Features

• IGBT CHIP(Trench+FS)

• Low saturation voltage and positive temperature coefficient

• Fast switching and short tail current

• Free wheeling diodes with fast and soft reverse recovery

• Temperature sense included

Application

• AC motor control

• Motion/servo control

• Inverter and power supplies

• Photovoltaic/Fuel cell

Pb-Free RoHS Halogen-Free

IGBT，Inverter

Absolute Maximum Ratings (TC=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{CES}	Collector Emitter Voltage	T_J=25°C	750	V
V_{GES}	Gate Emitter Voltage		±20	V
I_C	DC Collector Current	Tc=25°C,T_{jmax}=175°C	880	A
		Tc=95°C,T_{jmax}=176°C	600	A
I_{CRM}	Repetitive peak collector current	tp=1ms	1200	A
P_{tot}	Power Dissipation Per IGBT	Tc=25°C,T_{jmax}=175°C	3125	W

Diode，Inverter

Absolute Maximum Ratings (TC=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{RRM}	Repetitive Peak Reverse Voltage	T_J=25°C	750	V
$I_{F(AV)}$	Average Forward Current		600	A
I_{FRM}	Repetitive Peak Forward Current	tp=1ms	1200	A
I^2t	I^2t-Value	V_R=0V,tp=10ms,T_J=150°C	45	kA^2s

IGBT，Inverter

Electrical Characteristics (TC=25℃ unless otherwise noted)							
Symbol	**Parameter**	**Condition**		**Min**	Typ	**Max**	**Unit**
Static Electrical Characteristics @ TC= 25°C (unless otherwise stated)							
$V_{GE(th)}$	Gate Emitter Threshold Voltage	$V_{CE}=V_{GE}$, I_C=24mA		5.0	5.8	6.5	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	I_C=600A, V_{GE}=15V, T_J=25℃		--	1.9	2.3	V
		I_C=600A, V_{GE}=15V, T_J=125℃		--	2.2	--	V
		I_C=600A, V_{GE}=15V, T_J=150℃		--	2.25	--	V
I_{CES}	Collector Leakage Current	V_{CE}=1200V, V_{GE}=0V, T_J=25℃		--	--	1.0	mA
		V_{CE}=1200V, V_{GE}=0V, T_J=150℃		--	--	10	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V,V_{GE}=±20V, T_J=25℃		-400	--	400	nA
R_{gint}	Integrated Gate Resistor			--	0.7	--	Ω
Q_g	Gate Charge	V_{CE}=600V, I_C=600A , V_{GE}=15V		--	3.1	--	μC
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz		--	43.2	--	nF
C_{res}	Reverse Transfer Capacitance			--	2.07	--	nF
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,I_C=600A R_G =1.5Ω V_{GE}=±15V, Inductive Load	T_J=25℃	--	100	--	ns
			T_J=150℃	--	110	--	ns
t_r	Turn-on Rise Time		T_J=25℃	--	85	--	ns
			T_J=150℃	--	95	--	ns
$t_{d(off)}$	Turn-Off Delay Time		T_J=25℃	--	530	--	ns
			T_J=150℃	--	580	--	ns
t_f	Turn-Off Fall Time		T_J=25℃	--	65	--	ns
			T_J=150℃	--	215	--	ns
E_{on}	Turn on Energy		T_J=25℃		55		mJ
			T_J=150℃	--	95	--	mJ
E_{off}	Turn off Energy	V_{CC}=600V,I_C=200A $R_{G(on)}$ =2.5Ω,$R_{G(off)}$ =2.5Ω V_{GE}=±15V, Inductive Load	T_J=25℃	--	45	--	mJ
			T_J=150℃	--	63	--	mJ
I_{SC}	Short Circuit Current	tpsc≤8μs , V_{GE}=15V,T_J=150℃,V_{CC}=400V		--	2200	--	A
R_{thJC}	Junction to Case Thermal Resistance (Per IGBT)			--	--	0.048	K/W

Diode，Inverter

Absolute Maximum Ratings (TC=25℃unless otherwise noted)						
Symbol	**Parameter**		**Min**	**Typ**	**Max**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)						
V_F	Forward Voltage	I_F=600A , V_{GE}=0V, T_J=25°C	--	1.9	2.3	V
		I_F=600A , V_{GE}=0V, T_J=125°C	--	1.65	--	
		I_F=600A , V_{GE}=0V, T_J=150°C	--	1.6	--	
t_{rr}	Reverse Recovery Time	I_F=600A , V_R=600V dIF/dt=-4700A/μs T_J=150°C	--	550	--	ns
I_{RRM}	Max. reverse recovery current		--	520	--	A
Q_{RR}	Reverse Recovery Charge		--	130	--	μC
E_{rec}	Reverse Recovery Energy		--	54	--	mJ
R_{thJCD}	Junction to Case Thermal Resistance （Per Diode）		--	--	0.08	K/W

NTC CHARACTERISTICS

Absolute Maximum Ratings (TC=25℃unless otherwise noted)						
Symbol	**Parameter**		**Min**	**Typ**	**Max**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)						
R_{25}	Resistance	T_C=25°C	--	5.0	--	KΩ
$R_{25/50}$	R2 = R25 exp [B25/50(1/T2 - 1/(298.15 K))]		--	3375	--	K

Module

Absolute Maximum Ratings (TC=25℃unless otherwise n				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)				
V_{ISOL}	Isolation Breakdown voltage	AC, 50Hz(R.M.S), t=1minute	3000	V
T_{jmax}	Operating Temperature		175	℃
T_{jop}	Storage Temperature		-40~150	℃
T_{stg}	Storage Temperature		-40~125	℃
CTI	Comparative Tracking Index		>225	
Torque	to heatsink	Recommended（M5）	2.5~5	Nm
	to terminal	Recommended（M6）	3~5	Nm
Weight			350	g

Typical Operating Characteristics

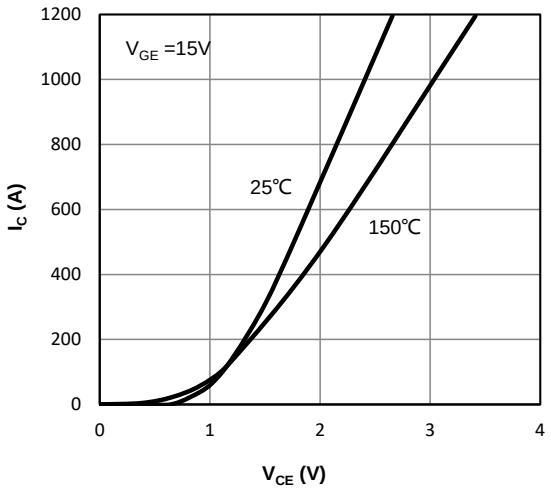


Figure 1. Typical Output Characteristics IGBT

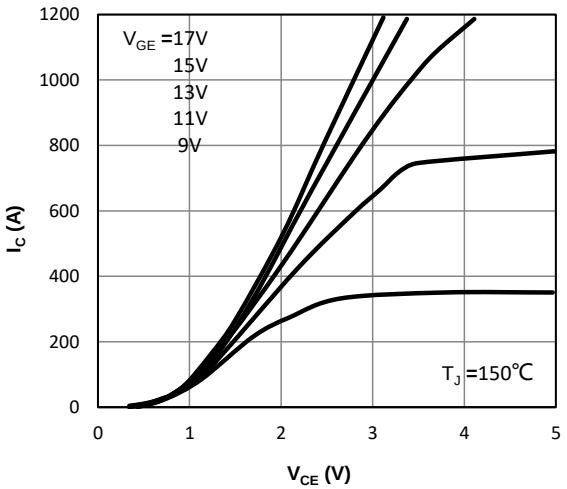


Figure 2. Typical Output Characteristics IGBT

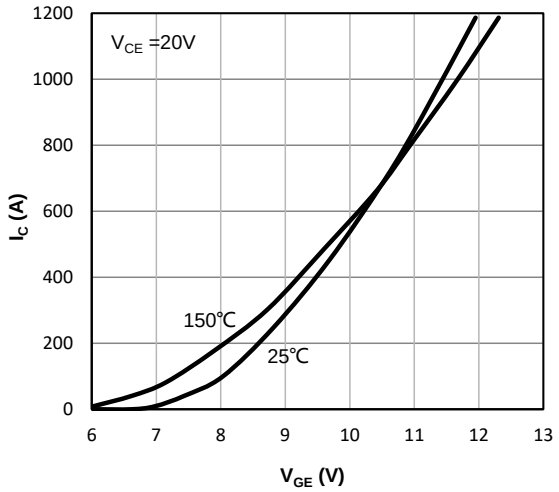


Figure 3. Typical Transfer Characteristics IGBT

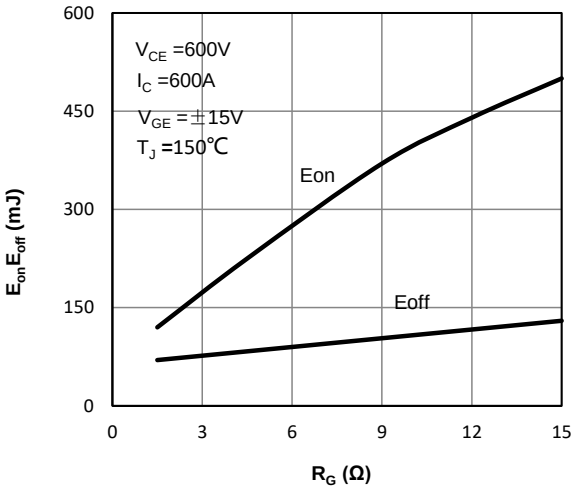


Figure 4. Switching Energy vs Gate Resistor

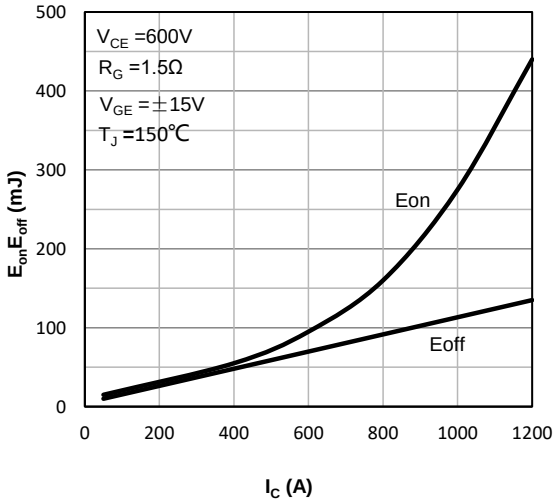


Figure 5. Switching Energy vs Collector Current IGBT

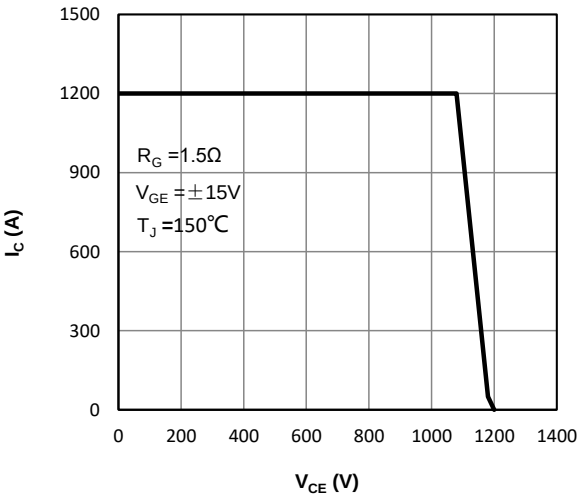


Figure 6. Reverse Biased Safe Operating Area IGBT

Typical Operating Characteristics

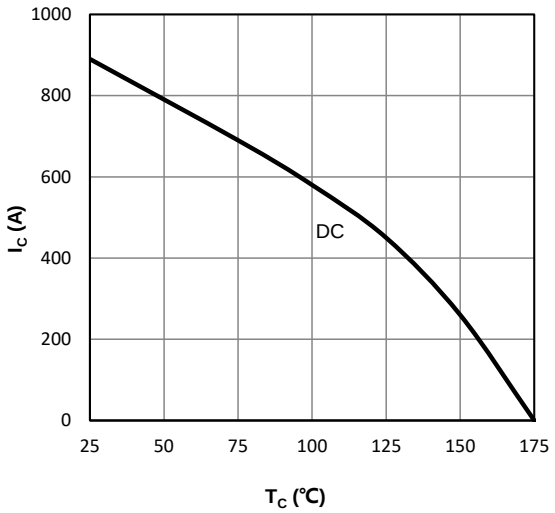


Figure 7. Collector Current vs Case temperature IGBT

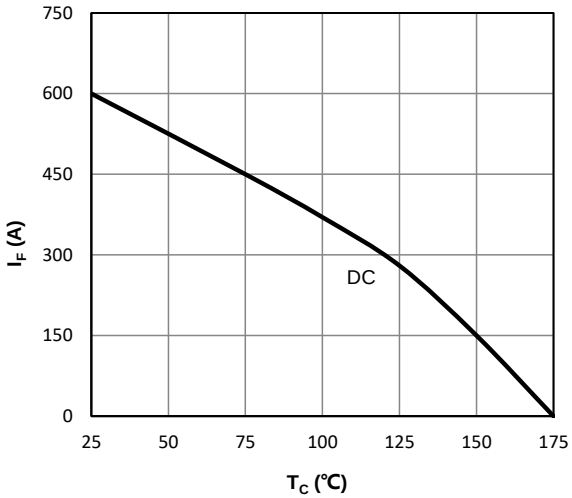


Figure 8. Forward Current vs Case temperature Diode

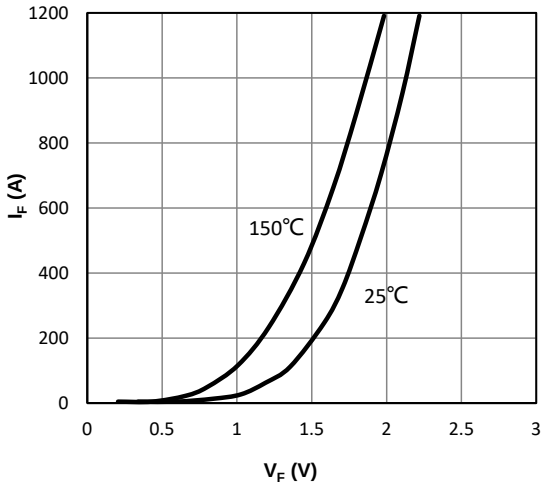


Figure 9. Diode Forward Characteristics Diode

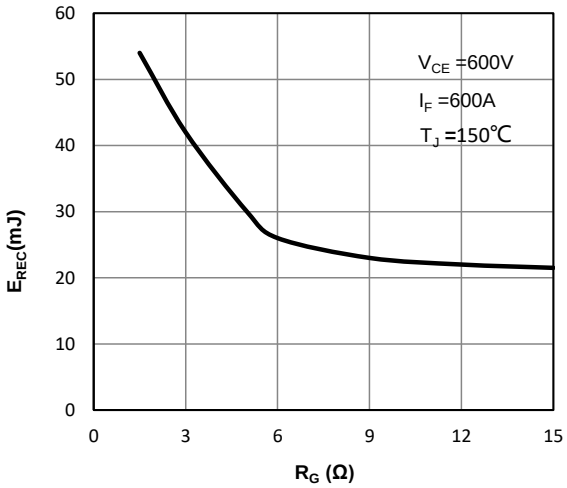


Figure 10. Switching Energy vs Gate Resistor Diode

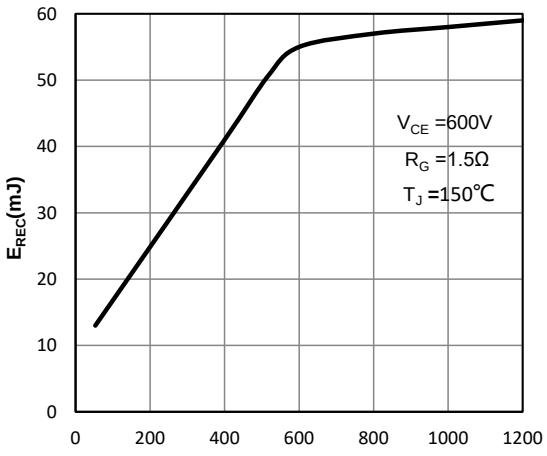


Figure 11. Switching Energy vs Forward Current Diode

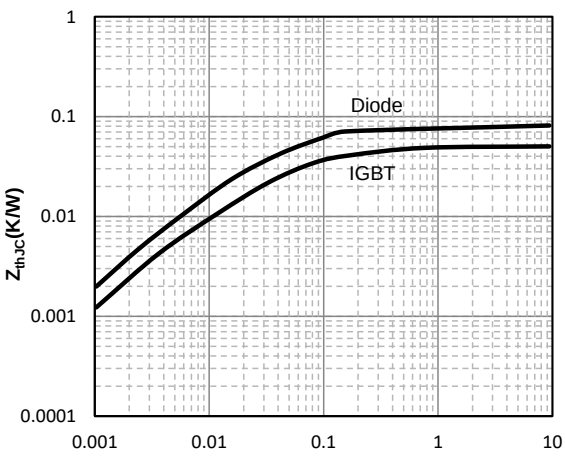
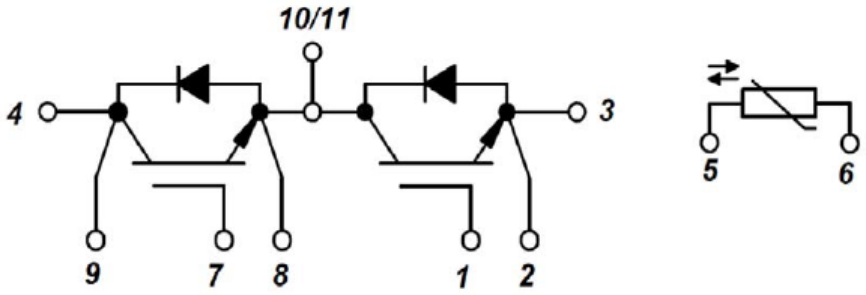


Figure 12. Transient Thermal Impedance of Diode and IGBT

Circuit diagram headline



Package outlines（Unit：mm）