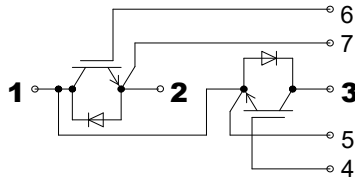


SGG400T60UC2

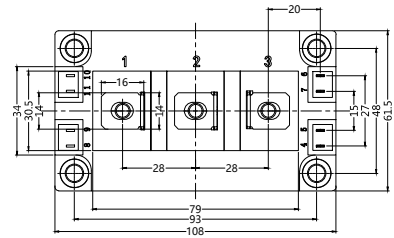
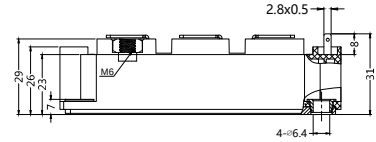
IGBT Modules



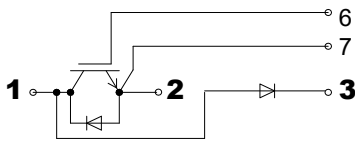
**SGG400T60UC2
(Half Bridge)**



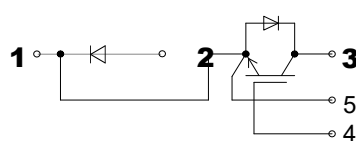
Dimensions in mm (1mm = 0.0394")



**SGD400T60UC
(Boost Chopper)**



**SDG400T60UC
(Buck Chopper)**



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

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_C=25(100)^{\circ}\text{C}$	800(400)	A
I_{CRM}	$T_C=25^{\circ}\text{C}$, $t_p=1\text{ms}$	800	A
V_{GES}		± 20	V
T_{Vj}		$-40 \dots +175$	$^{\circ}\text{C}$
Inverse Diode			
$I_F = -I_C$	$T_C=25(80)^{\circ}\text{C}$	800(400)	A
I_{FRM}	$T_C=25^{\circ}\text{C}$, $t_p=1\text{ms}$	800	A
I_{FSM}	$t_p=10\text{ms}$; $\sin 180^{\circ}$; $T_J=25^{\circ}\text{C}$	800	A
V_{RRM}		600	V
Module			
$I_{t(RMS)}$	$T_{terminal} = 80^{\circ}\text{C}$	400	A
T_{stg}		$-40 \sim 125$	$^{\circ}\text{C}$
V_{isol}	AC, 1min	2500	V

Features

- Trench FS IGBT technology
- Low switching losses
- Switching frequency up to 30kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Soft switching FWD diode Technology
- Package with copper baseplate
- Isolation voltage 2500 V

Application

- Inverter welding Machines
- UPS systems
- Power converters



Advantages

- space and weight savings
- reduced protection circuits

Sirectifier®

SGG400T60UC2

IGBT Modules

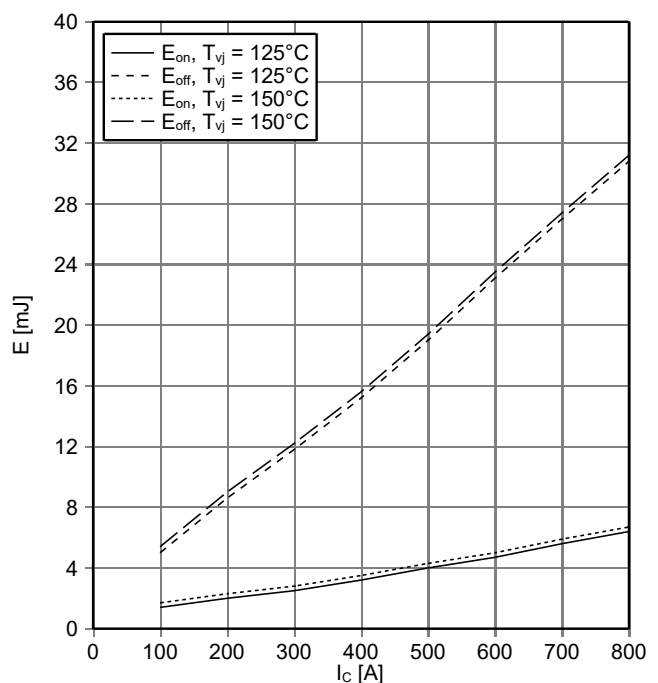
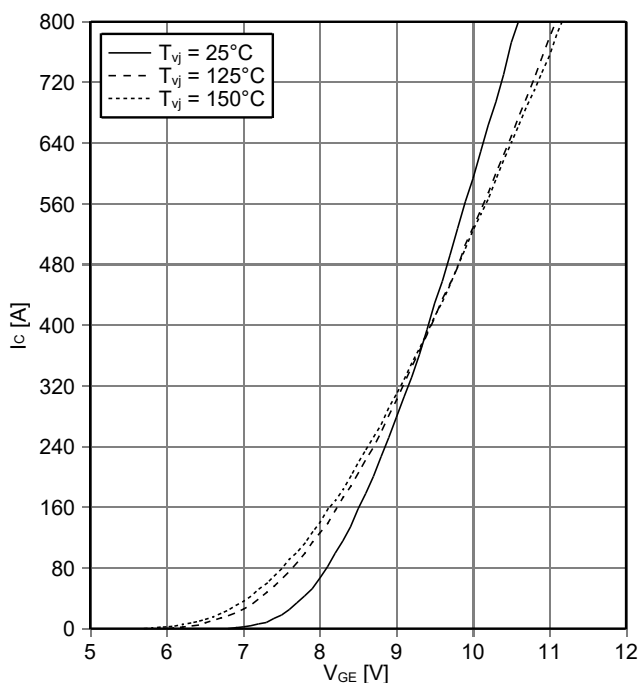
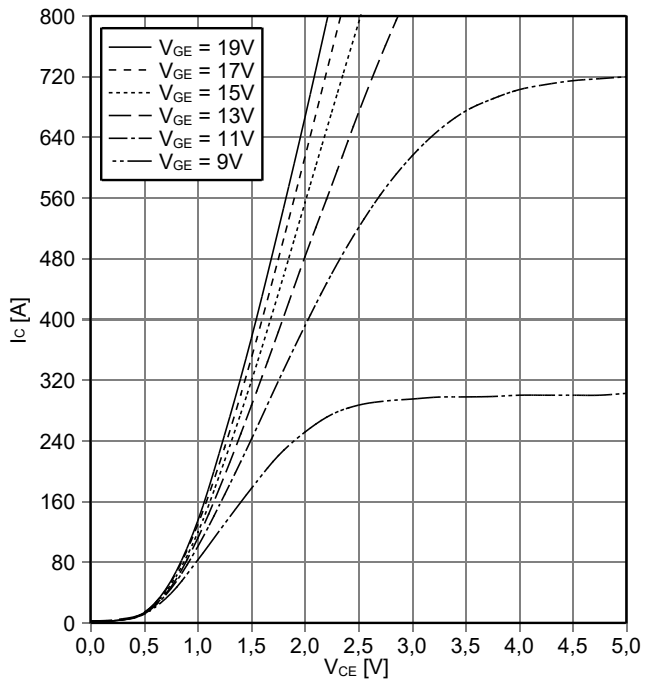
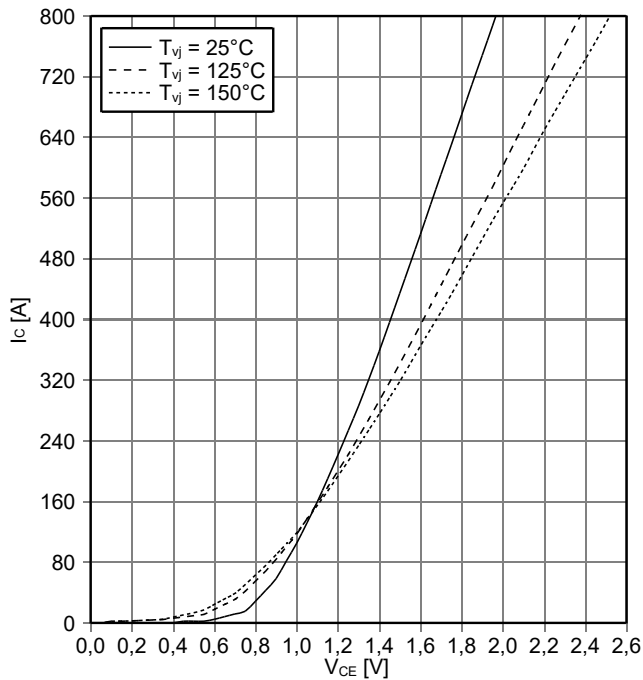
Characteristics

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

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE}=V_{CE}, I_c=3\text{mA}$	4.5	5.0	6.0	V
I_{CES}	$V_{GE}=0; V_{CE}=V_{CES}; T_j=25^{\circ}\text{C}$			0.10	mA
$V_{CE(TO)}$	$T_j=25^{\circ}\text{C}$		0.9	1.0	V
r_{CE}	$V_{GE}=15\text{V}, T_j=25(150)^{\circ}\text{C}$		1.4(0.8)	2.4(0.9)	$\text{m}\Omega$
$V_{CE(sat)}$	$I_c=400\text{A}; V_{GE}=15\text{V}; \text{chip level}$		1.65	2.10	V
C_{ies}	under following conditions		25		nF
C_{oes}	$V_{GE}=0, V_{CE}=25\text{V}, f=1\text{MHz}$		0.96		
C_{res}			0.75		
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c=25(125)^{\circ}\text{C}$		0.65(1.09)		$\text{m}\Omega$
$t_{d(on)}$	under following conditions:		108		ns
t_r	$V_{CC}=300\text{V}, I_c=400\text{A}$		52		ns
$t_{d(off)}$	$R_{Gon}=R_{Goff}=1\Omega, T_j=150^{\circ}\text{C}$		450		ns
t_f	$V_{GE}=\pm 15\text{V}$		69		ns
$E_{on}/E_{off}/E_{ts}$			2.2/16.4/18.6		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F=400\text{A}; V_{GE}=0\text{V}; T_j=25^{\circ}\text{C}$		1.55		V
$V_{(FO)}$	$T_j=25(125)^{\circ}\text{C}$		0.9(0.80)	1.1(1.0)	V
r_F	$T_j=25(125)^{\circ}\text{C}$		1.7(2.4)	2.1(2.7)	$\text{m}\Omega$
I_{RM}	$I_F=300\text{A}; T_j=125^{\circ}\text{C}$		216		A
Q_{rr}	$di/dt=100\text{A}/\mu\text{s}$		15		μC
E_{rr}	$V_{GE}=\pm 15\text{V}$		4.8		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.12	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.22	K/W
$R_{th(c-s)}$	per module			0.08	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2.5		5	Nm
Weight	typical			325	g

SGG400T60UC2

IGBT Modules



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IGBT Modules

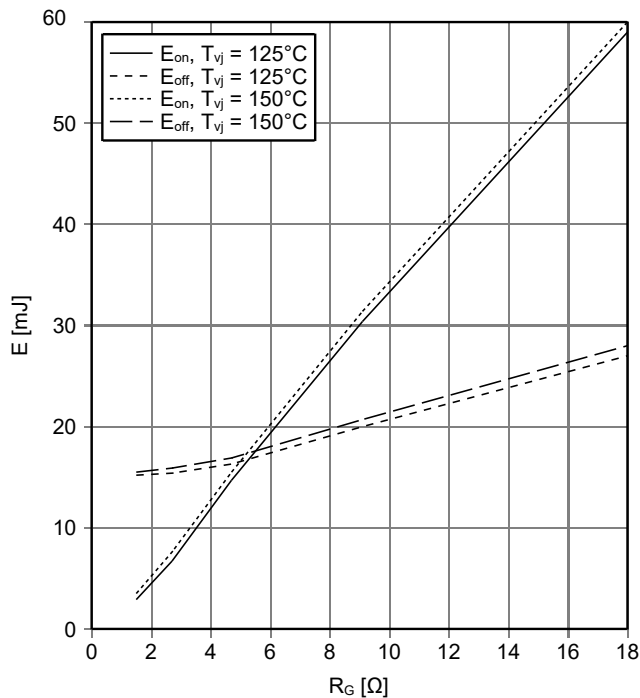


Fig.5 Switching losses IGBT, Inverter (typical)
 $E_{on}=f(R_G)$, $E_{off}=f(R_G)$
 $V_{GE}=\pm 15V$, $I_C=300A$, $V_{CE}=300V$

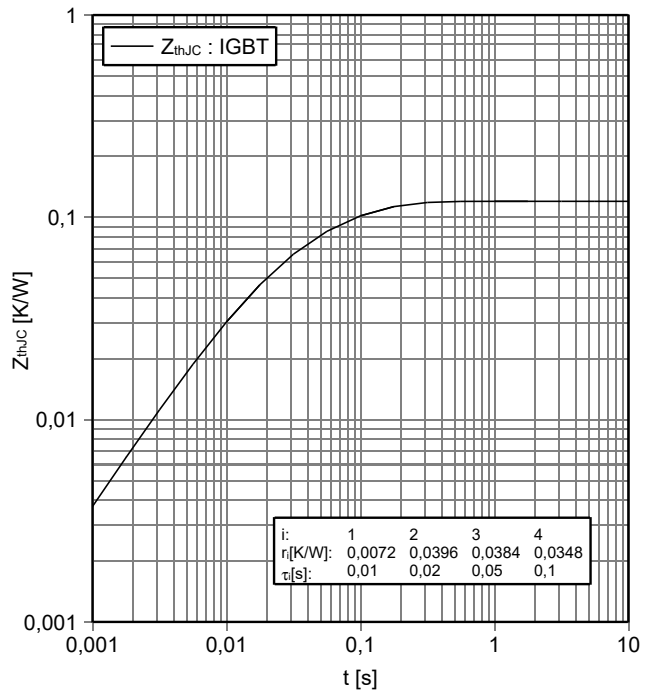


Fig.6 Transient thermal impedance IGBT, Inverter
 $Z_{thJC}=f(t)$

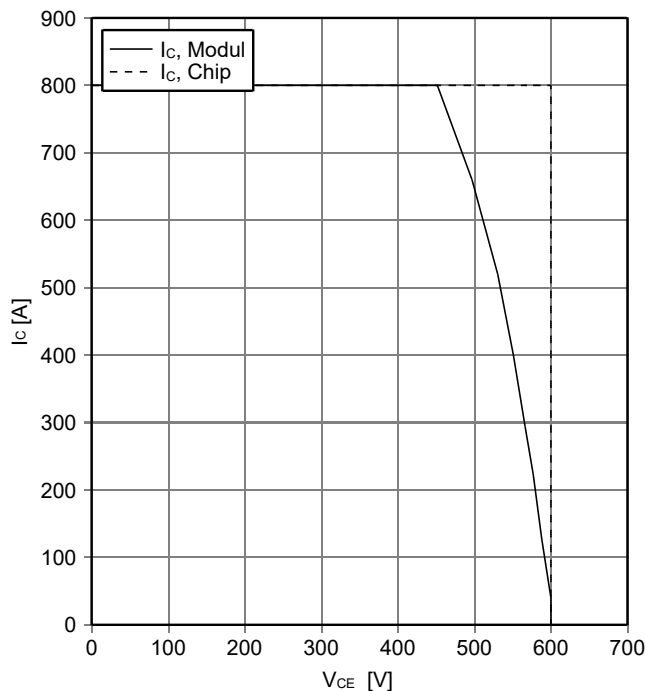


Fig.7 Reverse bias safe operating area IGBT, Inverter (RBSOA)
 $I_C=f(V_{CE})$, $V_{GE}=\pm 15V$, $R_{Goff}=2.4\Omega$, $T_{vj}=150^\circ C$

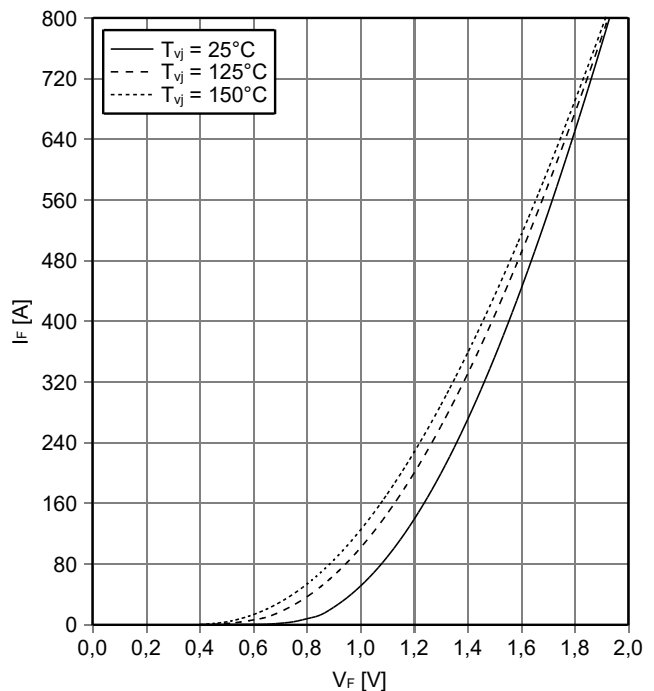


Fig.8 Forward characteristic of Diode, Inverter (typical)
 $I_F=f(V_F)$

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IGBT Modules

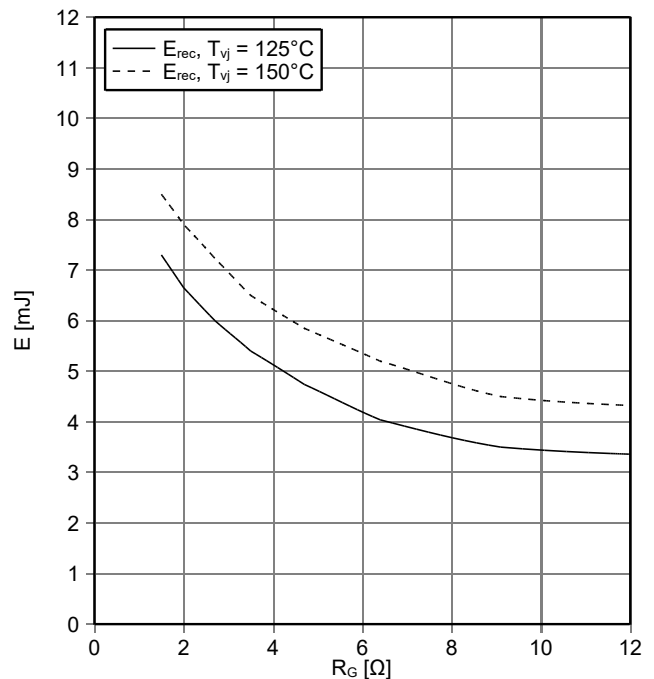
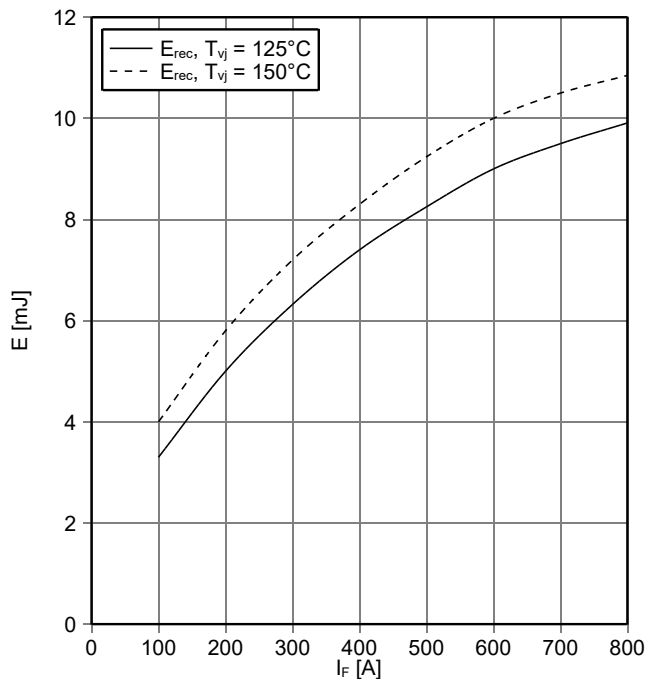


Fig.11 Transient thermal impedance Diode, Inverter $Z_{thJC}=f(t)$

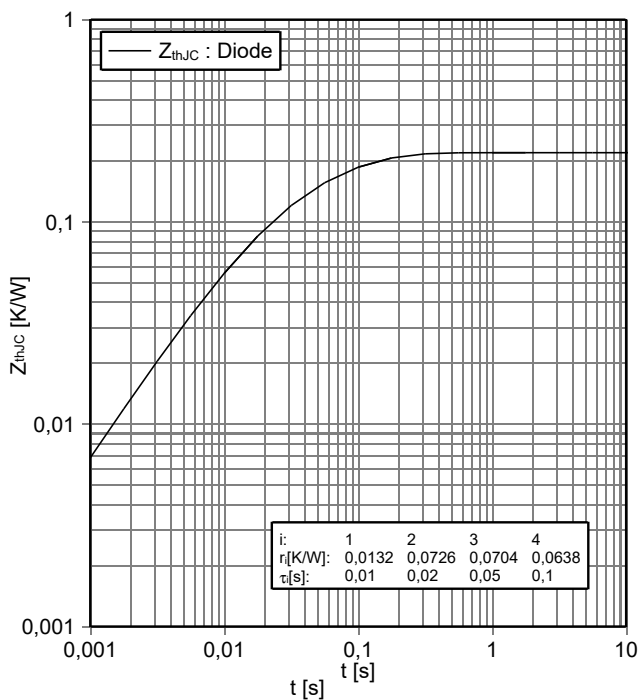


Fig.11 Transient thermal impedance Diode, Inverter $Z_{thJC}=f(t)$