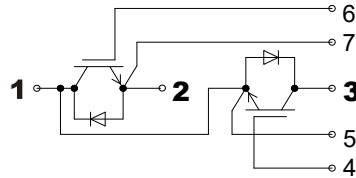


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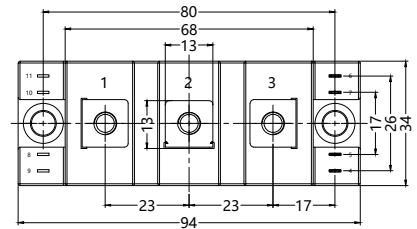
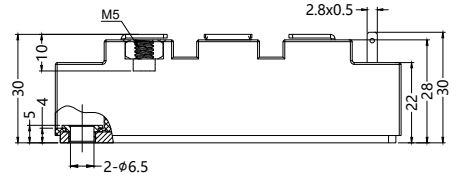
IGBT Modules



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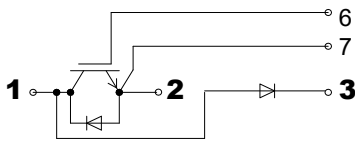


Dimensions in mm (1mm = 0.0394")

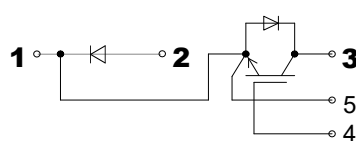


$T_C = 25^{\circ}\text{C}$, unless otherwise specified

SGD100T170UC1



SDG100T170UC1



Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_C=25(100)^{\circ}\text{C}$	150(100)	A
I_{CRM}	$T_C=25^{\circ}\text{C}, t_P = 1\text{ms}$	200	A
V_{GES}		± 20	V
T_{Vj}		$-40 \dots +175$	$^{\circ}\text{C}$
Inverse Diode			
V_{RRM}		1700	V
$I_F = -I_C$	$T_C=25(100)^{\circ}\text{C}$	120(100)	A
I_{FRM}	$T_C=25^{\circ}\text{C}, t_P = 1\text{ms}$	200	A
I_{FSM}	$t_P=10\text{ms}; \sin.; T_j=150^{\circ}\text{C}$	500	A
Module			
$I_{t(RMS)}$	$T_{terminal}=80^{\circ}\text{C}$	200	A
T_{stg}		$-40 \sim 125$	$^{\circ}\text{C}$
V_{Isol}	AC, 1min	4000	V

Features

- Trench Field Stop IGBT technology
- Low switching losses
- High short circuit capability
- Positive temperature coefficient for easy paralleling
- 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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IGBT Modules

Characteristics

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

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE}=V_{CE}, I_c=6\text{mA}$	5.1	5.7	6.4	V
I_{CES}	$V_{GE}=0; V_{CE}=V_{CES}; T_j=25^{\circ}\text{C}$			1.0	mA
$V_{CE(TO)}$	$T_j=25^{\circ}\text{C}$		0.85	0.95	V
r_{CE}	$V_{GE}=15\text{V}, T_j=25(150)^{\circ}\text{C}$		10.3(15.2)	11.8(16.3)	m Ω
$V_{CE(sat)}$	$I_c=100\text{A}; V_{GE}=15\text{V}; \text{chip level}$		1.85	2.35	V
C_{ies}	under following conditions $V_{GE}=0, V_{CE}=25\text{V}, f=1\text{MHz}$		13.55		nF
C_{oes}			0.560		
C_{res}			0.395		
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c=25(125)^{\circ}\text{C}$		0.68(1.2)		m Ω
$t_{d(on)}$	under following conditions: $V_{CC}=900\text{V}, I_c=100\text{A}$ $R_{Gon}=R_{Goff}=1\Omega, T_j=150^{\circ}\text{C}$ $V_{GE}=\pm 15\text{V}$		168		ns
t_r			40		ns
$t_{d(off)}$			340		ns
t_f			225		ns
$E_{on}(E_{off})$			15.22(20.12)		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F=100\text{A}; V_{GE}=0\text{V}; T_j=25^{\circ}\text{C}$		2.10	2.60	V
$V_{(FO)}$	$T_j=25(150)^{\circ}\text{C}$		1.34(0.96)	1.57(1.14)	V
r_F	$T_j=25(150)^{\circ}\text{C}$		9.2(12.9)	10.5(13.8)	m Ω
I_{RRM}	$I_F=100\text{A}; T_j=150^{\circ}\text{C}$		74		A
Q_{rr}	$di/dt=1900\text{A/us}$		20.7		uC
E_{rr}	$V_{GE}=\pm 15\text{V}$		20.9		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.37	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.58	K/W
$R_{th(c-s)}$	per module			0.06	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

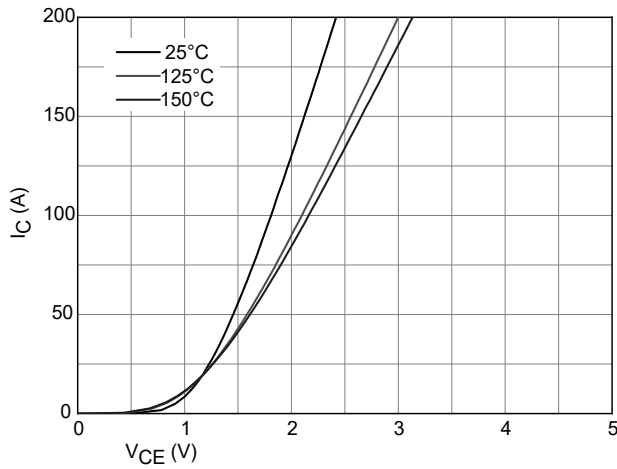


Figure1. Typical output characteristics (VGE=15V)

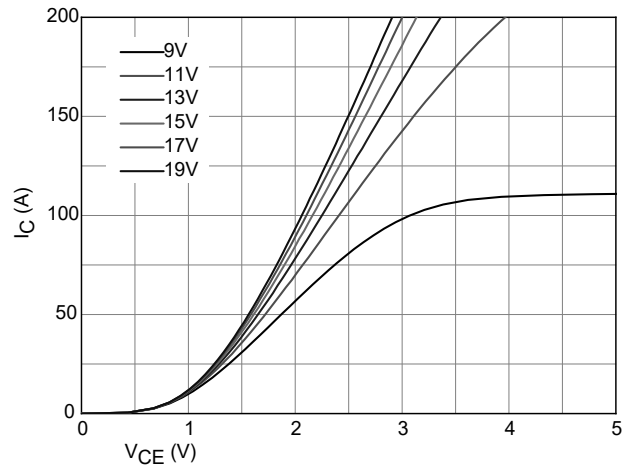


Figure2. Typical output characteristics (TVj=150°C)

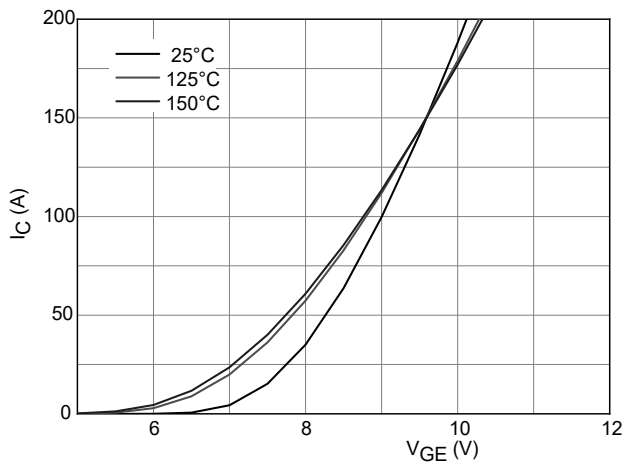


Figure3. Typical transfer characteristic(VCE=20V)

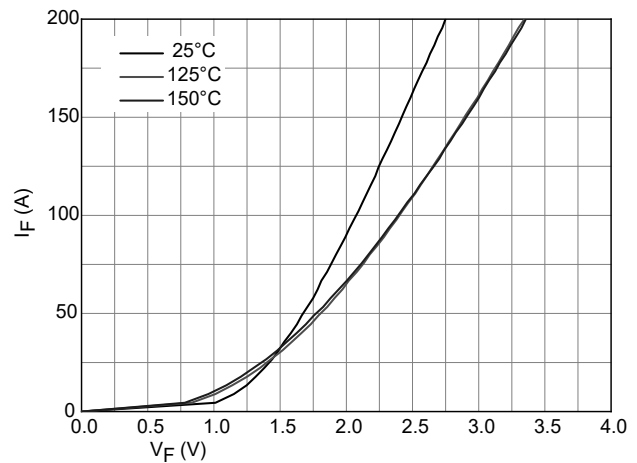


Figure4. Forward characteristic of Diode

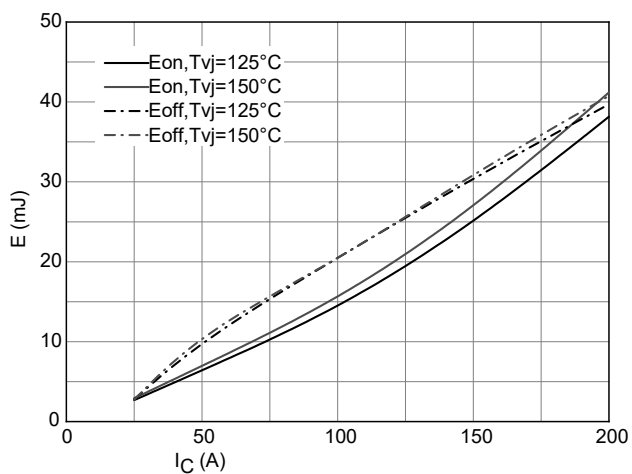


Figure5. Switching losses of IGBT
VGE=±15V, RGon=1Ω, RGoff=1Ω, VCE=900V

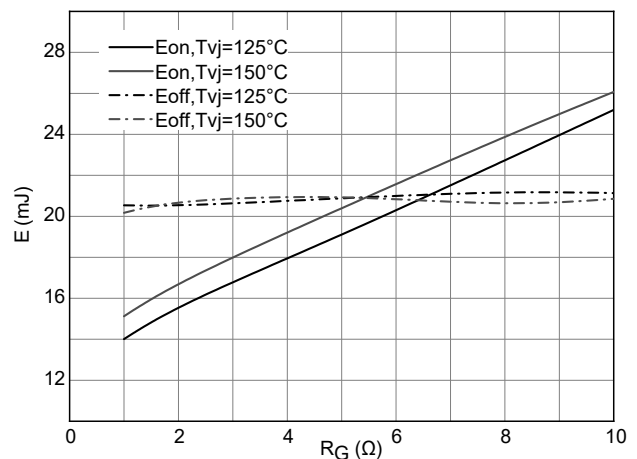


Figure 6. Switching losses of IGBT
VGE=±15V, IC=100A, VCE=900V

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IGBT Modules

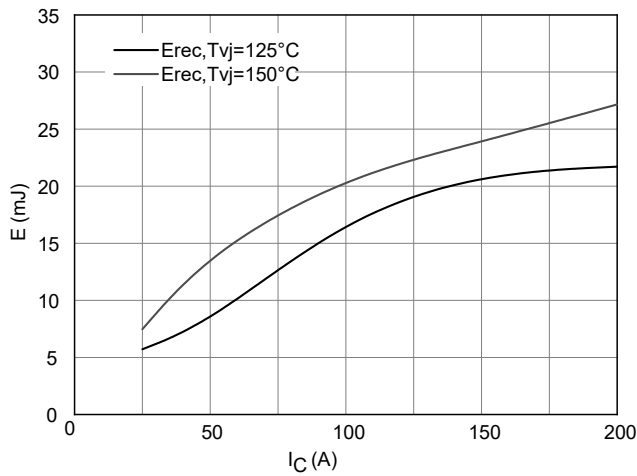


Figure 7. Switching losses of Diode $R_{Gon}=1\Omega, V_{CE}=900V$

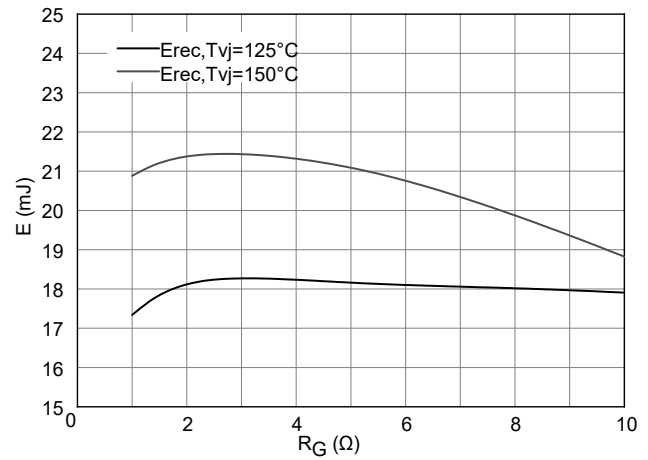


Figure 8. Switching losses of Diode $I_F=100A, V_{CE}=900V$

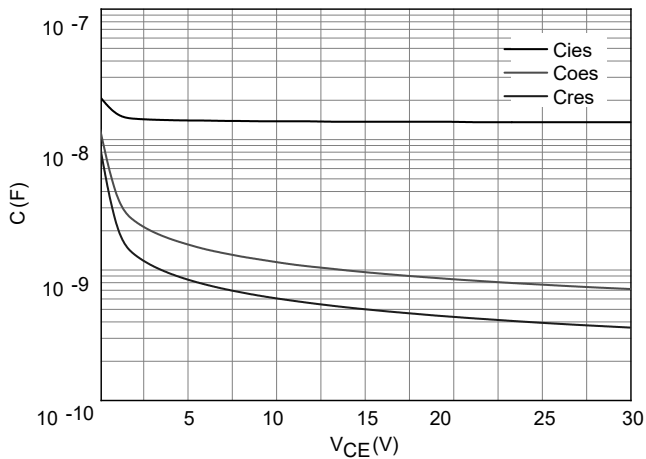


Figure 9. Capacitance characteristic