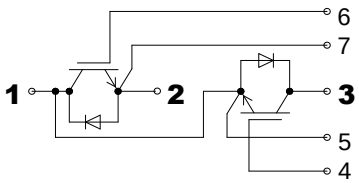
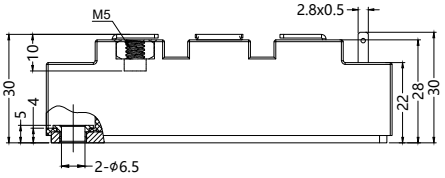
SGG195T60UC1

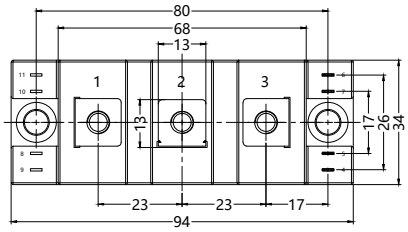
IGBT Modules

SGG195T60UC1
(Half Bridge)

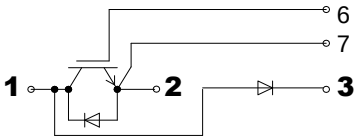


Dimensions in mm (1mm = 0.0394")

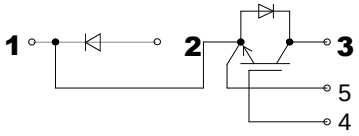




SGD195T60UC1
(Boost Chopper)



SDG195T60UC1
(Buck Chopper)



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT V_{CES}		600	V
I_C	T_C= 25(100)°C	390(195)	A
I_{CRM}	T_C= 25°C,t_P =1ms	390	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
InverseDiode I_F = -I_C	T_C=25(80)°C	390(195)	A
I_{FRM}	T_C=25°C,t_P=1ms	390	A
I_{FSM}	t_P10ms;sin180°;T_j=25°C	1450	A
V_{RRM}		600	V
Module $I_{t(RMS)}$	$T_{teminal}$=80°C	195	A
T_{stg}		-40~125	°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 parallelling
- MOS input, voltage controlled
- Soft swithcing diode Technology
- Package with copper baseplate
- Isolation voltage 4000 V

Application

- Inverter welding Machines
- UPS
- AC inverter Drives

Advantages

- spaceand weight savings
- reduced protectioncircuits

RoHS Compliant

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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		11.89		
C_{oes}	V_{GE}=0,V_{CE} =25V,f=1MHz		0.70		nF
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:		128		ns
t_r	V_{CC}=300V,I_C=195A,R_{Gon}=R_{Goff}=1Ω,		70		ns
$t_{d(off)}$	T_j=150°C V_{GE}=±15V		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_G =±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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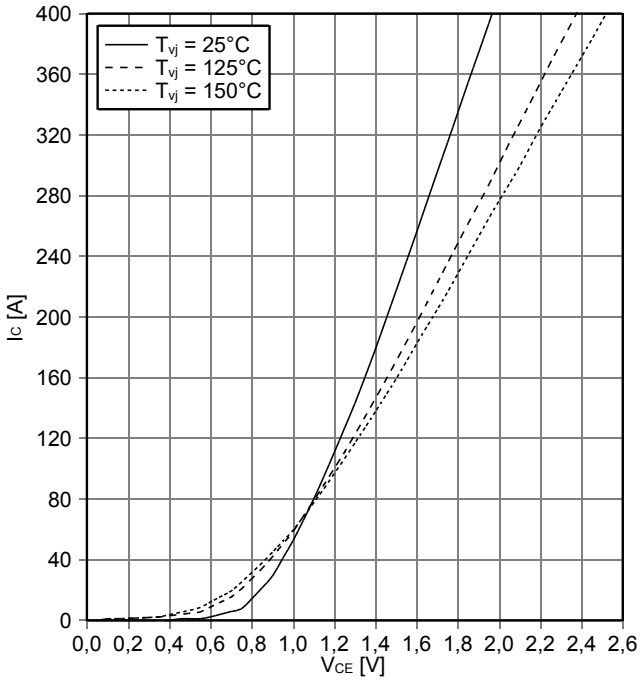

Fig.1 Output characteristic IGBT,Inverter(typical)
$I_C=f(V_{CE})$ V_{GE}=15V

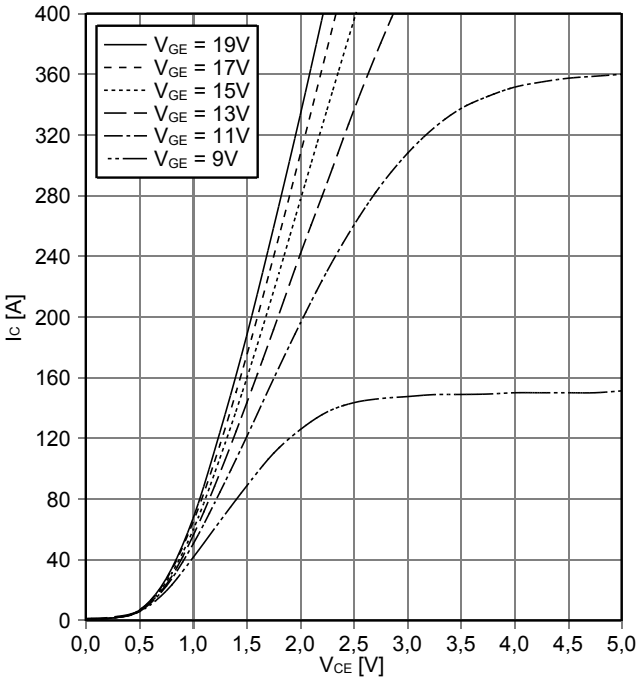

Fig.2 Output characteristic IGBT,Inverter (typical)
$I_C=f(V_{CE})$ T_{vj}=150°C

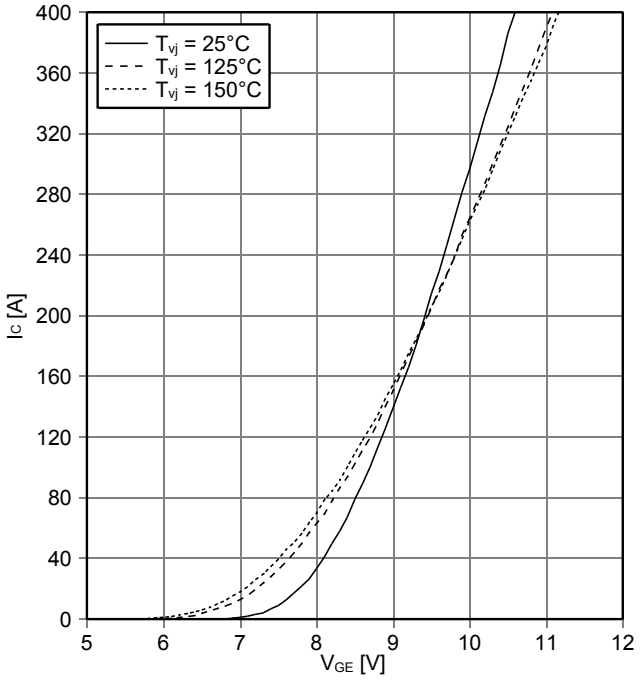

Fig.3 Transfer characteristic IGBT,Inverter(typical)
$I_C=f(V_{GE})$ V_{CE}=20 V

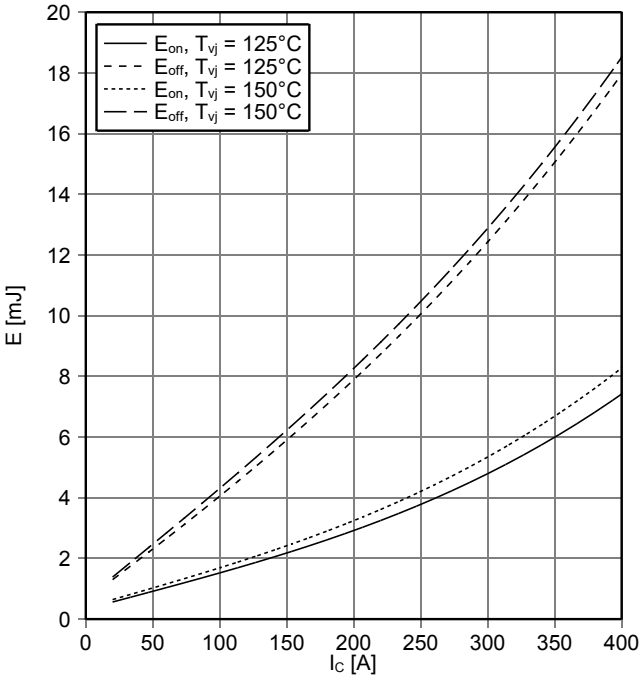

Fig.4 Switching losses IGBT,Inverter (typical)
$E_{on}=f(I_C)$,$E_{off}=f(I_C)$,V_{GE}=±15 V,

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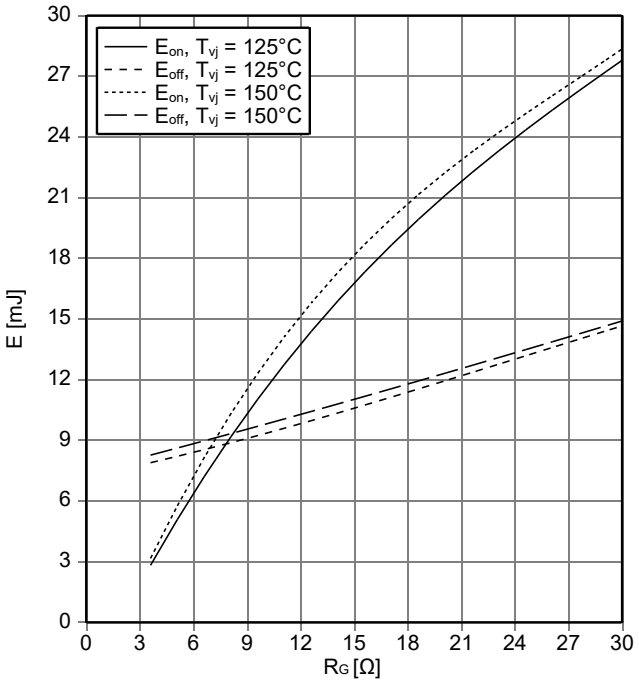

Fig.5 Switching losses IGBT,Inverter(typical)
$E_{on}=f(R_G),E_{off}=f(R_G),V_{GE}$±15V,$I_C$=200A,$V_{CE}$=300V

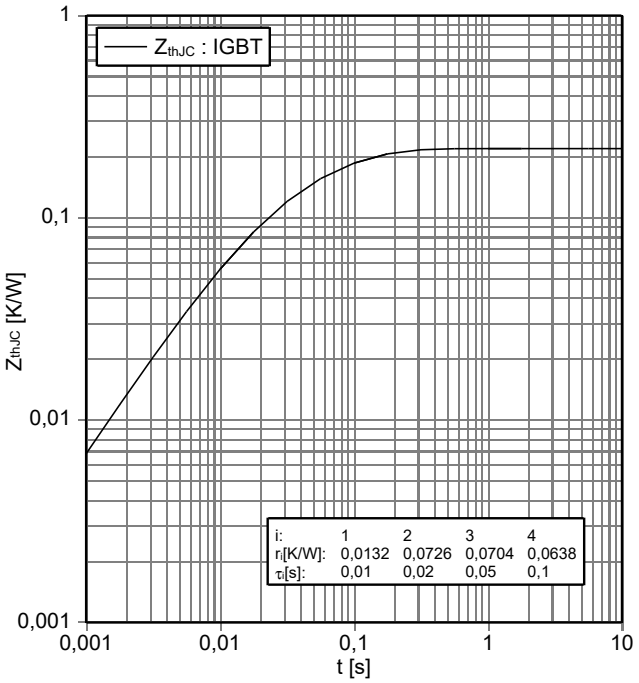

Fig.6 Transient thermal impedance IGBT,Inverter
$Z_{thJC}=f(t)$

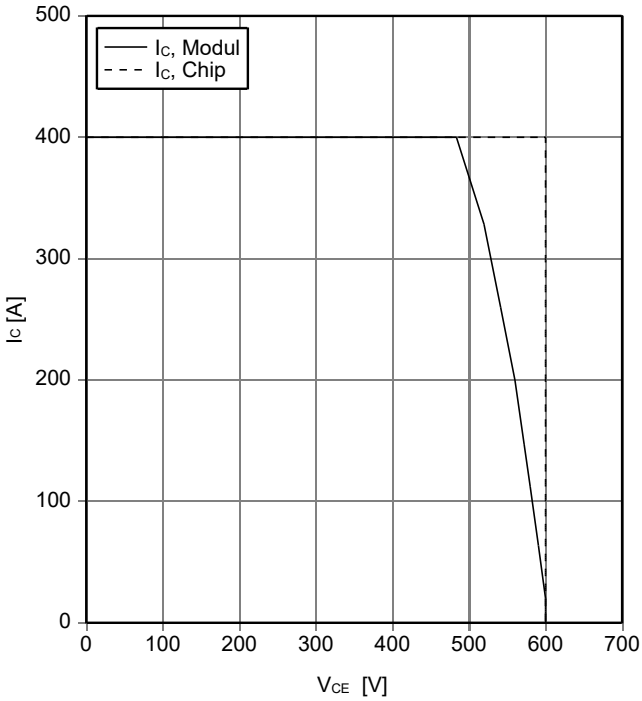

Fig.7 Reverse bias safe operating area IGBT, Inverter (RBSOA)$I_C=f(V_{CE}),V_{GE}$=±15V,R_{Goff}=3.9Ω,T_{vj}=150°C

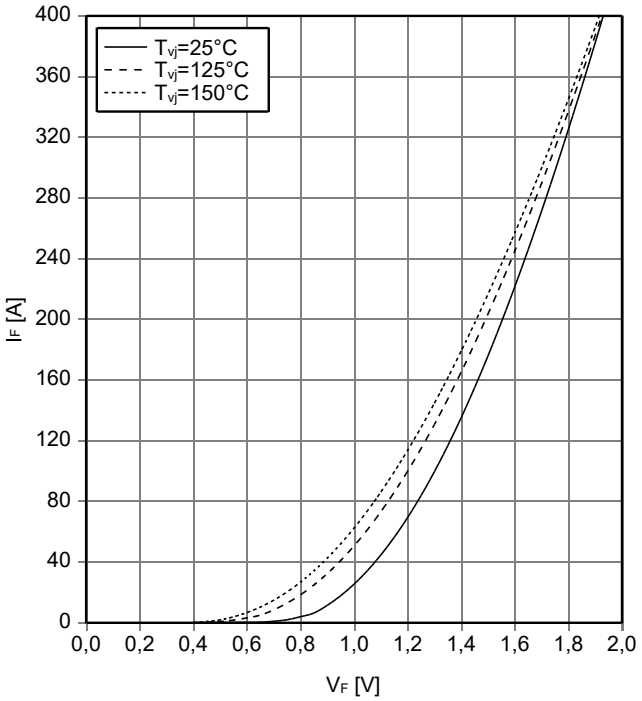

Fig.8 Forward characteristic of Diode,Inverter(typical)
$I_F=f(V_F)$

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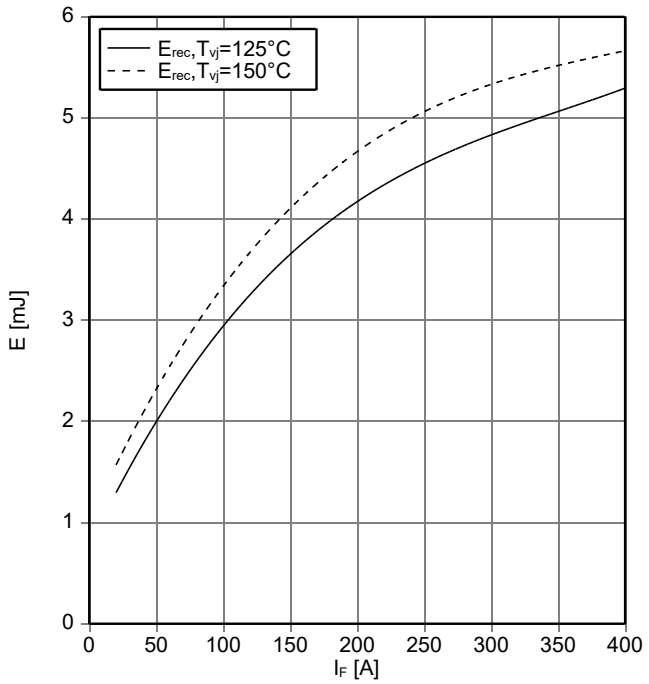

Fig.9 Switching losses Diode,Inverter(typical)
$E_{rec}=f(I_F),R_{Gon}=3.9\Omega,V_{CE}=300V$

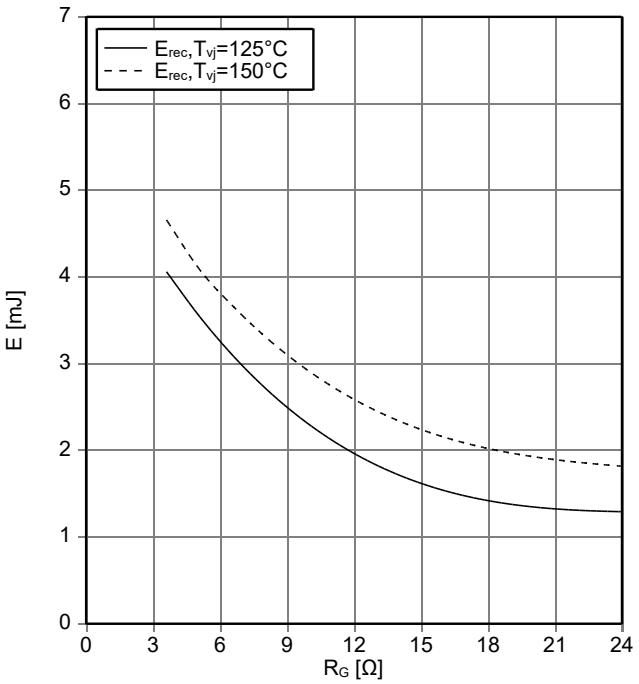

Fig.10 Switching losses Diode,Inverter(typical)
$E_{rec}=f(R_G),I_F=200A,V_{CE}=300V$

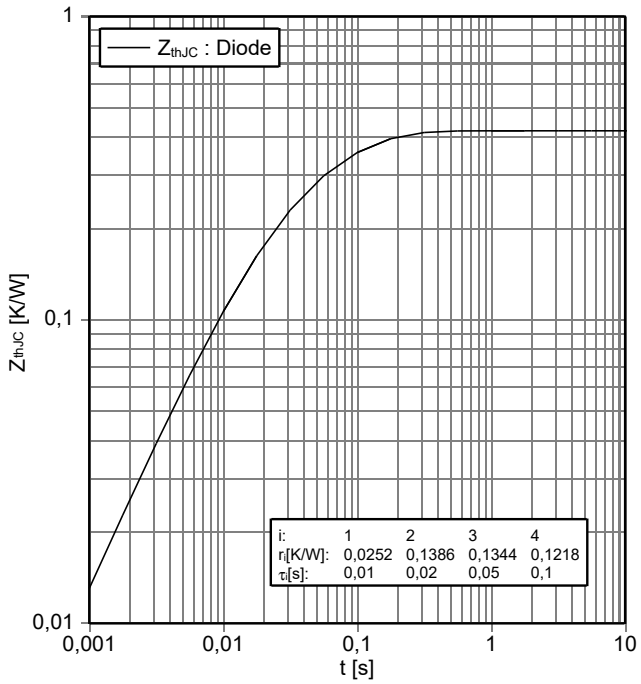

Fig.11 Transient thermal impedance Diode,Inverter
$Z_{thJC}=f(t)$

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