Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

V_{CES} = 1200V

I_C = 200A at T_C = 80°C

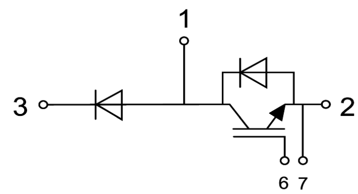
t_{SC} ≥ 10µsec

$V_{CE(ON)}$ = 1.90V at I_C = 200A

Low-Side Chopper IGBT with High-Side Diode
POWIR 62™ Package

Applications:

- Industrial Motor Drive
- Uninterruptible Power Supply
- Welding and Cutting Machine
- Switched Mode Power Supply



Features	**Benefits**
Low $V_{CE(ON)}$ and Switching Losses	High Efficiency in a Wide Range of Applications
RBSOA Tested	Rugged Transient Performance
10µsec Short Circuit Safe Operating Area	
POWIR 62™ Package	Industry Standard
Lead Free	RoHS Compliant, Environmental Friendly

Base Part Number	Package Type	Standard Pack	Quantity	Orderable Part Number
IRG7T200CL12B	***POWIR 62***™	Box	45	IRG7T200CL12B

Absolute Maximum Ratings of IGBT

V_{CES}	Collector to Emitter Voltage		1200	V
V_{GES}	Continuous Gate to Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C = 80°C	200	A
		T_C = 25°C	390	A
I_{CM}	Pulse Collector Current	T_J = 175°C	400	A
P_D	Maximum Power Dissipation (IGBT)	T_C = 25°C, T_J = 175°C	1060	W
T_J	Maximum IGBT Junction Temperature		175	°C
T_{JOP}	Maximum Operating Junction Temperature Range		-40 to +150	°C
T_{stg}	Storage Temperature		-40 to +125	°C

Electrical Characteristics of IGBT at T_J = 25°C (Unless Otherwise Specified)

Parameter		Min.	Typ.	Max.	Unit	Test Conditions	
$V_{(BR)CES}$	Collector to Emitter Breakdown Voltage	1200			V	V_{GE} = 0V, I_C = 2mA	
$V_{GE(th)}$	Gate Threshold Voltage	5.0	5.8	6.5	V	I_C = 10mA, V_{CE} = V_{GE}	
$V_{CE(ON)}$	Collector to Emitter Saturation Voltage		1.90	2.20	V	T_J = 25°C	I_C = 200A, V_{GE} = 15V
			2.20		V	T_J = 125°C	
I_{CES}	Collector to Emitter Leakage Current			2	mA	V_{GE} = 0V, V_{CE} = V_{CES}	
I_{GES}	Gate to Emitter Leakage Current			400	nA	V_{GE} = ±20V, V_{CE} = 0	
R_{Gint}	Internal Gate Resistance		1.25		Ω		

Switching Characteristics of IGBT

Parameter		Min.	Typ.	Max.	Unit	Test Conditions	
$t_{d(on)}$	Turn-on Delay Time		355		ns	T_J = 25°C	V_{CC}=600V, I_C = 200A, R_G = 10Ω, V_{GE}=±15V, Inductive Load
			320			T_J = 125°C	
t_r	Rise Time		200		ns	T_J = 25°C	
			210			T_J = 125°C	
$t_{d(off)}$	Turn-off Delay Time		525		ns	T_J = 25°C	
			560			T_J = 125°C	
t_f	Fall Time		170		ns	T_J = 25°C	
			190			T_J = 125°C	
E_{on}	Turn-on Switching Loss		24.6		mJ	T_J = 25°C	
			33.0			T_J = 125°C	
E_{off}	Turn-off Switching Loss		12.7		mJ	T_J = 25°C	
			17.2			T_J = 125°C	
Q_g	Total Gate Charge		1800		nC	T_J = 25°C	
C_{ies}	Input Capacitance		22.5		nF	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz, T_J = 25°C	
C_{oes}	Output Capacitance		1.56				
C_{res}	Reverse Transfer Capacitance		0.94				
RBSOA	Reverse Bias Safe Operating Area		Trapezoid			I_C = 400A, V_{CC} = 960V, V_P = 1200V, R_G = 15Ω, V_{GE} = +15V to 0V, T_J = 150°C	
SCSOA	Short Circuit Safe Operating Area	10			µs	V_{CC} = 600V, V_{GE} = 15V, T_J = 150°C	

Absolute Maximum Ratings of Freewheeling Diode

V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current, T_C = 25°C	400	A
	Diode Continuous Forward Current, T_C = 80°C	200	
I_{FM}	Pulse Diode Current	400	A

Electrical and Switching Characteristics of Freewheeling Diode

Parameter		Typ.	Max.	Unit	Test Conditions	
V_F	Forward Voltage	2.00	2.70	V	T_J = 25°C	I_F = 200A , V_{GE} = 0V
		2.20			T_J = 125°C	
I_{rr}	Peak Reverse Recovery Current	70		A	T_J = 25°C	I_F=200A, di/dt=1100A/μs, V_{rr} = 600V, V_{GE} = -15V
		110			T_J = 125°C	
Q_{rr}	Reverse Recovery Charge	10.6		μC	T_J = 25°C	
		22.3			T_J = 125°C	
E_{rec}	Reverse Recovery Energy	3.7		mJ	T_J = 25°C	
		8.1			T_J = 125°C	

Absolute Maximum Ratings of Brake-Chopper Diode

V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current, T_C = 25°C	400	A
	Diode Continuous Forward Current, T_C = 80°C	200	
I_{FM}	Pulse Diode Current	400	A

Electrical and Switching Characteristics of Brake-Chopper Diode

Parameter		Typ.	Max.	Unit	Test Conditions	
V_F	Forward Voltage	2.00	2.70	V	T_J = 25°C	I_F = 200A , V_{GE} = 0V
		2.20			T_J = 125°C	
I_{rr}	Peak Reverse Recovery Current	70		A	T_J = 25°C	I_F=200A, di/dt=1100A/μs, V_{rr} = 600V, V_{GE} = -15V
		110			T_J = 125°C	
Q_{rr}	Reverse Recovery Charge	10.6		μC	T_J = 25°C	
		22.3			T_J = 125°C	
E_{rec}	Reverse Recovery Energy	3.7		mJ	T_J = 25°C	
		8.1			T_J = 125°C	

Module Characteristics

Parameter		Min.	Typ.	Max.	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted), f = 50Hz, 1minute			2500	V
$R_{\theta JC}$	Junction-to-Case (IGBT)		0.141		°C/W
$R_{\theta JC}$	Junction-to-Case (Freewheeling Diode)		0.204		°C/W
$R_{\theta JC}$	Junction-to-Case (Brake-Chopper Diode)		0.204		°C/W
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)		0.1		°C/W
M	Power Terminals Screw: M6	3.0		5.0	N·m
M	Mounting Screw: M6	4.0		6.0	N·m
G	Weight		230		g

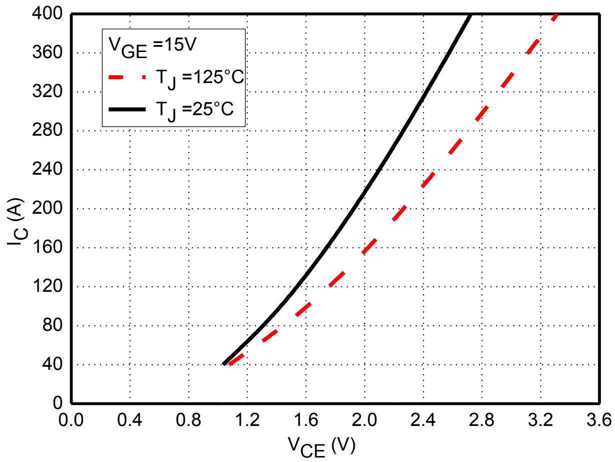


Fig.1 Typical IGBT Saturation Characteristics

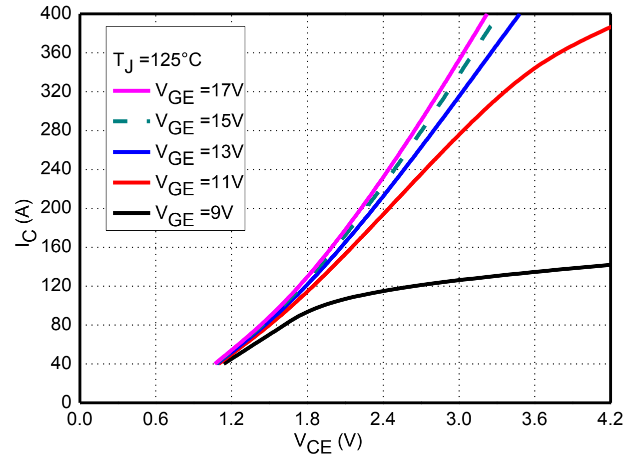


Fig.2 Typical IGBT Output Characteristics

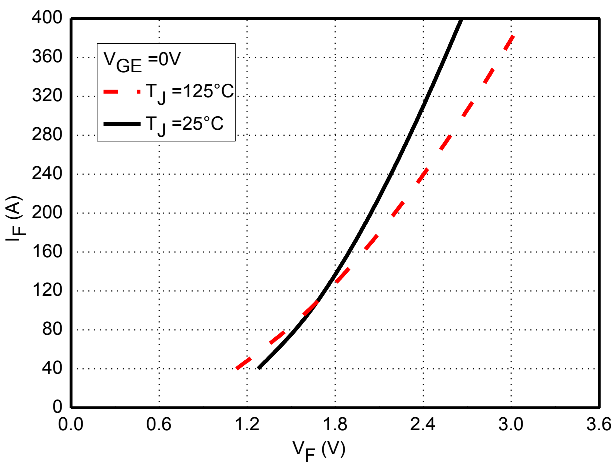


Fig.3 Typical Forward Characteristics, Freewheeling Diode

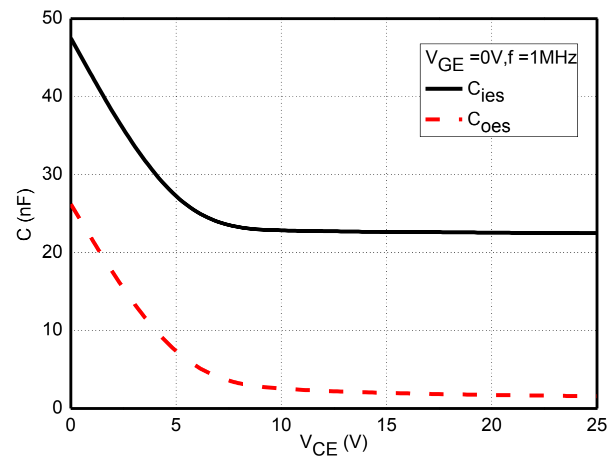


Fig. 4 Typical Capacitance Characteristics

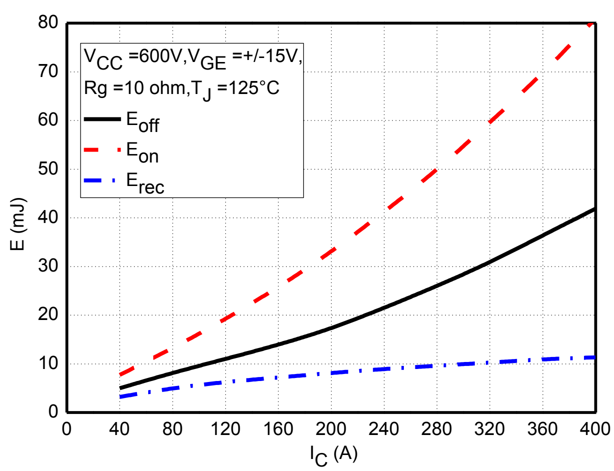


Fig.5 Typical Switching Loss vs. Collector Current

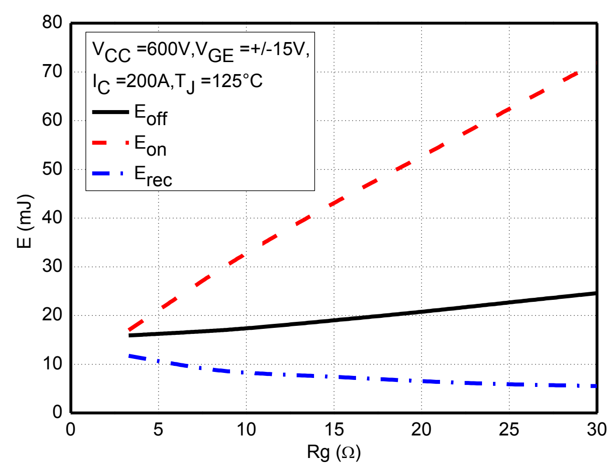


Fig.6 Typical Switching Loss vs. Gate Resistance

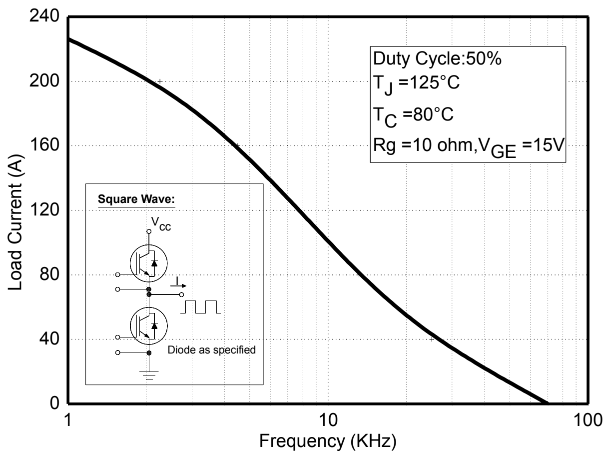


Fig.7 Typical Load Current vs. Frequency

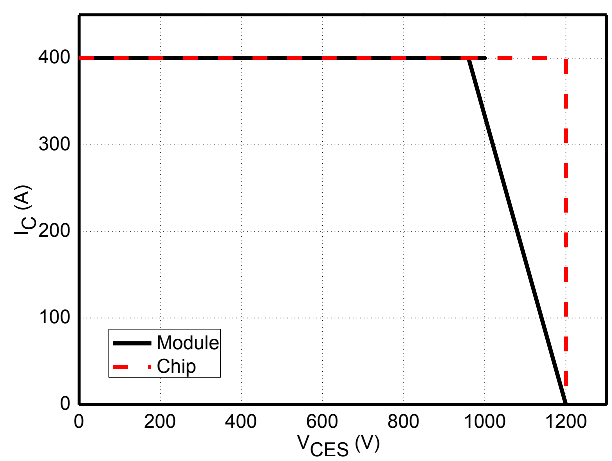


Fig.8 Reverse Bias Safe Operation Area (RBSOA)

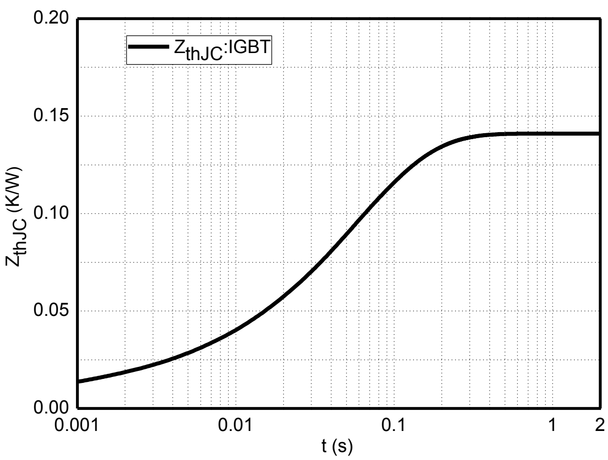


Fig.9 Typical Transient Thermal Impedance (IGBT)

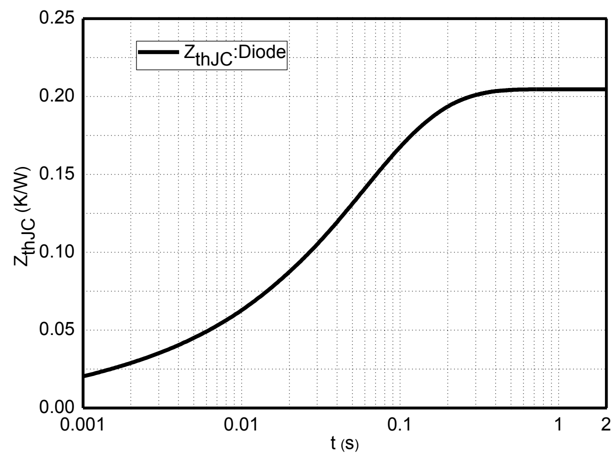


Fig.10 Typical Transient Thermal Impedance (Diode)

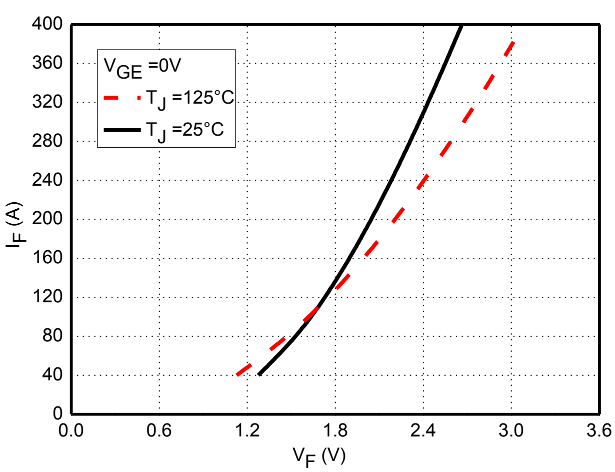
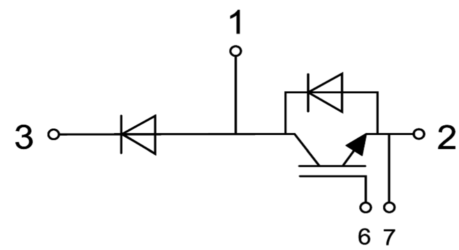
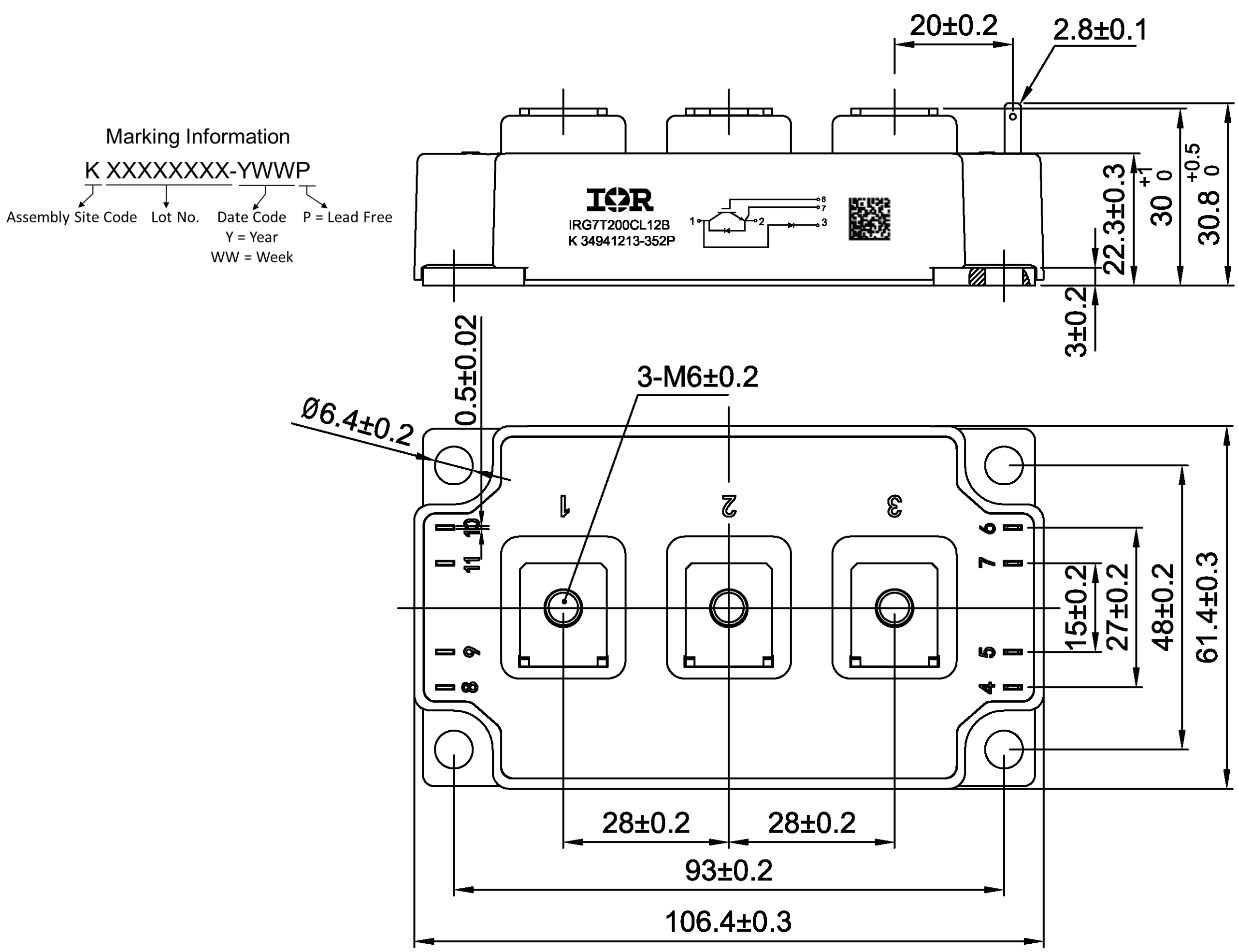


Fig.11 Typical Forward Characteristics, Brake-Chopper Diode

Internal Circuit:



Package Outline (Unit: mm):



Qualification Information[†]

Qualification Level	Industrial
Moisture Sensitivity Level	Not Applicable
RoHS Compliant	Yes

† Qualification standards can be found at International Rectifier's web site: http://www.irf.com/product-info/reliability/

International Rectifier

IR WORLD HEADQUARTERS: 101 North Sepulveda Blvd, El Segundo, California, 90245, USA
To contact International Rectifier, please visit: http://www.irf.com/whoto-call/

