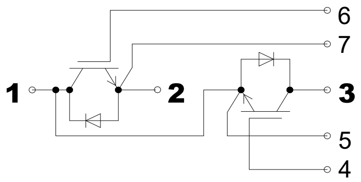
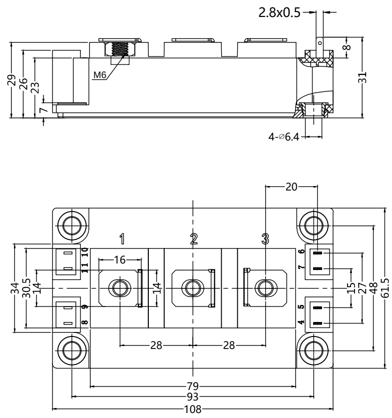
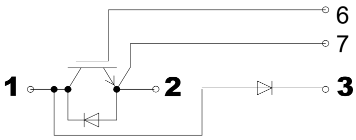
SGG300T65UC2

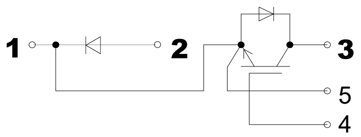
IGBT Modules



Dimensions in mm (1mm = 0.0394")







T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		650	V
I_C	T_C=25(100)°C	600(300)	A
I_{CRM}	T_C=25°C,t_P=1ms	900	A
V_{GES}		±20	V
T_{Vj}		-40...+175	°C
InverseDiode			
I_F=-I_C	T_C=25(80)°C	600(300)	A
I_{FRM}	T_C=25°C,t_P =1ms	900	A
I_{FSM}	t_P=10ms;sin180°;T_j=25°C	900	A
V_{RRM}		650	V
Module			
$I_{t(RMS)}$	$T_{teminal}$ =80°C	300	A
T_{stg}		-40~125	°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 parallelling
- MOS input, voltage controlled
- Soft switching FWD diode Technology
- Package with copper base plate
- Isolation voltage 4000 V

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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SGG300T65UC2

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	4.5	5.0	6.0	V
I_{CES}	V_{GE}=0;V_{CE}=V_{CES};T_j=25°C			0.05	mA
$V_{CE(TO)}$	T_j=25°C		0.9		V
r_{CE}	V_{GE}=15V,T_j=25(150)°C		1.8(2.7)		mΩ
$V_{CE(sat)}$	I_C=300A;V_{GE}=15V;chip level		1.65	2.10	V
C_{ies} C_{oes} C_{res}	under following conditions V_{GE}=0,V_{CE}=25V,f=1MHz		18 0.80 0.40		nF
L_{CE}				30	nH
$R_{CC'+EE'}$	res.,terminal-chip T_C=25(125)°C		0.65(1.09)		mΩ
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	under following conditions: V_{CC}=300V,I_C=300A R_{Gon}=R_{Goff}=1Ω,T_j=150°C V_{GE}=±15V		660 79 105 60		ns ns ns ns
E_{on}/E_{off}/E_{ts}			3.6/8.4/6.4		mJ
Inverse Diode	under following conditions:				
V_F = V_{EC}	I_F=300A;V_{GE}=0V;T_j=25°C		1.50		V
$V_{(FO)}$	T_j=25(125)°C		1.2(0.90)	1.4(1.1)	V
r_F	T_j=25(125)°C		17(24)	21(27)	mΩ
I_{RM} Q_{rr} E_{rr}	I_F=300A;T_j=25°C di/dt=100A/us V_{GE} =±15V		12.6 0.45 12.8		A uC mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.41	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.89	K/W
$R_{th(c-s)}$	per module			0.28	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

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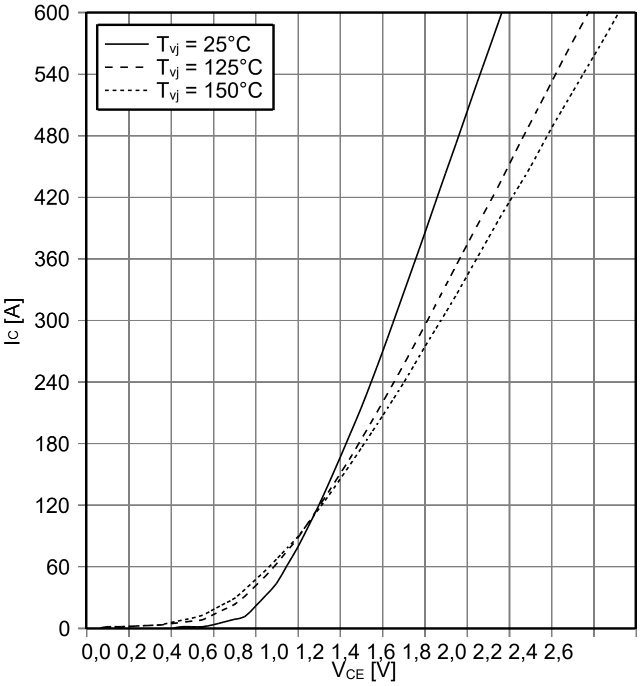

Fig.1 Ou tput characteristic IGBT,Inverter(typical)
I_C=f(V_{CE}) V_{GE}=15 V

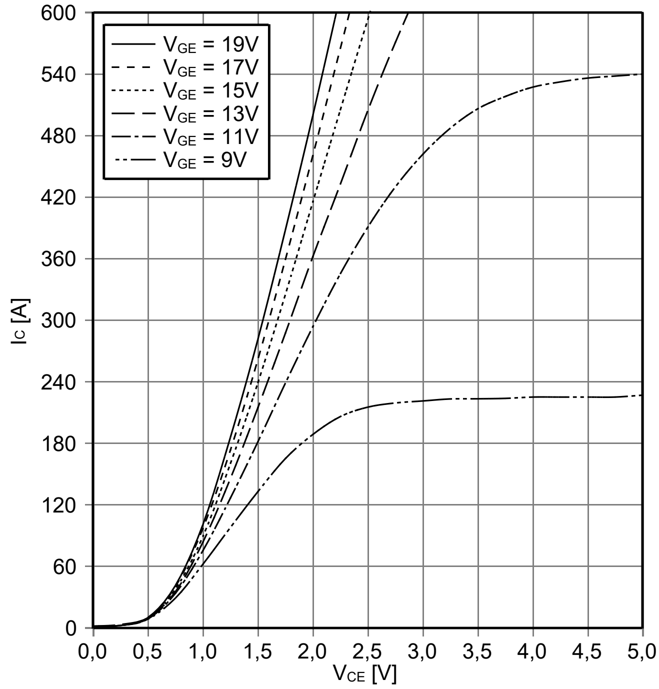

Fig.2 Ou tput characteristic IGBT,Inverter (typical)
I_C=f(V_{CE}) T_{vj}=150°C

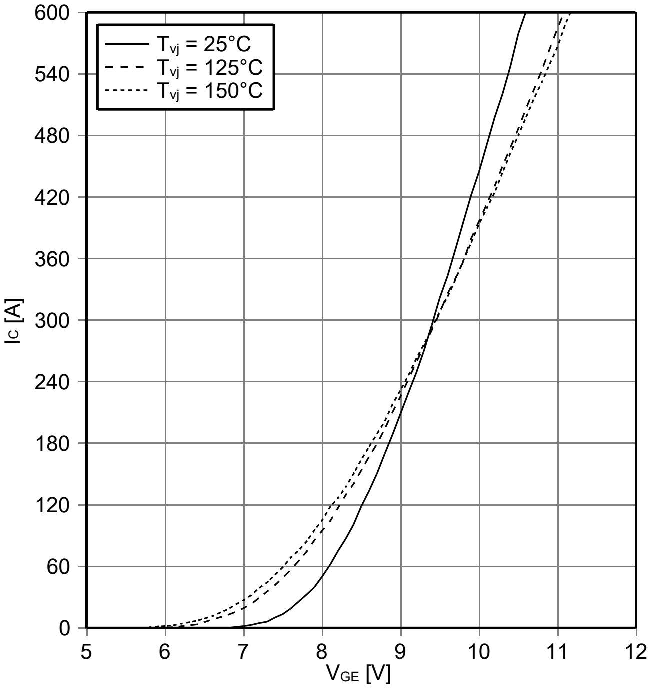

Fig.3 Transfer characteristic IGBT,Inverter(typical)
I_C=f (V_{GE}) V_{CE}=20V

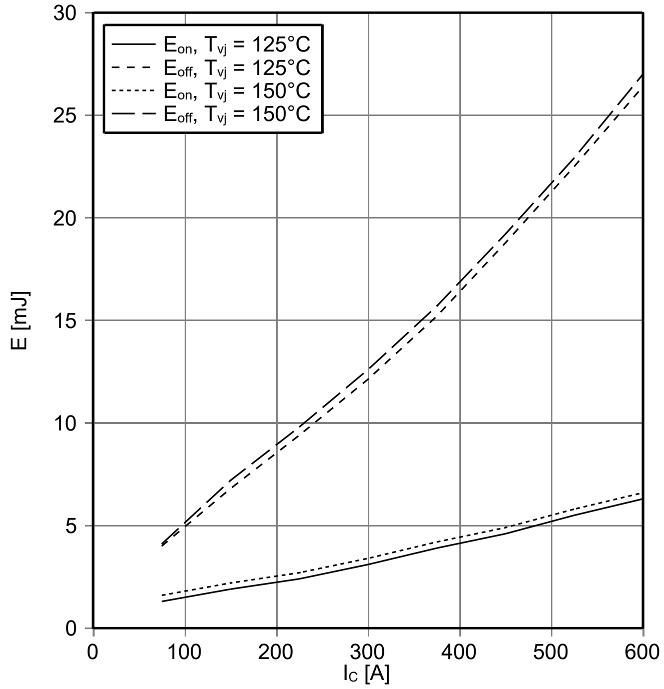

Fig.4 Switching losses IGBT,Inverter (typical)
E_{on}=f(I_C),E_{off}=f(I_C)
V_{GE}=±15V,R_{Gon}=2.4Ω,R_{Goff}=2.4Ω,V_{CE}=300V

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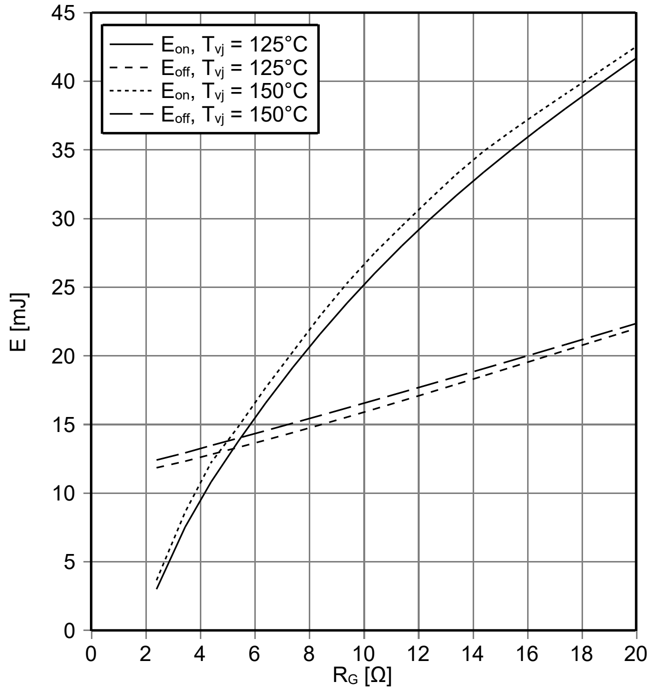

Fig.5 Switching losses IGBT,Inverter (typical)
E_{on}=f(R_G),Eoff=f(R_G)
V_{GE}=±15V,I_C=300A,VC_E=300V

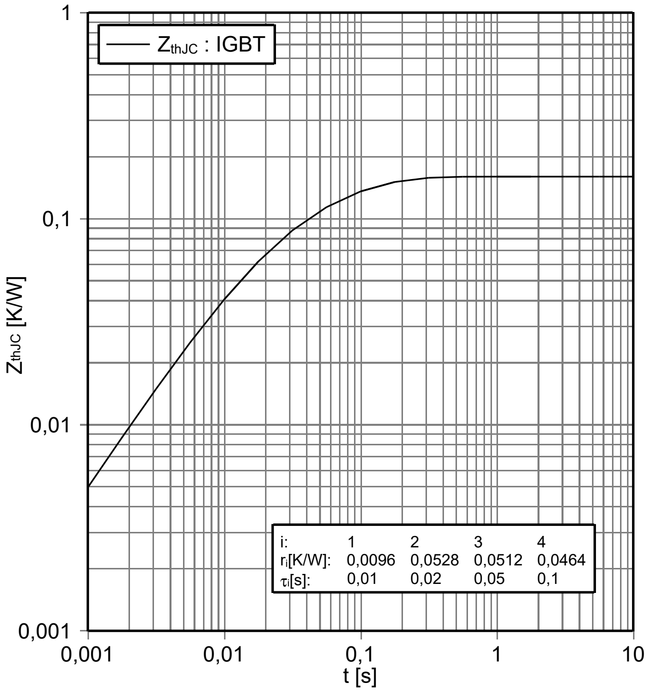

Fig.6 Transient thermal impedance IGBT,Inverter
Z_{thJC}=f(t)

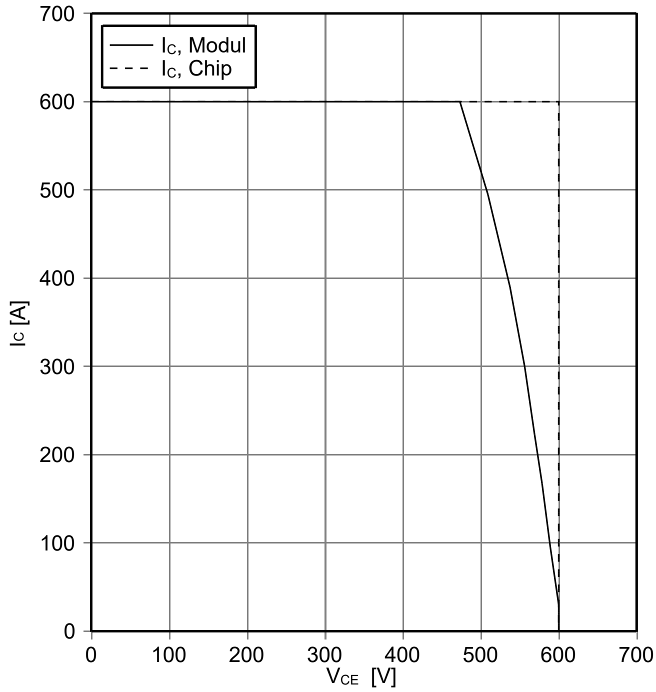

Fig.7 Reverse bias safe operating area IGBT,Inverter(RBSOA)
I_C=f(V_{CE}) V_{GE}=±15V,R_{Goff}=2.4Ω,T_{vj}=150°C

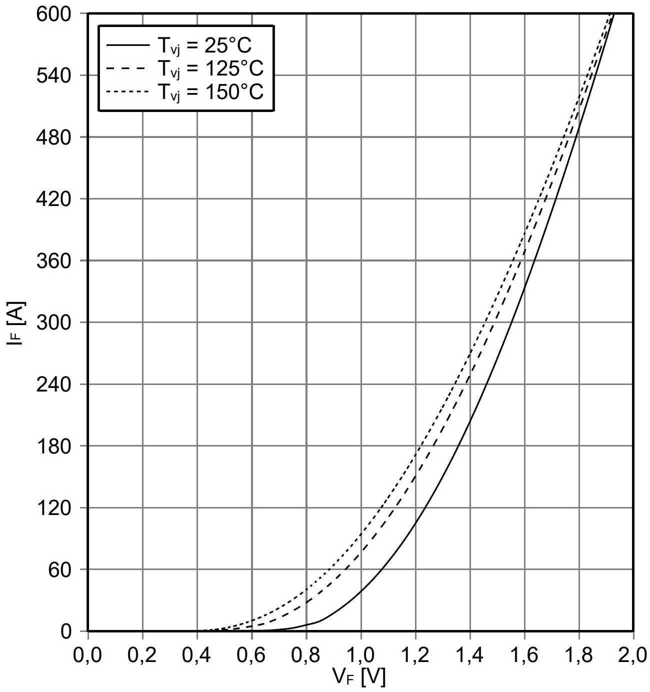

Fig.8 Forward characteristic of Diode,Inverter (typical) I_F=f(V_F)

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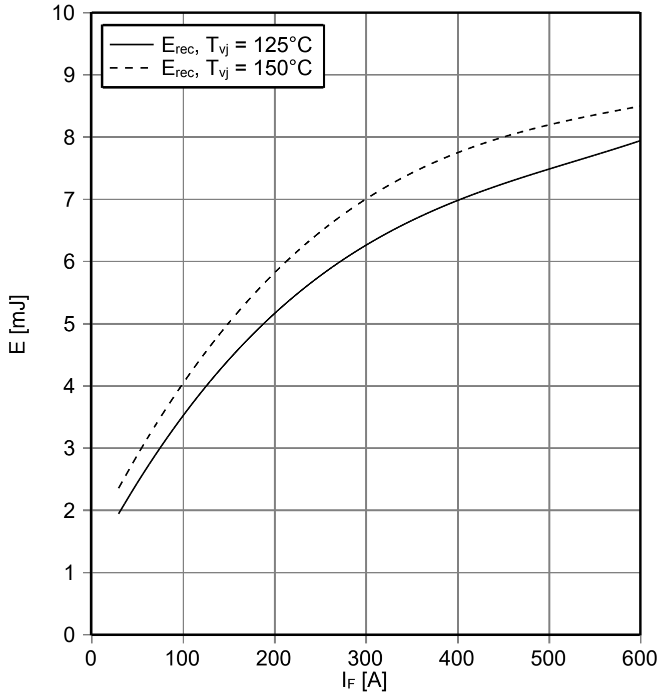


Fig.9 Switching losses Diode,Inverter(typical)
E_{rec}=f(I_F) R_{Gon}=2.4Ω,V_{CE}=300V

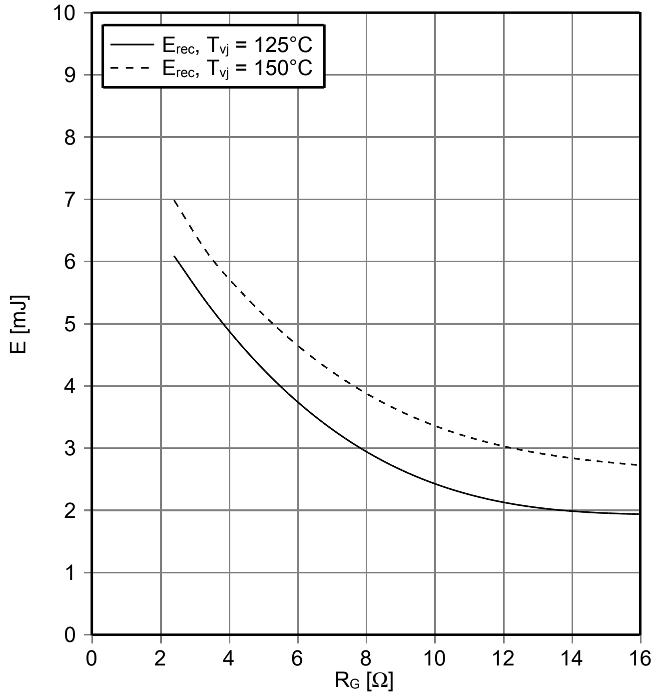
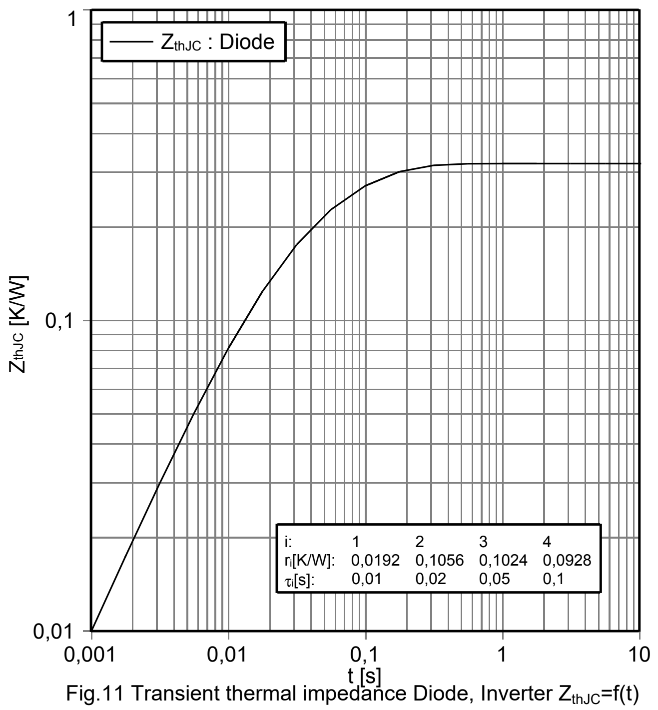


Fig.10 Switching losses Diode,Inverter (typical)
E_{rec}=f(R_G) I_F=300A,V_{CE}=300V



i:	1	2	3	4
r_i[K/W]:	0,0192	0,1056	0,1024	0,0928
τ_i[s]:	0,01	0,02	0,05	0,1

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

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