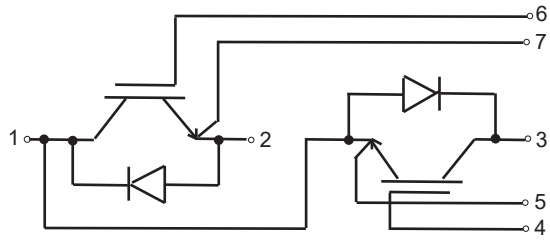
CMG150N120

1200V 150A IGBT-Module

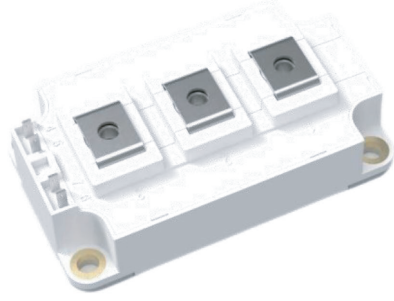
FEATURES

- V_{CES} = 1200V, $I_{C\ nom}$ = 150A .
- Low $V_{CE(sat)}$.
- Low Switching Loss .
- Ultrasonic Weldingof Power Terminals .
- Standard Housing .



APPLICATIONS

- Motor Drives .
- Wind Turbines.
- High Power Converters .



IGBT,Inverter
Maximum Rated Values

Parameter	Symbol	Value	Units
Collector-Emitter Voltage	V_{CES}	1200	V
Gate-Emitter Voltage	V_{GES}	±20	V
Collector Current@ T_C = 100°C,T_{jmax} =175°C	$I_{C\ nom}$	150	A
Repetitive peak collector current,t_p=1ms	I_{CRM}	300	A

Diode,Inverter
Maximum Rated Values

Parameter	Symbol	Value	Units
Repetitive peak reverse voltage,T_j=25°C	V_{RRM}	1200	V
Continuous DC forward current,t_p=1ms	I_F	150	A
Repetitive peak forward current,t_p=1ms	I_{FRM}	300	A

IGBT,Inverter

Electrical Characteristics T_j = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	V_{GE}=0V, I_{CE}=250uA	1200			V
Collector-Emitter cut-off Current	I_{CES}	V_{GE}=0V, V_{CE}=1200V			5	mA
Gate Emitter Leakage Current	I_{GES}	V_{GE}=20V, V_{CE}=0V			500	nA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V_{GE} = 15V, I_C = 150A T_j=25°C		1.75	2.2	V
Gate Threshold Voltage	$V_{GE(th)}$	I_C=250uA,V_{CE}=V_{GE}	5.0	5.5	6.8	V
Internal gate resistor	R_G			4.9		Ω
Thermal resistance, junction to case	$R_{\theta JC}$	Per IGBT			0.17	K/W
Temperature under switching	T_{jop}		-40		150	°C
Dynamic Characteristics						
Input Capacitance	C_{ies}	V_{CE} = 25V, V_{GE} = 0V, f = 1.0 MHz		18		nF
Reverse Transfer Capacitance	C_{res}			0.12		nF
Total Gate Charge	Q_g	V_{GE}= -15,,,+15V		0.58		uC
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		132 142 144		ns
Rise Time	t_r	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		55 61 60		ns
Turn-Off Delay Time	$t_{d(off)}$	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		228 254 264		ns
Fall Time	t_f	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		190 334 366		ns
Turn-On Switching Loss	E_{on}	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		3.96 5.42 5.8		mJ
Turn-Off Switching Loss	E_{off}	V_{CE} = 600V, R_g = 2Ω, T_J=25°C V_{GE} =±15V,I_C = 150A T_J=125°C Inductive Load T_J=150°C		8.9 14.2 15.7		mJ

Diode,Inverter

Electrical Characteristics T_j = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Thermal resistance, junction to case	$R_{\theta JC}$	Per diode			0.28	K/W
Temperature under switching	T_{jop}		-40		150	°C
Forward voltage	V_F	V_{GE} = 0V, I_F = 150A T_j=25°C		1.8	3	V
Peak reverse recovery current	I_{RM}	V_{GE} =-15V,I_F = 150A, V_R = 600V, T_J=25°C		150		A
		T_J=125°C		180		
		T_J=150°C		185		
Recovered charge	Q_r	V_{GE} =-15V,I_F = 150A, V_R = 600V, T_J=25°C		12.7		uC
		T_J=125°C		21.4		
		T_J=150°C		23		
Reverse recovery energy	E_{rec}	V_{GE} =-15V,I_F = 150A, V_R = 600V, T_J=25°C		5.5		mJ
		T_J=125°C		10.1		
		T_J=150°C		11		

Module

Parameter	Symbol	Value	Units
Isolation test voltage	V_{ISOL}	2500	V
Comperative tracking index	CTI	>400	

CHARACTERISTICS

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Stray inductance module	L_{SCE}			20		nH
Module lead resistance	$R_{CC'+EE}$	T_C=25°C ,per switch		0.7		mΩ
Storage temperature	T_{stg}		-40		125	°C
Weight	G			317		g
Mounting torque for module mounting:M5	M5		3		6	N.m
Terminal connection torque:M6	M6		2.5		5	N.m

TYPICAL PERFORMANCE CHARACTERISTICS

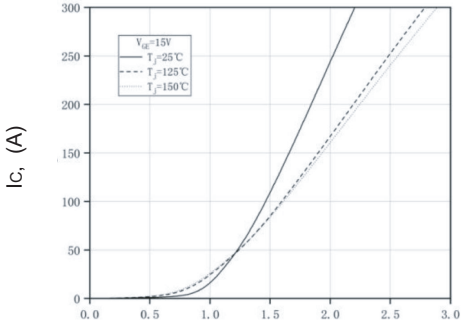


Figure 1.output characteristic IGBT, Inverter(typical)

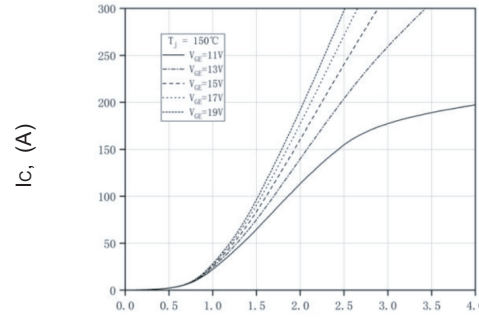


Figure 2.output characteristic IGBT, Inverter(typical)

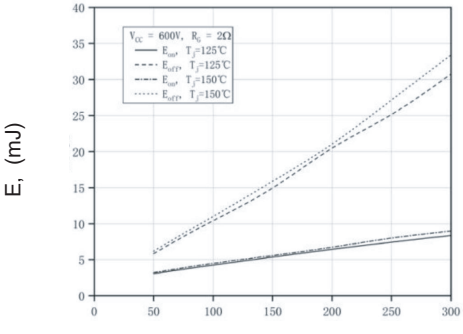


Figure 3.switching losses IGBT, Inverter(typical)

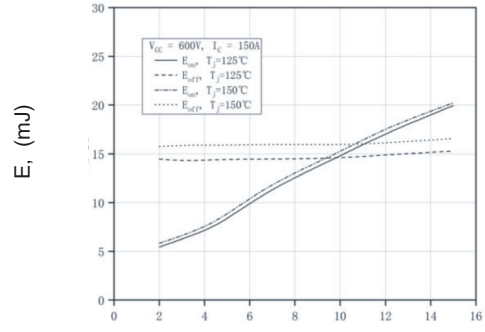


Figure 4.switching losses IGBT, Inverter(typical)

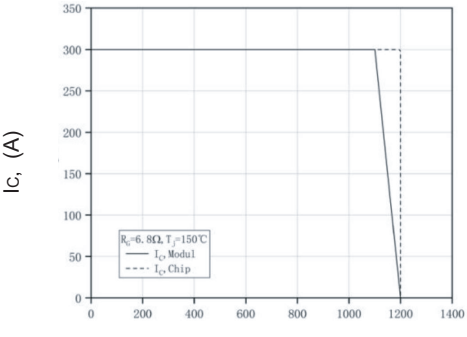


Figure 5.reverse bias safe operating area IGBT, Inverter(RBSOA)

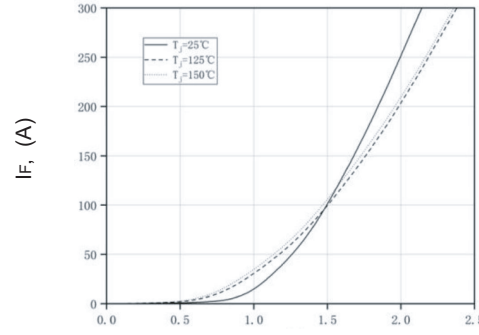


Figure 6.forward characteristic of Diode, Inverter(typical)

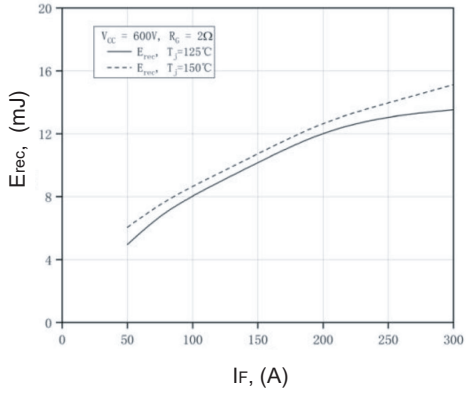


Figure 7.switching losses Diode, Inverter(typical)

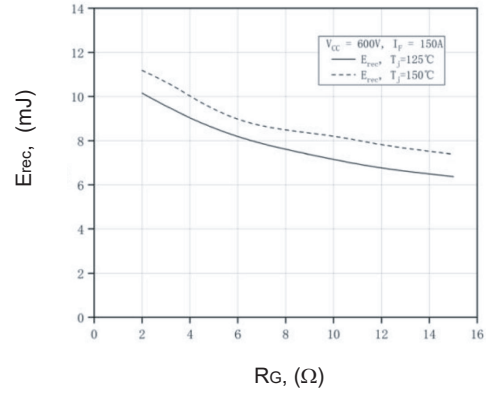


Figure 8.switching losses Diode, Inverter(typical)

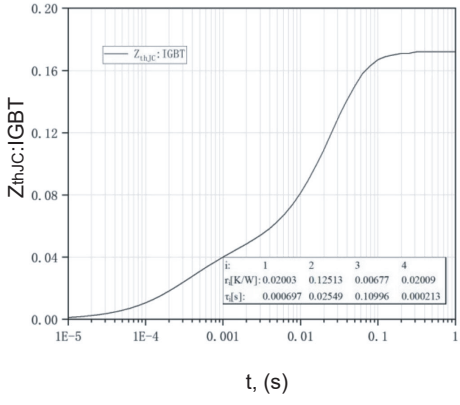


Figure 9.transient thermal impedance IGBT, Inverter

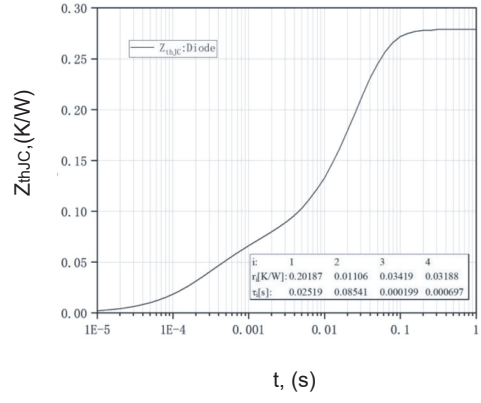
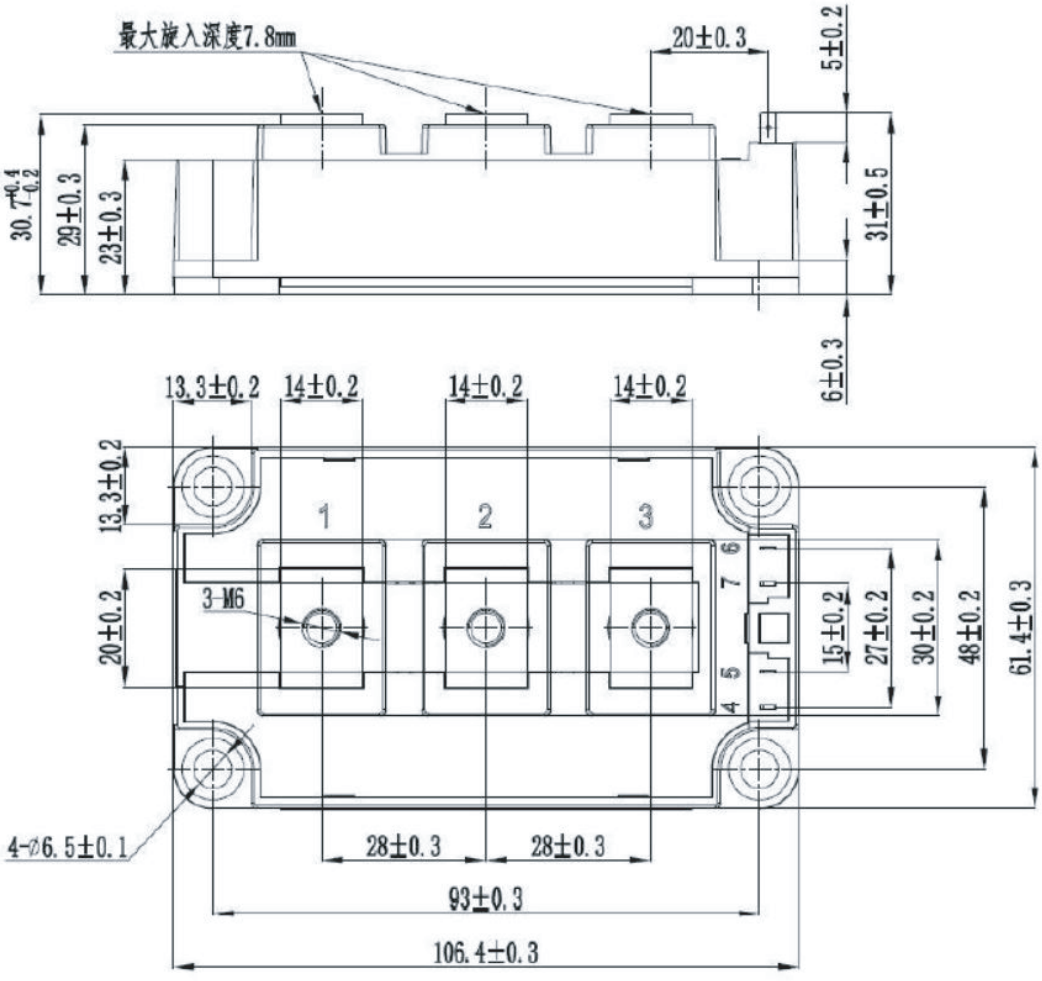


Figure 10.transient thermal impedance Diode, Inverter

Package


最大旋入深度7.8mm
20±0.3
5±0.2
31±0.5
6±0.3
30.7+0.4 -0.2
29±0.3
23±0.3
13.3±0.2
14±0.2
14±0.2
14±0.2
13.3±0.2
20±0.2
1
2
3
3-M6
7
6
5
4
15±0.2
27±0.2
30±0.2
48±0.2
61.4±0.3
4-∅6.5±0.1
28±0.3
28±0.3
93±0.3
106.4±0.3