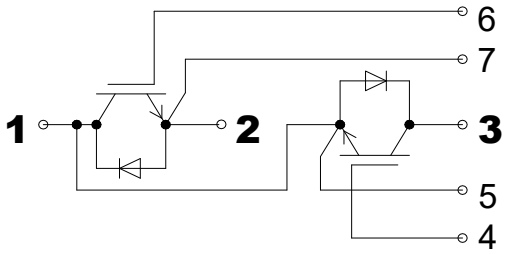
SGG100NF120UC1

IGBT Modules

SGG100NF120UC1



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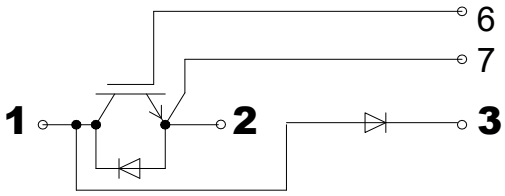

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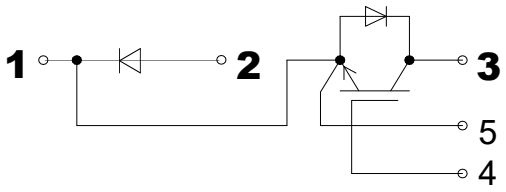

Symbol	Test Condition	Value	Unit
IGBT			
V_{CES}		1200	V
I_C	T_C = 100°C per chip	100	A
V_{GES}		±20	V
T_{vj} (T_{stg})		-40 ~ +150(125)	°C
P_{tot}		400	W
INVERSE DIODE			
I_F	T_C=25°C per chip	100	A
I_{FM}		200	A
V_{RRM}		1200	V
I^2t	T_j=125°C, t=10ms, V_R=0V	4000	A^2s

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Symbol	Test Conditions	Min	Typ	Max	Unit
IGBT	**Tc = 25°C unless otherwise specified**				
$V_{GE(th)}$	VGE=VCE, IC = 1mA	4.5		5.7	V
I_{CES}	VGE = 0; VCE=VCES; Tj=25(125)°C			1	mA
$V_{CE(TO)}$	Tj=25(125)°C		1.4(1.6)	1.6(1.8)	V
r_{CE}	VGE=15V		11(15)	14(19)	mΩ
$V_{CE(sat)}$	IC=100A; VGE=15V; chip level		2.3	2.5	V
C_{ies}	VGE=0V, VCE=25V, f=1MHz		7.2		nF
C_{oes}			1.10		
C_{res}			0.63		
LCE				30	nH
RCC'+EE'	Termial to Case， Tc=25°C		0.35		mΩ
$t_{d(on)}$	Vcc = 600V, IC = 100A RGON = RGOFF = 10Ω Tj=125°C VGE=±15V		25		ns
t_r			50		ns
$t_{d(off)}$			290		ns
t_f			90		ns
E_{on}/E_{off}			4.50/2.30		mJ
INVERSE DIODE	**Tc = 25°C unless otherwise specified**				
VF	IF =100A; VGE=0V; Tj = 25°C		1.9	2.2	V
Qrr	IF=50A; VR=300V; Tj=25°C di/dt = 600A/us, VGE=-15V		8.5		μC
IRRM			75		A
Erec			2.30		mJ
THERMAL CHARACTERISTICS					
Rth(j-c)	per IGBT			0.31	K/W
Rth(j-c)D	per FRD			0.45	K/W
Mechanical Data					
Ms		2.5		4	Nm
Weight			158		g

Features

- Planar Gate Field Stop Technology IGBT
- Fast Recovery Free Wheeling Diode
- Low Switching Losses
- Vce(sat) with positive temperature coefficient
- Fast Switching and short tail current
- Switched mode power supplies at f_{sw}>20KHz
- Resonant inverters up to 100KHz
- Electronic Welders at f_{sw}>20KHz

Application

- Welding inverters
- Inductive Heating

Advantages

- Space and weight savings
- Reduced protection circuits

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Fig 1. output characteristic IGBT,
$I_C=f(V_{CE})$,VGE=15V

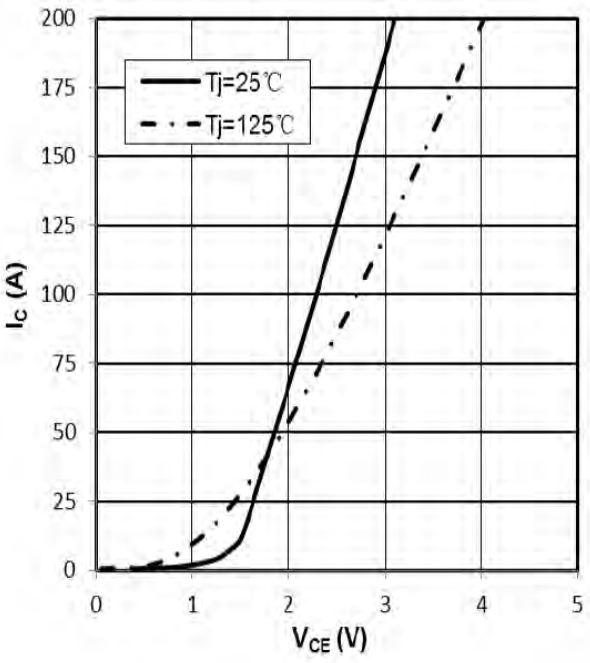

Fig 2. output characteristic IGBT,
$I_C=f(V_{CE})$,T_j=125℃

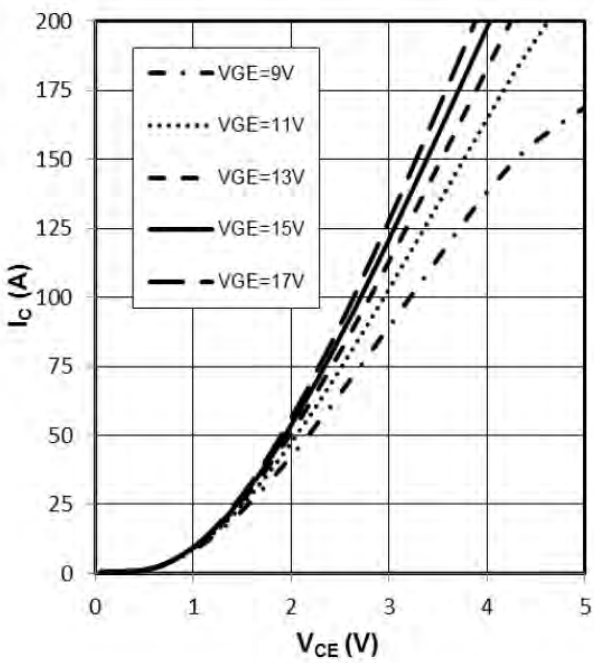

Fig 3. transfer characteristic IGBT,
$I_C=f(V_{GE})$,V_{CE}=20V

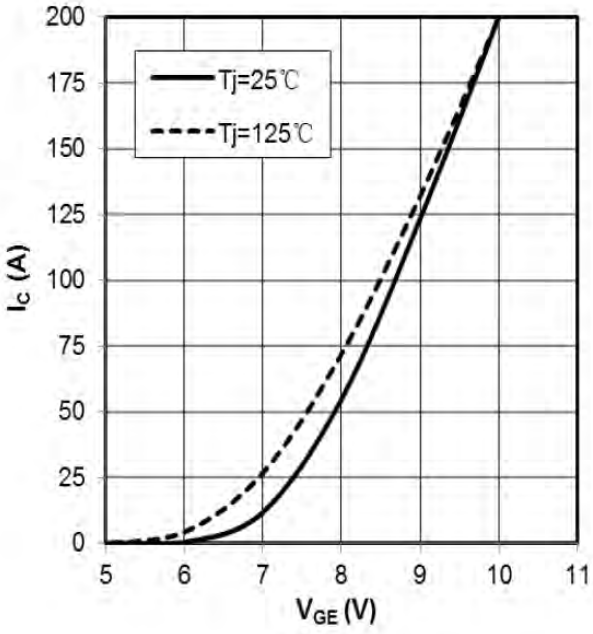

Fig 4. switching losses IGBT, $E_{on}=f(Ic)$,$E_{off}=f(I_c)$,
V_{GE}=±15V,R_{Gon}=5.6Ω,R_{Goff}=5.6Ω,V_{CE}=600V

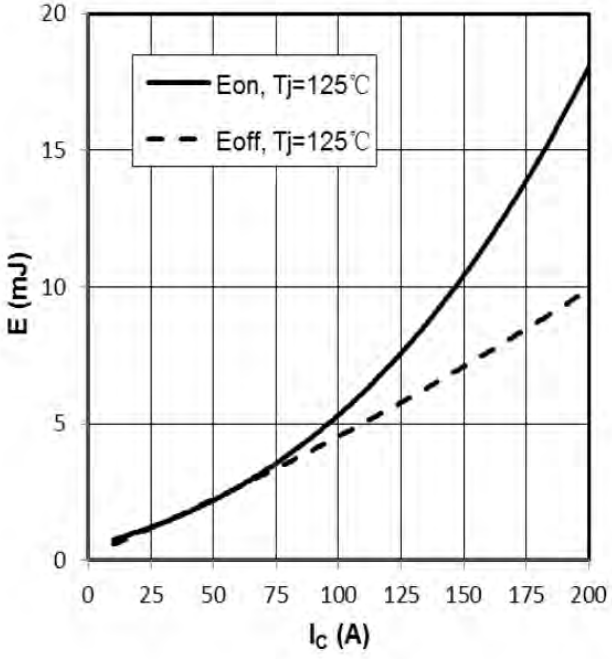

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Fig 5. switching losses IGBT,
$E_{on}=f(R_G)$,$E_{off}=f(R_G)$, $V_{GE}=\pm15V$,$I_C=100A$,$V_{CE}=600V$

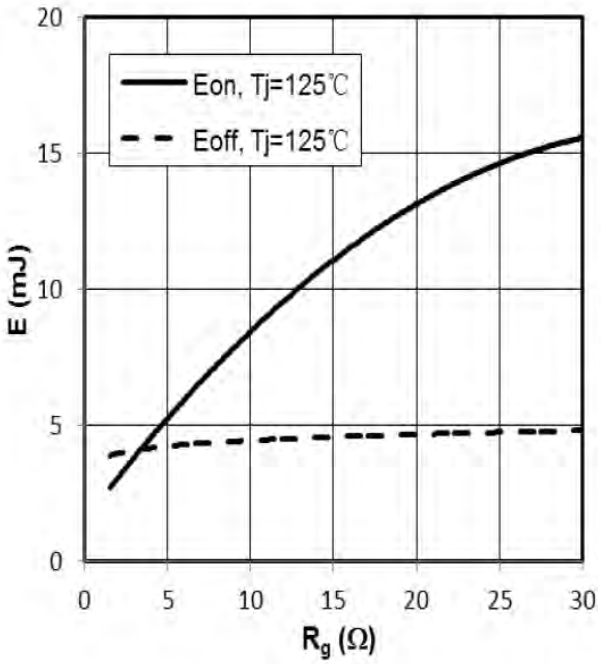


Fig 6. transient thermal impedance IGBT , Zthjc=f(t)

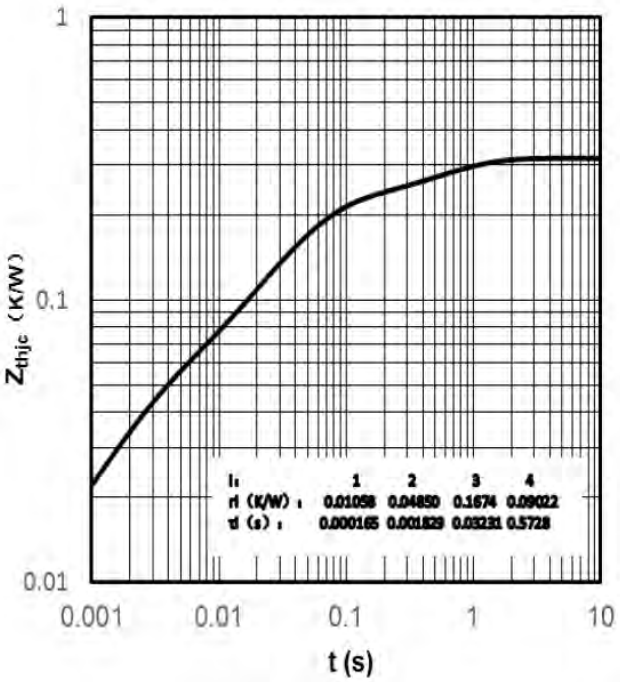


Fig 7. reverse bias safe operating area IGBT,
$I_C=f(V_{CE})$,$V_{GE}=\pm15V$,$R_{Goff}=5.6\Omega$，Tvj=125℃

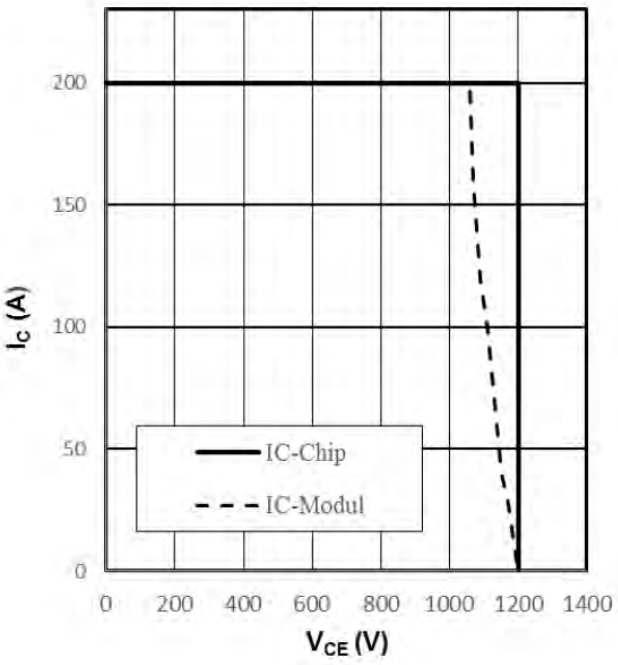
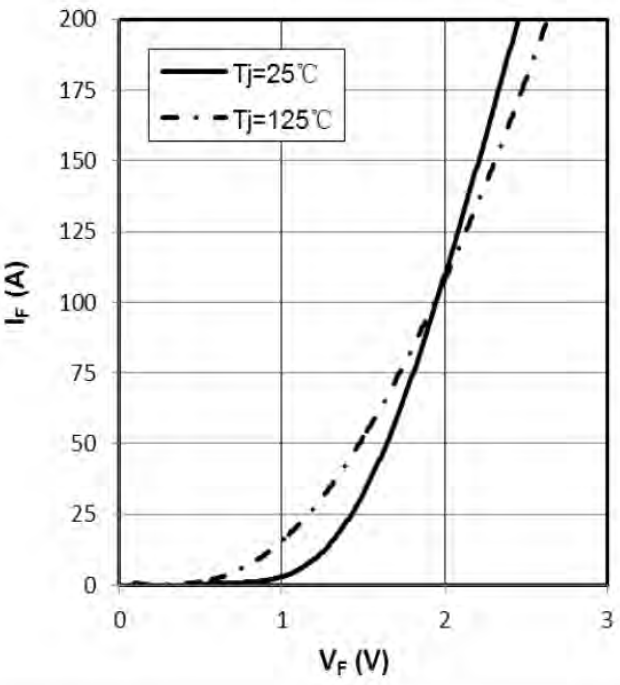


Fig 8. forward characteristic of Diode， $I_F=f(V_F)$



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Fi g 9. switching losses Diode,
$E_{rr}=f(I_F),,R_{Gon}=7.5\Omega,V_{CE}=600V$

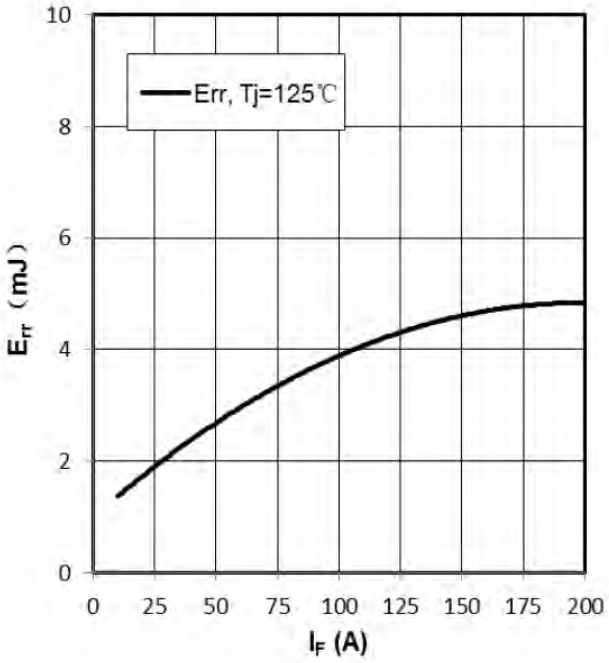
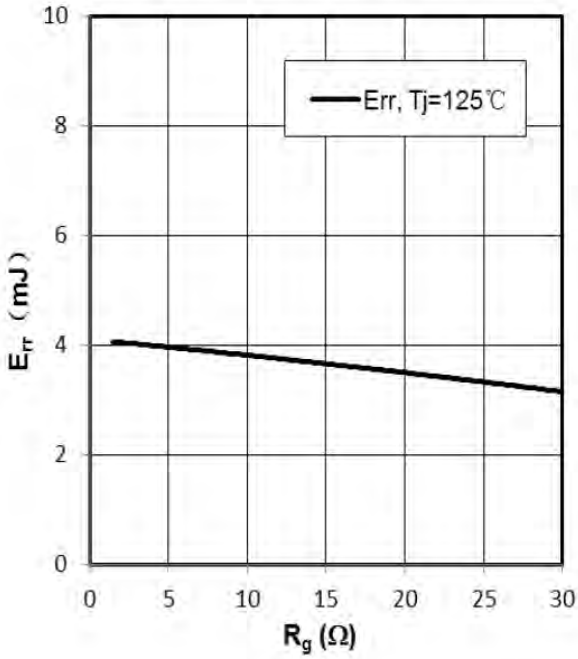


Fig 10. switching losses Diode,
$E_{rr}=f(R_G),I_F=100A,V_{CE}=600V$



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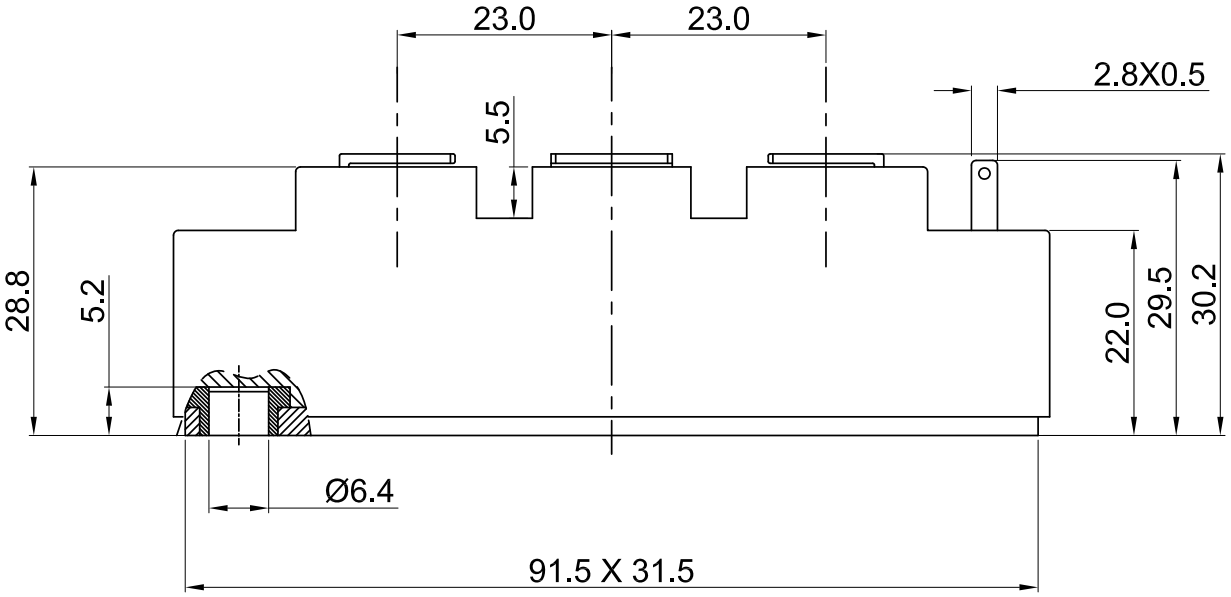

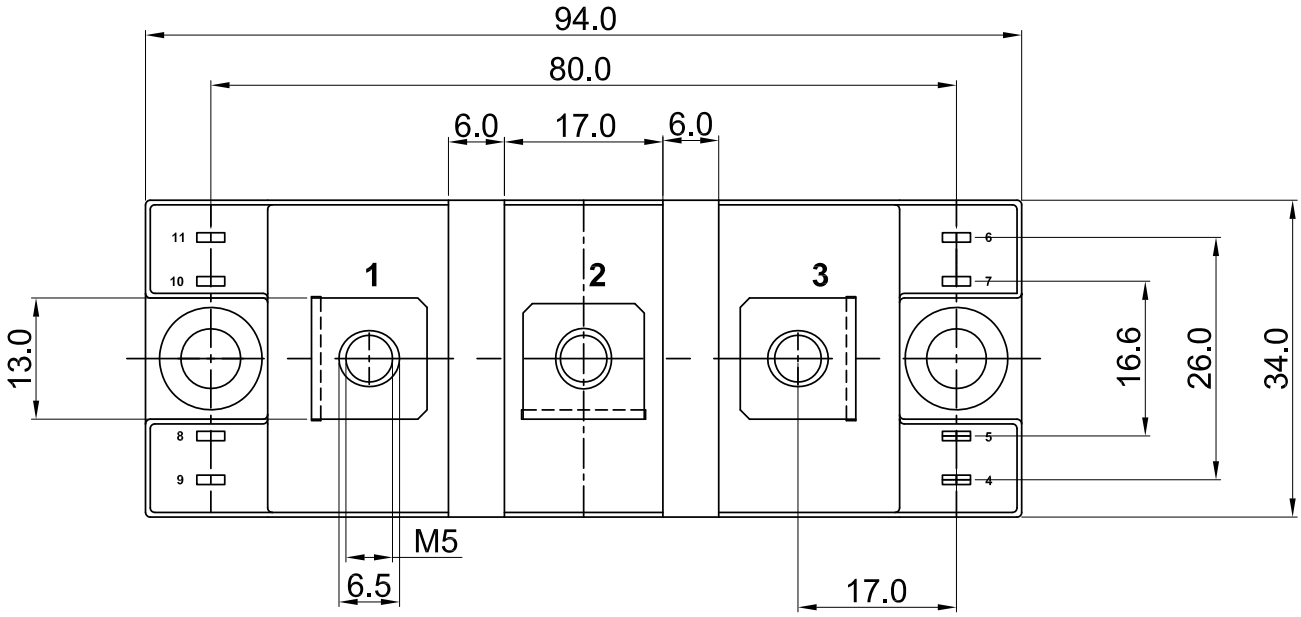

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