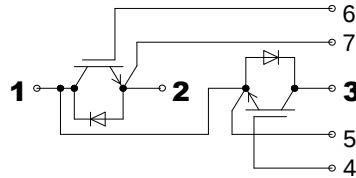


SGG195T60UC1

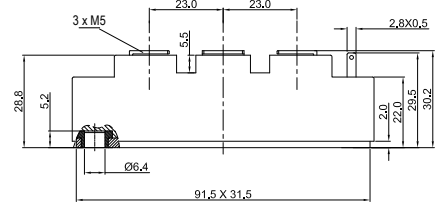
IGBT Modules



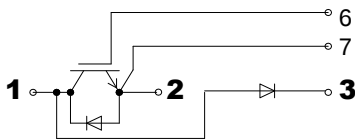
**SGG195T60UC1
(Half Bridge)**



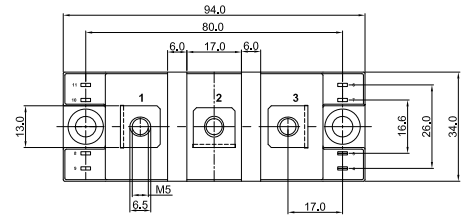
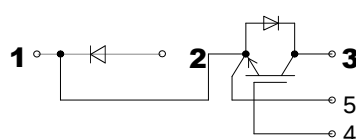
Dimensions in mm (1mm = 0.0394")



**SGD195T60UC1
(Boost Chopper)**



**SDG195T60UC1
(Buck Chopper)**



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

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_C = 25(100)^\circ\text{C}$	390(195)	A
I_{CRM}	$T_C = 25^\circ\text{C}$, $t_P = 1\text{ms}$	390	A
V_{GES}		± 20	V
T_{Vj}		$-40 \dots +175$	$^\circ\text{C}$
Inverse			
Diode $I_F = -I_C$	$T_C = 25(80)^\circ\text{C}$	390(195)	A
I_{FRM}	$T_C = 25^\circ\text{C}$, $t_P = 1\text{ms}$	390	A
I_{FSM}	$t_P = 10\text{ms}$; $\sin 180^\circ$; $T_J = 25^\circ\text{C}$	1450	A
V_{RRM}		600	V
Module			
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$	195	A
T_{stg}		$-40 \sim 125$	$^\circ\text{C}$
V_{isol}	AC, 1min	4000	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 paralleling
- MOS input, voltage controlled
- Soft switching diode Technology
- Package with copper baseplate
- Isolation voltage 4000 V

Application

- Inverter welding Machines
- UPS
- AC inverter Drives

Advantages

- space and weight savings
- reduced protection circuits



Sirectifier®

SGG195T60UC1

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 = 3mA	5.0	5.5	6.5	V
I _{CES}	V _{GE} = 0; V _{CE} = V _{CES} ; T _J = 25°C			0.40	mA
V _{CE(TO)}	T _J = 25°C		0.9	1.0	V
r _{CE}	V _{GE} = 15V, T _J = 25(150)°C		2.8 (4.3)	4.5(6.0)	mΩ
V _{CE(sat)}	I _C = 195A; V _{GE} = 15V; chip level		1.65	1.90	V
C _{ies}	under following conditions V _{GE} = 0, V _{CE} = 25V, f = 1MHz		11.89		nF
C _{oes}			0.70		
C _{res}			0.38		
L _{CE}				30	nH
R _{CC'+EE'}	res., terminal-chip T _C = 25(125)°C		0.75(1.02)		mΩ
t _{d(on)}	under following conditions: V _{CC} = 300V, I _C = 195A, R _{Gon} = R _{Goff} = 1Ω , T _J = 150°C V _{GE} = ± 15V		128		ns
t _r			70		ns
t _{d(off)}			505		ns
t _f			48		ns
E _{on} /E _{off} /E _{ts}			14/7.8/21.8		mJ
Inverse Diode under following conditions:					
V _F = V _{EC}	I _F = 195A; V _{GE} = 0V; T _J = 25°C		1.55		V
V _(FO)	T _J = 25(125)°C		0.95(1.05)	1.00(1.20)	V
r _F	T _J = 25(125)°C		2.2(2.4)	2.5 (2.7)	mΩ
I _{RM}	I _F = 195A; T _J = 150°C		100		A
Q _{rr}	di/dt = 2000A/us		30		uC
E _{rr}	V _{GE} = ±15V		5.8		mJ
Thermal Characteristics					
R _{th(j-c)}	per IGBT			0.22	K/W
R _{th(j-c)D}	per Inverse Diode			0.40	K/W
R _{th(c-s)}	per module			0.05	K/W
Mechanical Data					
M _s	to heatsink M6	3		5	Nm
M _t	to terminals M5	2.5		5	Nm
Weight	typical			155	g

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IGBT Modules

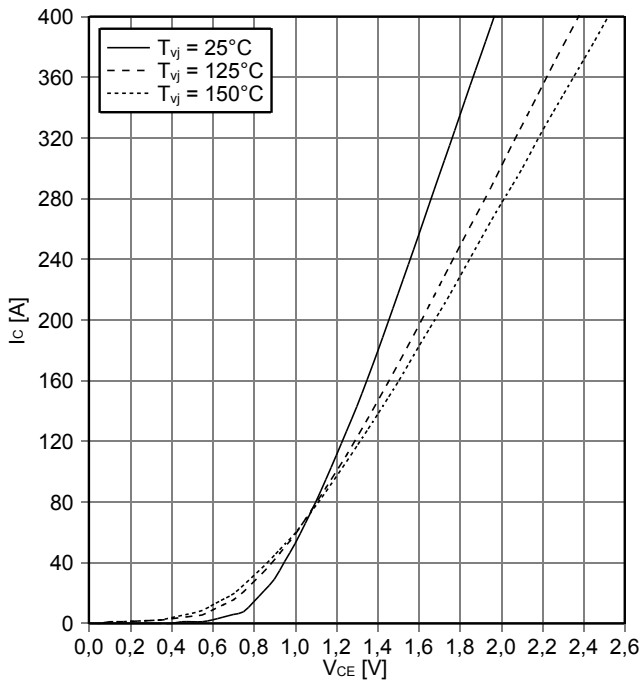


Fig.1 Output characteristic IGBT, Inverter (typical)
 $I_C = f(V_{CE})$ $V_{GE} = 15\text{ V}$

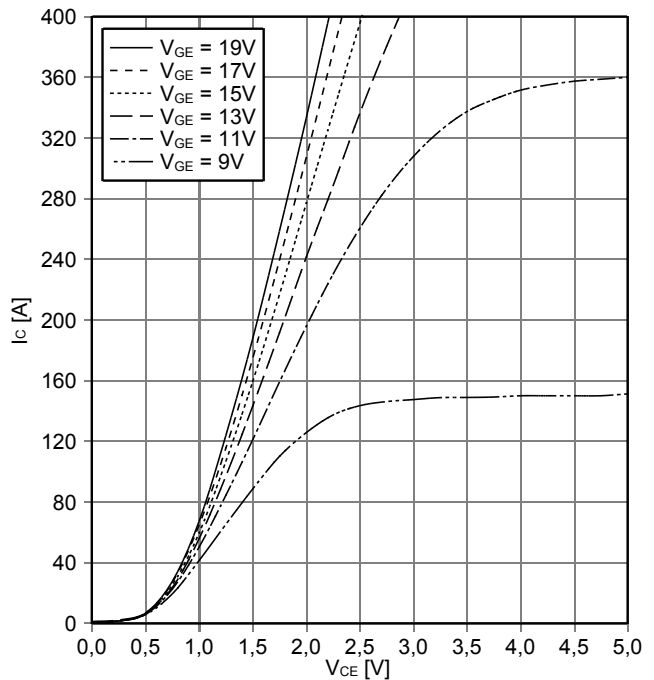


Fig.2 Output characteristic IGBT, Inverter (typical)
 $I_C = f(V_{CE})$ $T_{vj} = 150^\circ\text{C}$

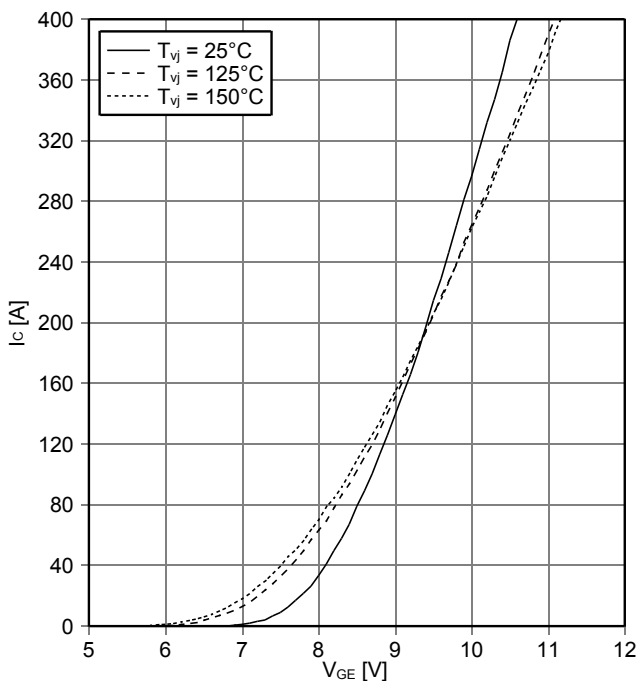


Fig.3 Transfer characteristic IGBT, Inverter (typical)
 $I_C = f(V_{GE})$ $V_{CE} = 20\text{ V}$

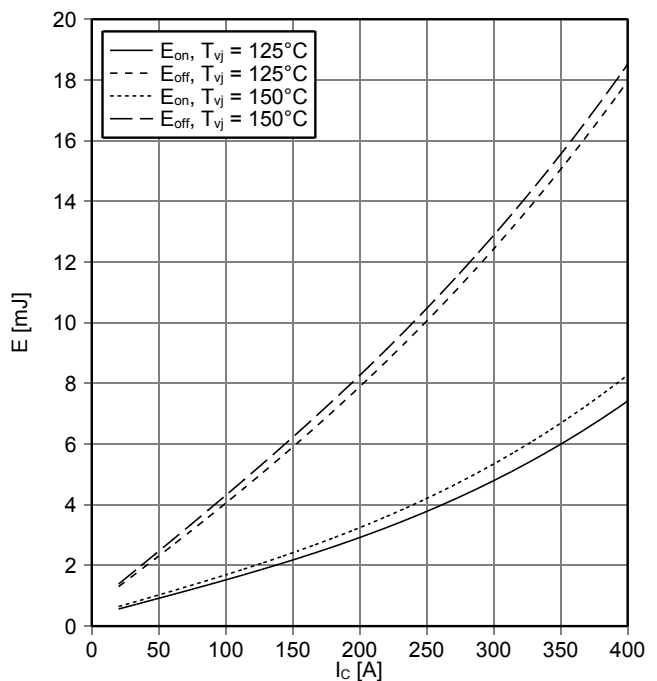


Fig.4 Switching losses IGBT, Inverter (typical)
 $E_{on} = f(I_C)$, $E_{off} = f(I_C)$, $V_{GE} = \pm 15\text{ V}$, $R_{Gon} = 3.9\ \Omega$,
 $R_{Goff} = 3.9\ \Omega$, $V_{CE} = 300\text{ V}$

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IGBT Modules

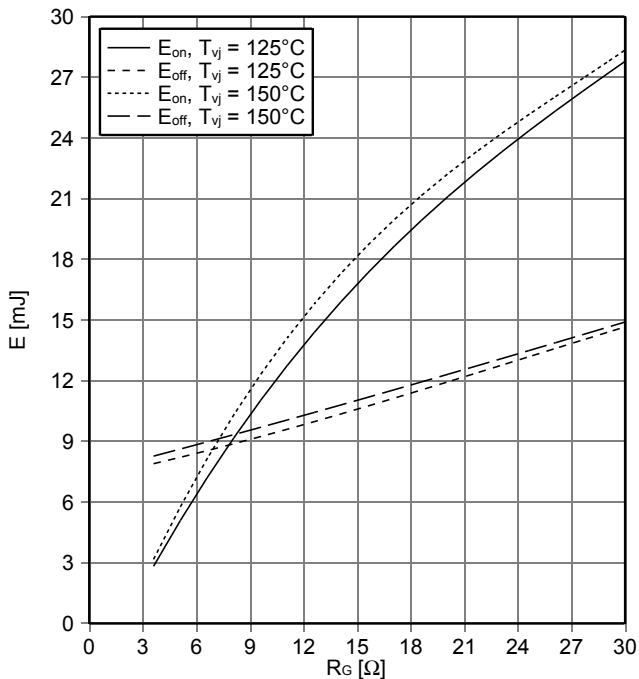


Fig.5 Switching losses IGBT, Inverter (typical)
 $E_{on} = f(R_g)$, $E_{off} = f(R_g)$, $V_{GE} = \pm 15\text{ V}$, $I_c = 200\text{ A}$, $V_{CE} = 300\text{ V}$

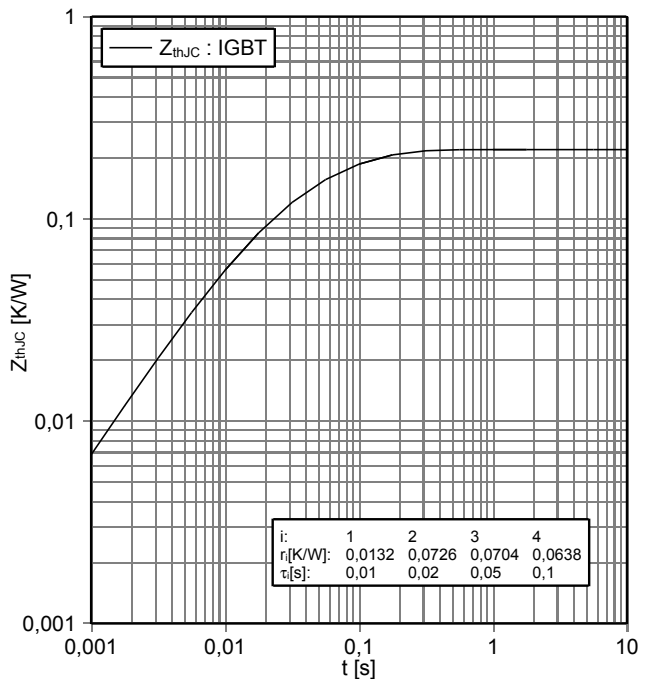


Fig.6 Transient thermal impedance IGBT, Inverter
 $Z_{thJC} = f(t)$

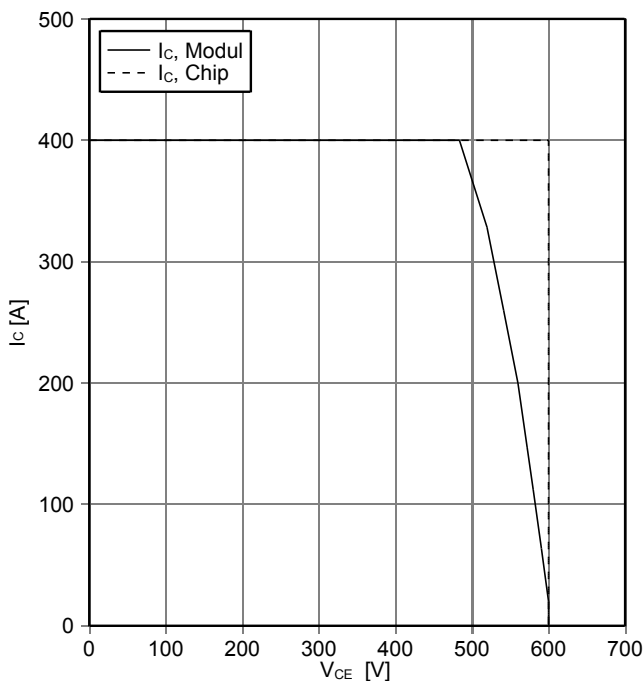


Fig.7 Reverse bias safe operating area IGBT, Inverter (RBSOA)
 $I_c = f(V_{CE})$, $V_{GE} = \pm 15\text{ V}$, $R_{Goff} = 3.9\ \Omega$, $T_{vj} = 150^\circ\text{C}$

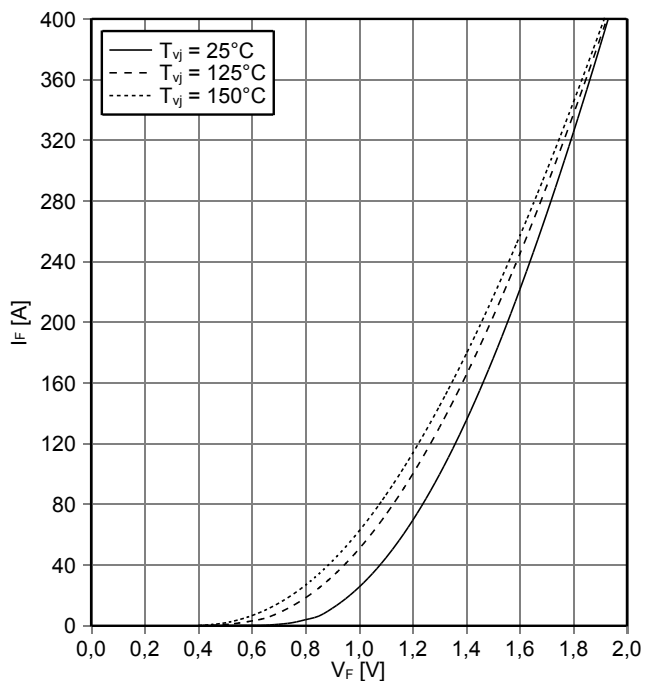


Fig.8 Forward characteristic of Diode, Inverter (typical)
 $I_F = f(V_F)$

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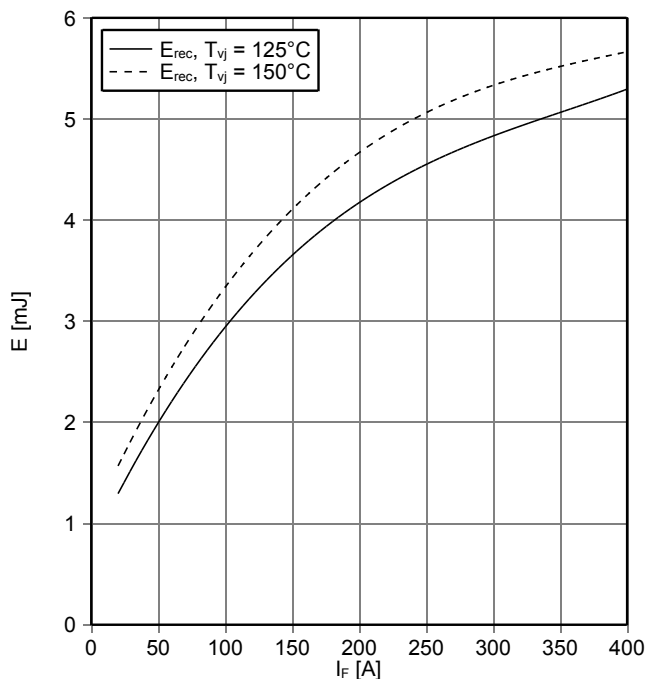


Fig.9 Switching losses Diode, Inverter (typical)
 $E_{rec} = f(I_F)$, $R_{Gon} = 3.9 \Omega$, $V_{CE} = 300 \text{ V}$

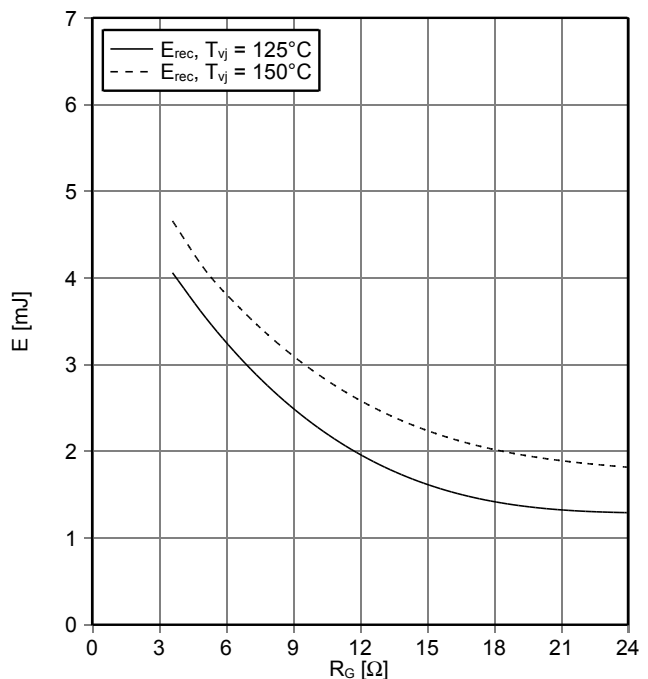


Fig.10 Switching losses Diode, Inverter (typical)
 $E_{rec} = f(R_G)$, $I_F = 200 \text{ A}$, $V_{CE} = 300 \text{ V}$

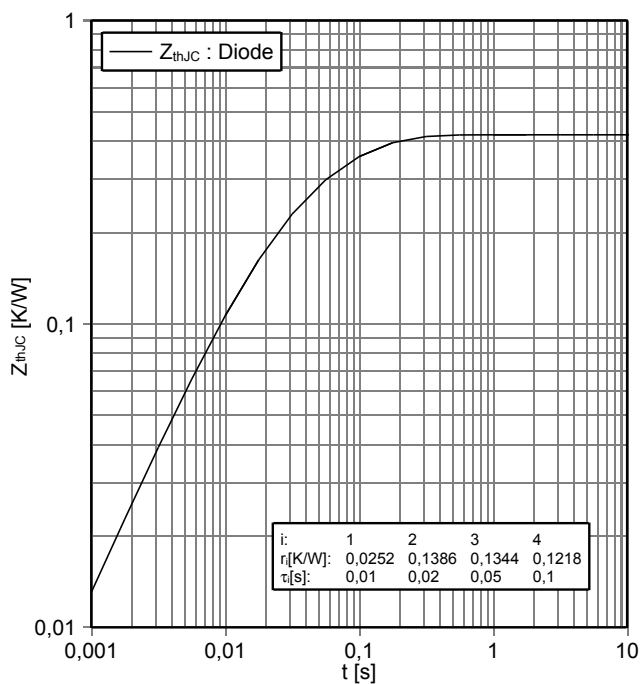


Fig.11 Transient thermal impedance Diode, Inverter
 $Z_{thJC} = f(t)$