

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



Halogen-Free

IGBT, Inverter

Absolute Maximum Ratings (TC=25°C unless otherwise noted)				
Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{CES}	Collector Emitter Voltage	T _J =25°C	1200	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℃ Unless Otherwise Noted)				
V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25℃	1200	V
I _{F(AV)}	Average Forward Current		600	A
I _{FRM}	Repetitive Peak Forward Current	tp=1ms	1200	A
I ² t	I ² t-Value	V _R =0V, tp=10ms, T _J =150℃	45	kA ² s

IGBT, Inverter

Electrical Characteristics (TC=25°C 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°C		--	1.9	2.3	V
		I _C =600A, V _{GE} =15V, T _J =125°C		--	2.2	--	V
		I _C =600A, V _{GE} =15V, T _J =150°C		--	2.25	--	V
I _{CES}	Collector Leakage Current	V _{CE} =1200V, V _{GE} =0V, T _J =25°C		--	--	1.0	mA
		V _{CE} =1200V, V _{GE} =0V, T _J =150°C		--	--	10	mA
I _{GES}	Gate Leakage Current	V _{CE} =0V,V _{GE} =±20V, T _J =25°C		-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°C	--	100	--	ns
			T _J =150°C	--	110	--	ns
t _r	Turn-on Rise Time		T _J =25°C	--	85	--	ns
			T _J =150°C	--	95	--	ns
t _{d(off)}	Turn-Off Delay Time		T _J =25°C	--	530	--	ns
			T _J =150°C	--	580	--	ns
t _f	Turn-Off Fall Time		T _J =25°C	--	65	--	ns
			T _J =150°C	--	215	--	ns
E _{on}	Turn on Energy		T _J =25°C		55		mJ
			T _J =150°C	--	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°C	--	45	--	mJ
			T _J =150°C	--	63	--	mJ
I _{SC}	Short Circuit Current	tpsc≤10μs , V _{GE} =15V,T _J =150°C,V _{CC} =800V		--	2200	--	A
R _{thJC}	Junction to Case Thermal Resistance (Per IGBT)			--	--	0.048	K/W

Diode, Inverter

Absolute Maximum Ratings (TC=25°C 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 dI _F /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 _{thJC}	Junction to Case Thermal Resistance （ Per Diode ）		--	--	0.08	K/W

NTC CHARACTERISTICS

Absolute Maximum Ratings (TC=25°C 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℃ 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

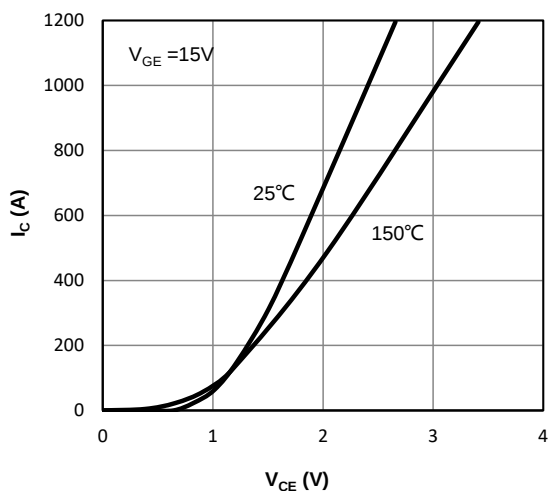


Figure 1. Typical Output Characteristics IGBT

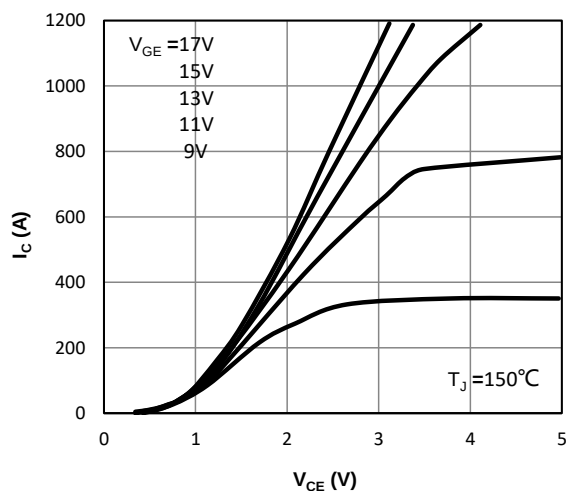


Figure 2. Typical Output Characteristics IGBT

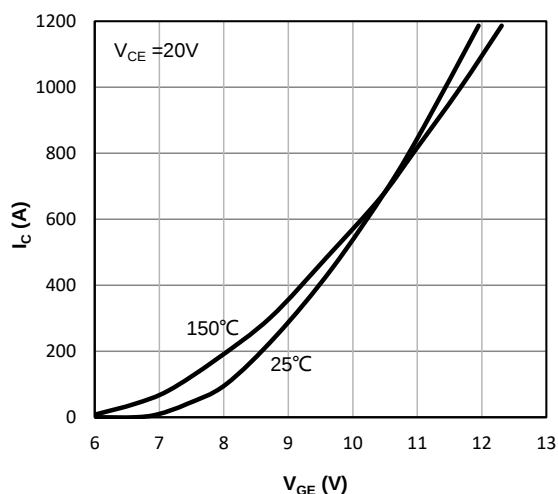


Figure 3. Typical Transfer Characteristics IGBT

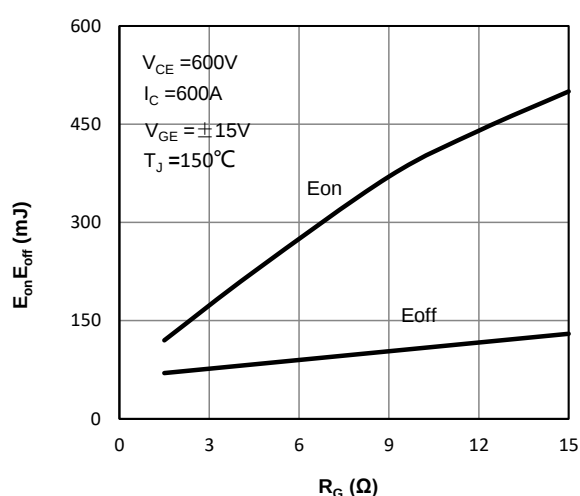


Figure 4. Switching Energy vs Gate Resistor

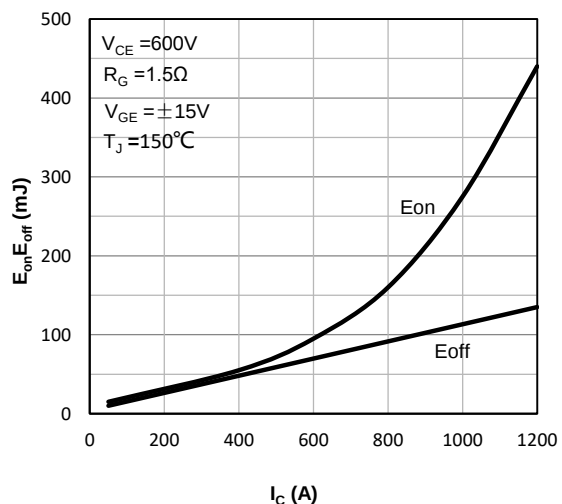


Figure 5. Switching Energy vs Collector Current IGBT

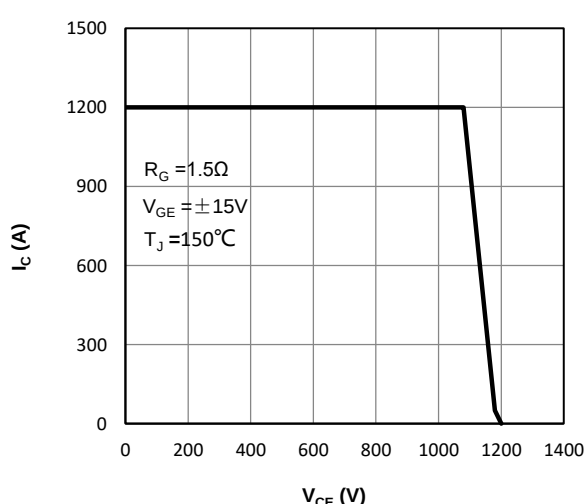


Figure 6. Reverse Biased Safe Operating Area IGBT

Typical Operating Characteristics

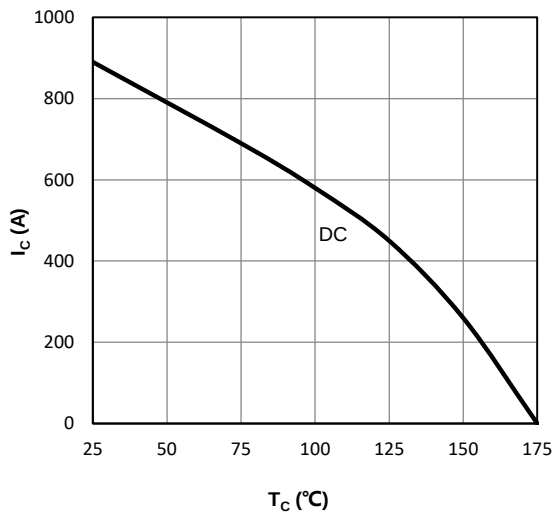


Figure 7. Collector Current vs Case temperature IGBT

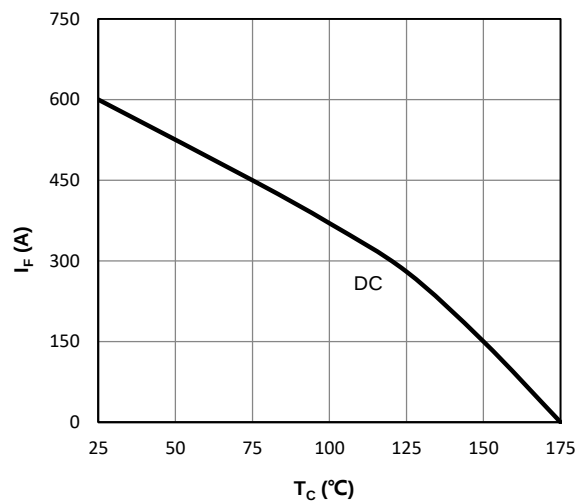


Figure 8. Forward Current vs Case temperature Diode

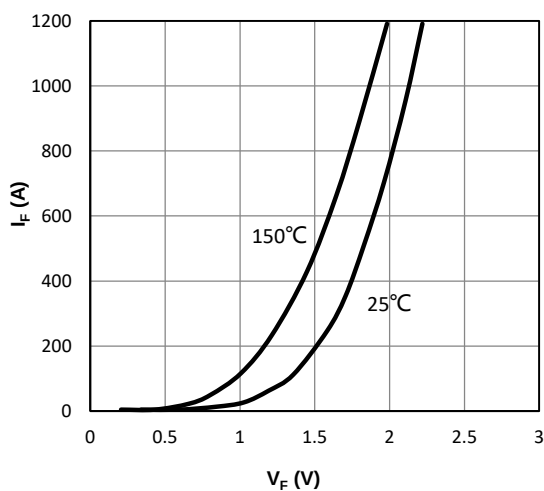


Figure 9. Diode Forward Characteristics Diode

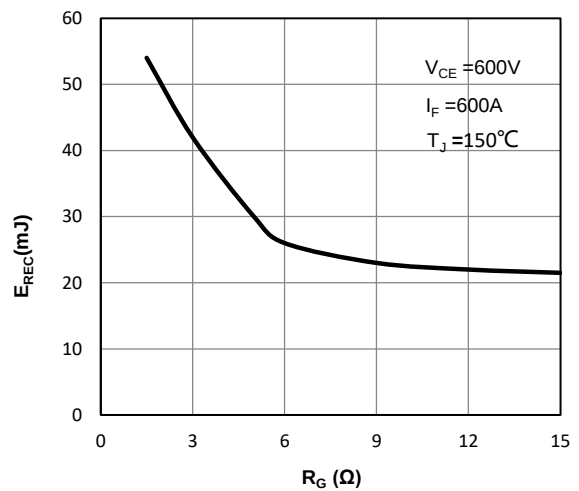


Figure 10. Switching Energy vs Gate Resistor Diode

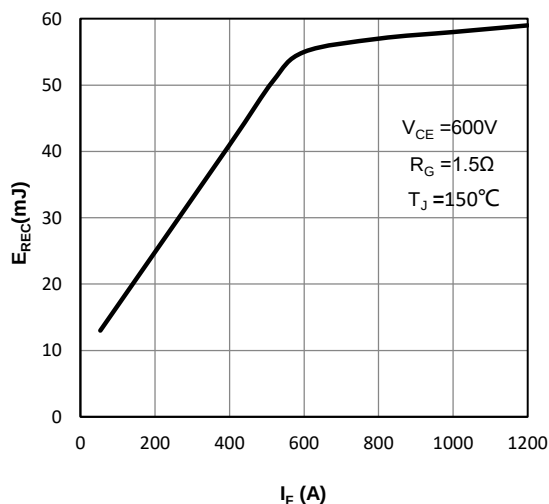


Figure 11. Switching Energy vs Forward Current Diode

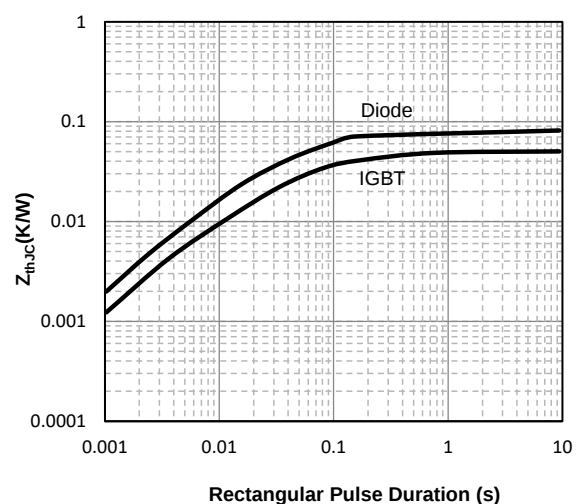
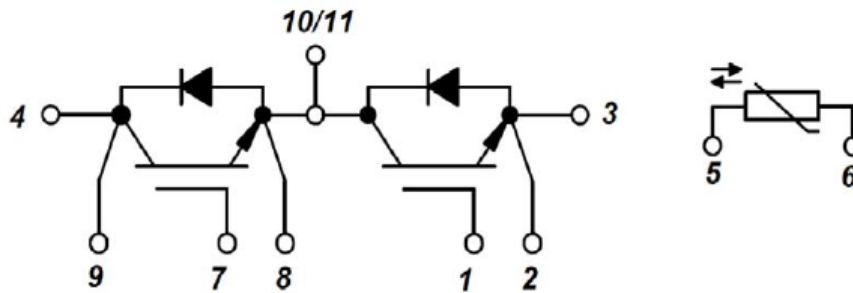


Figure 12. Transient Thermal Impedance of Diode and IGBT

Circuit diagram headline



Package outlines (Unit: mm)

