\circ\text{C}$	770	A
Module			
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$	300	A
T_{stg}		$-40 \sim 125$	$^\circ\text{C}$
V_{Isol}	AC, 1min	4000	V

Features

- Trench Field Stop Technology
- Low switching losses
- Switching frequency up to 30kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- Soft switching FWD 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

Sirectifier®

SGG145T60UC1

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 =1.5mA	4.3	5.2	6.1	V
I _{CES}	V _{GE} =0; V _{CE} =V _{CES} ; T _J =25°C			2.0	mA
V _{CE(TO)}	T _J =25°C		0.8	0.9	V
r _{CE}	V _{GE} =15V, T _J =25(125)°C		7.0(10.3)	8.0(11.0)	mΩ
V _{CE(sat)}	I _C =145A; V _{GE} =15V; chip level		1.65	2.10	V
C _{ies}	under following conditions V _{GE} =0, V _{CE} =25V, f=1MHz		8.80		nF
C _{oes}			0.28		
C _{res}			0.27		
L _{CE}				20	nH
R _{CC+EE}	res., terminal-chip T _C =25(125)°C		0.25(0.5)		mΩ
t _{d(on)}	under following conditions: V _{CC} =600V, I _C =145A R _{Gon} =R _{Goff} = 1Ω, T _J =150°C V _{GE} = ± 15V		68		ns
t _r			163		ns
t _{d(off)}			208		ns
t _f			73		ns
E _{on} (E _{off})	T _C =150°C		8.4(2.4)		mJ
Inverse Diode under following conditions:					
V _F = V _{EC}	I _F =145A; V _{GE} =0V; T _J =25°C		1.48	2.00	V
V _(FO)	T _J =25(150)°C		1.3(0.95)	1.5(1.1)	V
r _F	T _J =25(150)°C		5.8(8.0)	6.4 (8.8)	mΩ
I _{RRM}	I _F =145A; T _J =150°C di/		17		A
Q _{rr}	dt=3100A/us		7.4		uC
E _{rr}	V _{GE} =±15V		1.8		mJ
Thermal Characteristics					
R _{th(j-c)}	per IGBT			0.24	K/W
R _{th(j-c)D}	per Inverse Diode			0.37	K/W
R _{th(c-s)}	per module			0.145	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

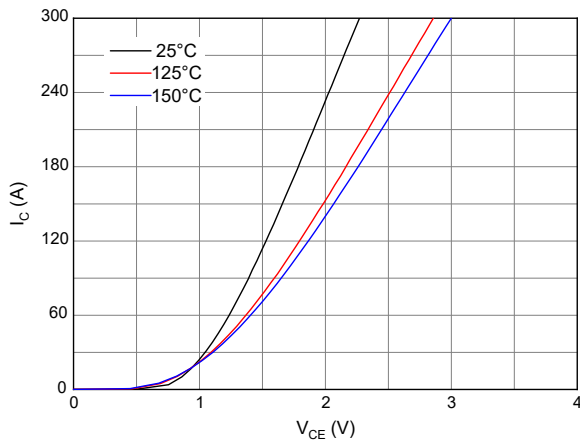


Fig.1. Typical output characteristics ($V_{GE}=15V$)

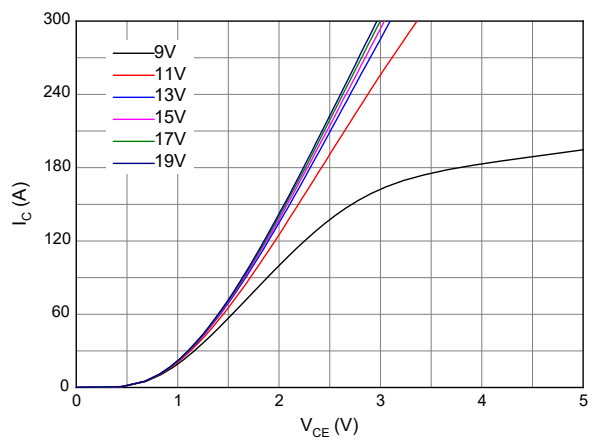


Fig.2. Typical output characteristics ($T_{vj}=150^{\circ}C$)

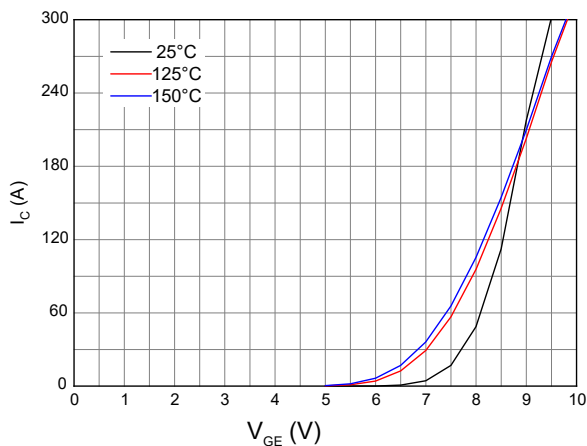


Fig.3. Typical transfer characteristic ($V_{CE}=20V$)

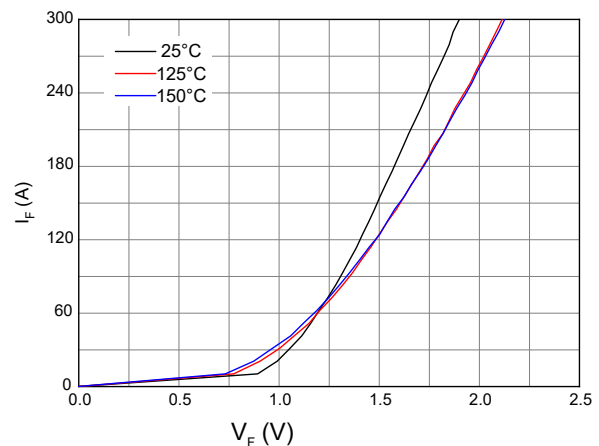


Fig.4. Forward characteristic of Diode

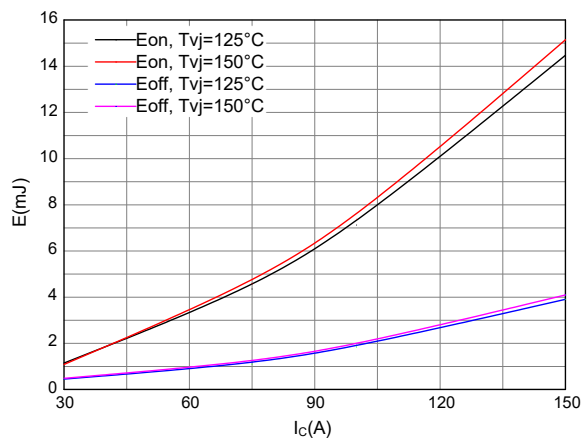


Fig.5. Switching losses of IGBT
 $V_{GE}=\pm 15V, R_{Gon}=8\Omega, R_{Goff}=8\Omega, V_{CE}=400V$

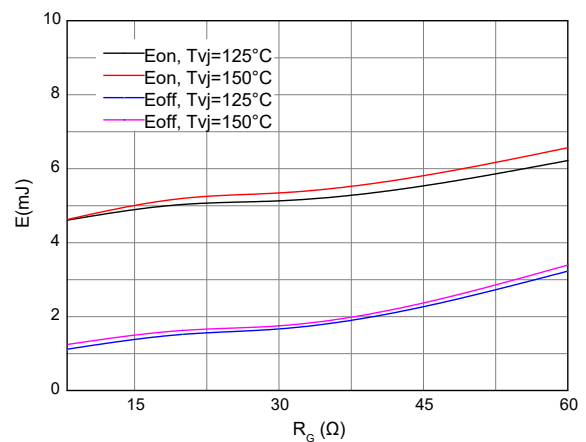


Fig.6. Switching losses of IGBT
 $V_{GE}=\pm 15V, I_C=75A, V_{CE}=400V$

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IGBT Modules

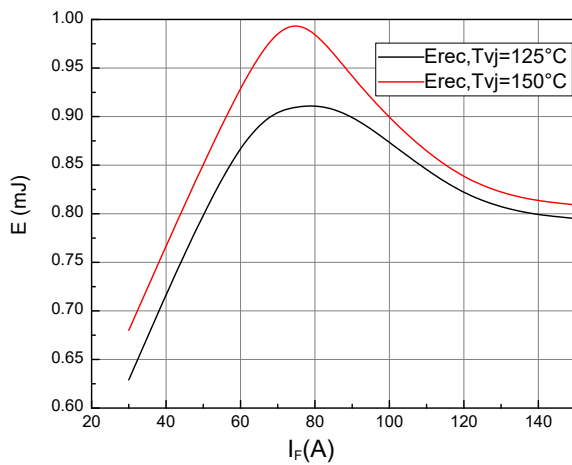


Fig. 7. Switching losses of Diode
 $R_{g\text{on}}=8\Omega, V_{CE}=400\text{V}$

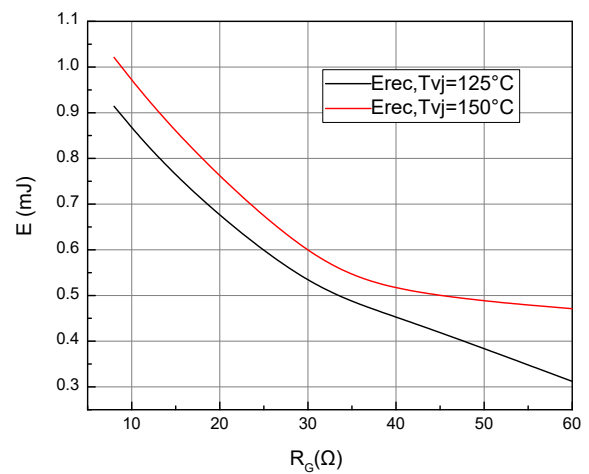


Fig. 8. Switching losses of Diode
 $I_F=75\text{A}, V_{CE}=400\text{V}$

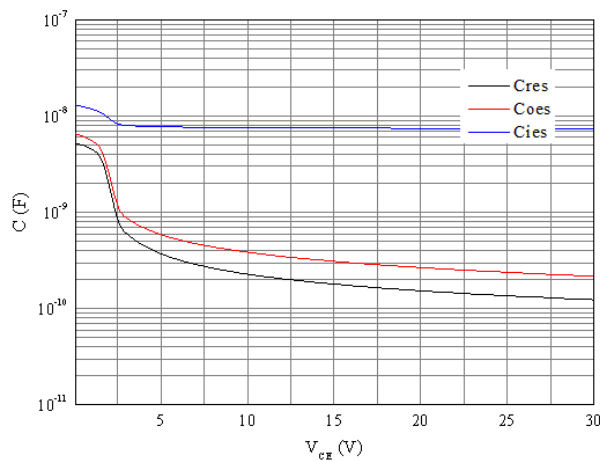


Fig. 9. Capacitance characteristic