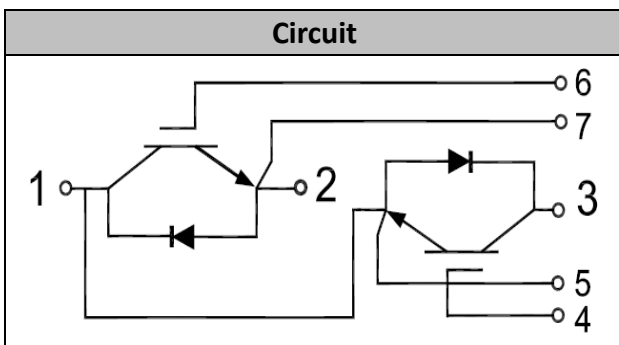


IGBT Modules

V_{CES}	1200V
I_c	200A

Applications

- Inverter for motor drive
- AC and DC servo drive amplifier
- UPS (Uninterruptible Power Supplies)
- Soft switching welding machine



Features

- Low $V_{CE(sat)}$ with Trench technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability(10us)
- Including ultra fast & soft recovery anti-parallel FWD
- Low inductance
- Maximum junction temperature 175°C

● IGBT

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Collector-Emitter Voltage	V_{CES}	$V_{GE}=0V, I_c=1mA, T_{vj}=25^{\circ}C$	1200	V
Continuous Collector Current	I_c	$T_C=100^{\circ}C$	200	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	400	A
Gate-Emitter Voltage	V_{GES}	$T_{vj}=25^{\circ}C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	1250	W



Characteristic Values

Parameter	Symbol	Conditions	Value			Unit	
			Min.	Typ.	Max.		
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=7.6mA, T_{vj}=25^{\circ}C$	5.0	5.8	6.5	V	
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1.0	mA	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=200A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.90	2.20	V	
		$I_C=200A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.20			
		$I_C=200A, V_{GE}=15V, T_{vj}=150^{\circ}C$		2.30			
Gate Charge	Q_G			1.2		uC	
Internal Gate Resistor	R_{Gint}			3.8		Ω	
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz, T_{vj}=25^{\circ}C$		12.8		nF	
Reverse Transfer Capacitance	C_{res}			0.5		nF	
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA	
Turn-on Delay Time	$t_{d(on)}$	$I_C=200A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=3.6\Omega$ $T_{vj}=25^{\circ}C$		187		ns	
Rise Time	t_r			62		ns	
Turn-off Delay Time	$t_{d(off)}$			266		ns	
Fall Time	t_f			179		ns	
Energy Dissipation During Turn-on Time	E_{on}			21.1		mJ	
Energy Dissipation During Turn-off Time	E_{off}			12.9		mJ	
Turn-on Delay Time	$t_{d(on)}$		$I_C=200A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=3.6\Omega$ $T_{vj}=150^{\circ}C$		192		ns
Rise Time	t_r				71		ns
Turn-off Delay Time	$t_{d(off)}$				311		ns
Fall Time	t_f				265		ns
Energy Dissipation During Turn-on Time	E_{on}			32.7		mJ	
Energy Dissipation During Turn-off Time	E_{off}			17.8		mJ	
SC Data	I_{sc}	$t_p \leq 10\mu s, V_{GE}=15V,$ $T_{vj}=150^{\circ}C, V_{CC}=600V,$ $V_{CEM} \leq 1200V$			800		A



● Diode

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_{vj}=25^{\circ}\text{C}$	1200	V
Continuous DC Forward Current	I_F		200	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	400	A

Characteristic Values

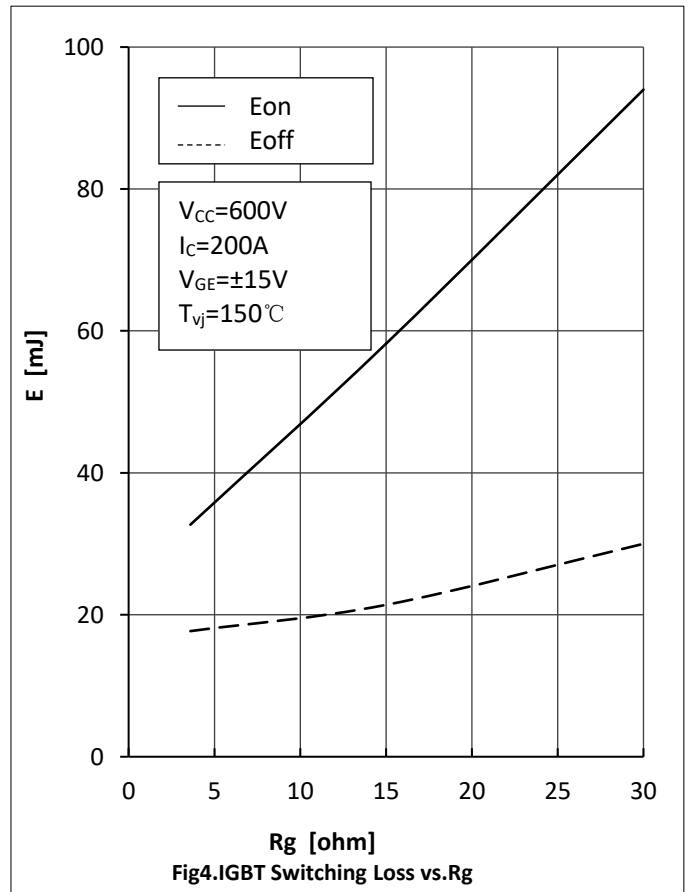
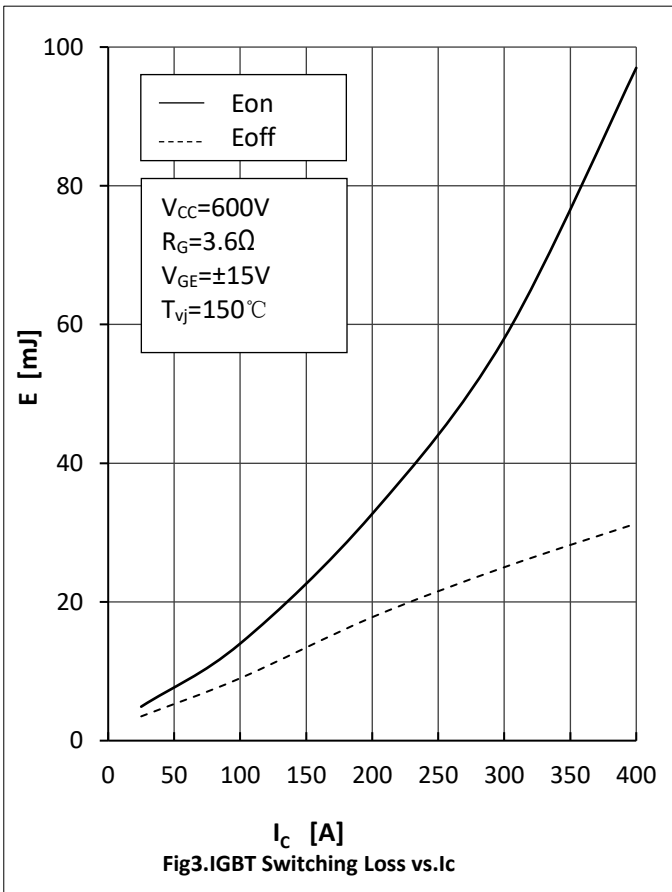
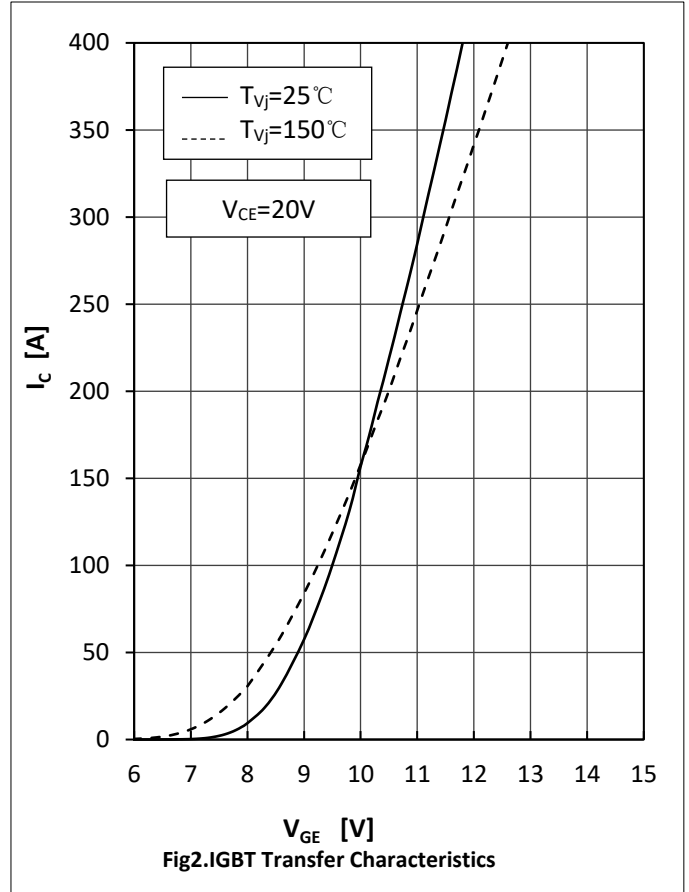
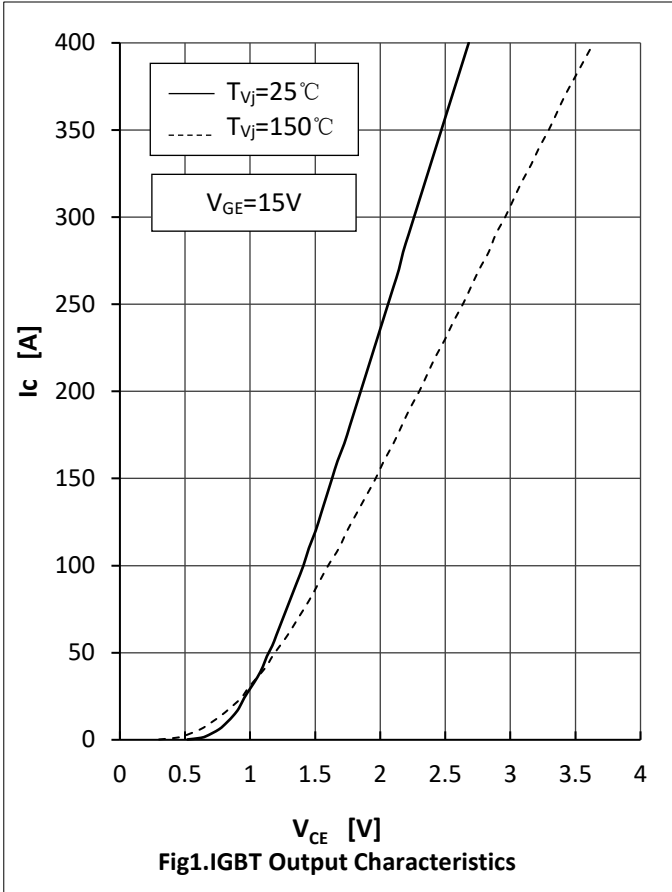
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=200\text{A}, T_{vj}=25^{\circ}\text{C}$		2.00	2.80	V
		$I_F=200\text{A}, T_{vj}=125^{\circ}\text{C}$		1.85		
		$I_F=200\text{A}, T_{vj}=150^{\circ}\text{C}$		1.80		
Recovered Charge	Q_{rr}	$I_F=200\text{A}$		13.0		μC
Peak Reverse Recovery Current	I_{rr}	$V_R=600\text{V}$ $-di_F/dt=2400\text{A}/\mu\text{s}$		86		A
Reverse Recovery Energy	E_{rec}	$T_{vj}=25^{\circ}\text{C}$		3.9		mJ
Recovered Charge	Q_{rr}	$I_F=200\text{A}$		39.2		μC
Peak Reverse Recovery Current	I_{rr}	$V_R=600\text{V}$ $-di_F/dt=2400\text{A}/\mu\text{s}$		137		A
Reverse Recovery Energy	E_{rec}	$T_{vj}=150^{\circ}\text{C}$		13.1		mJ

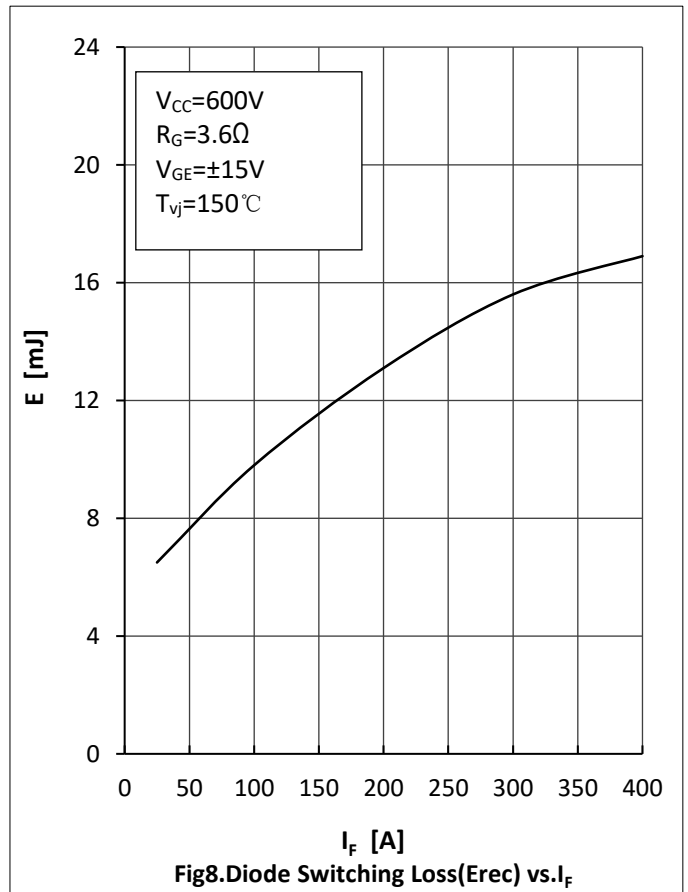
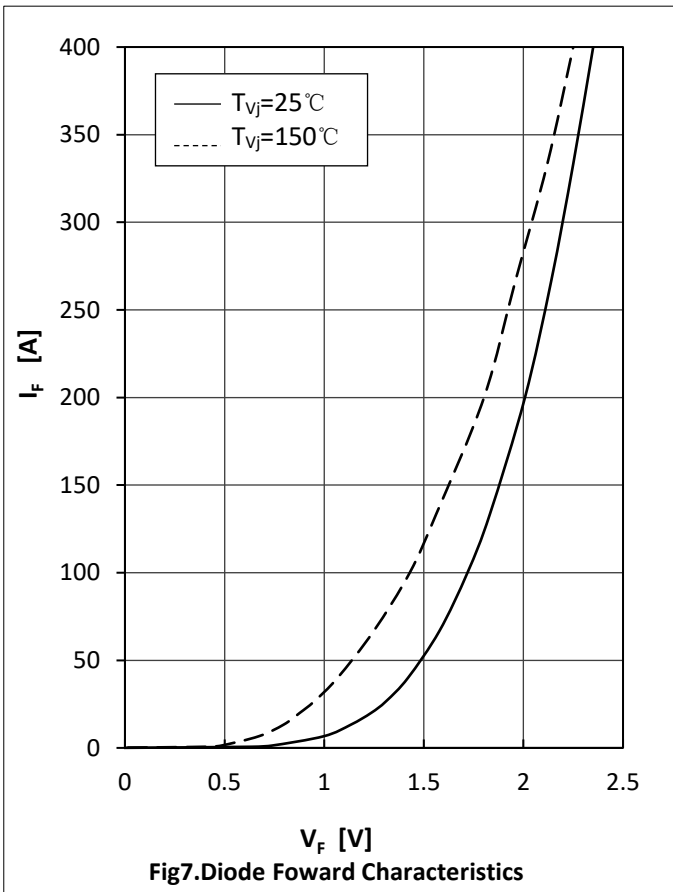
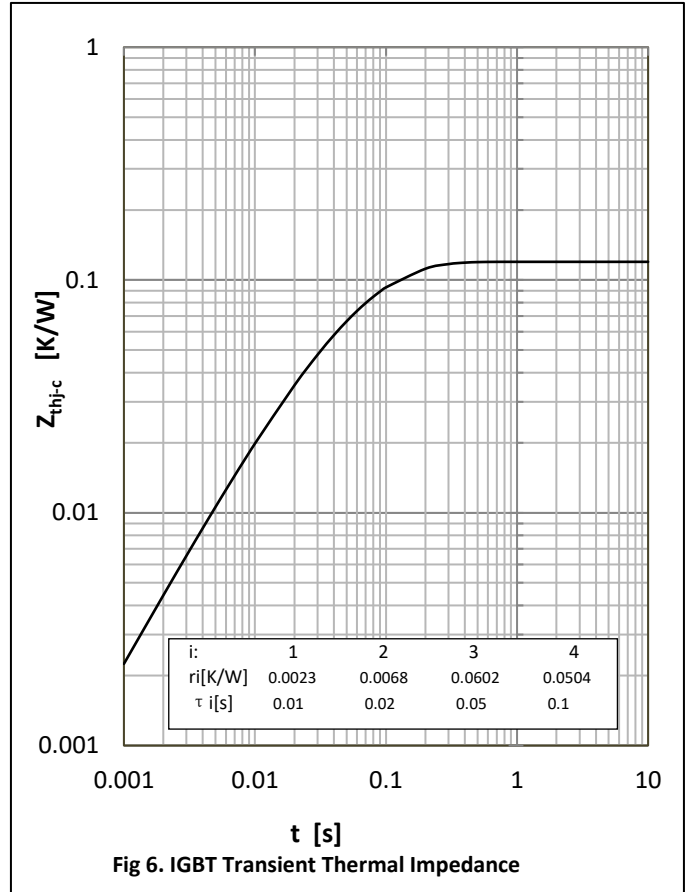
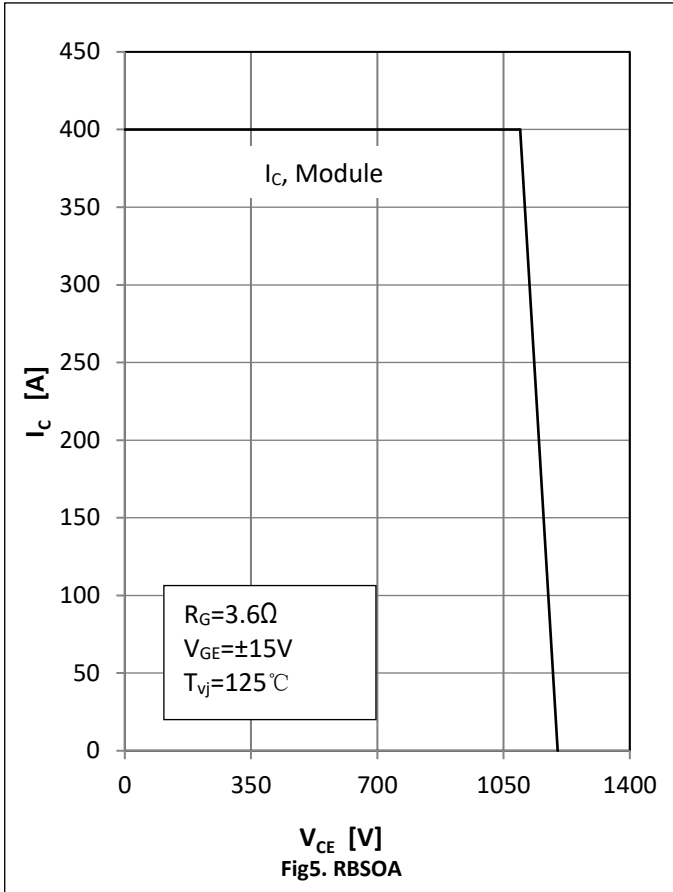


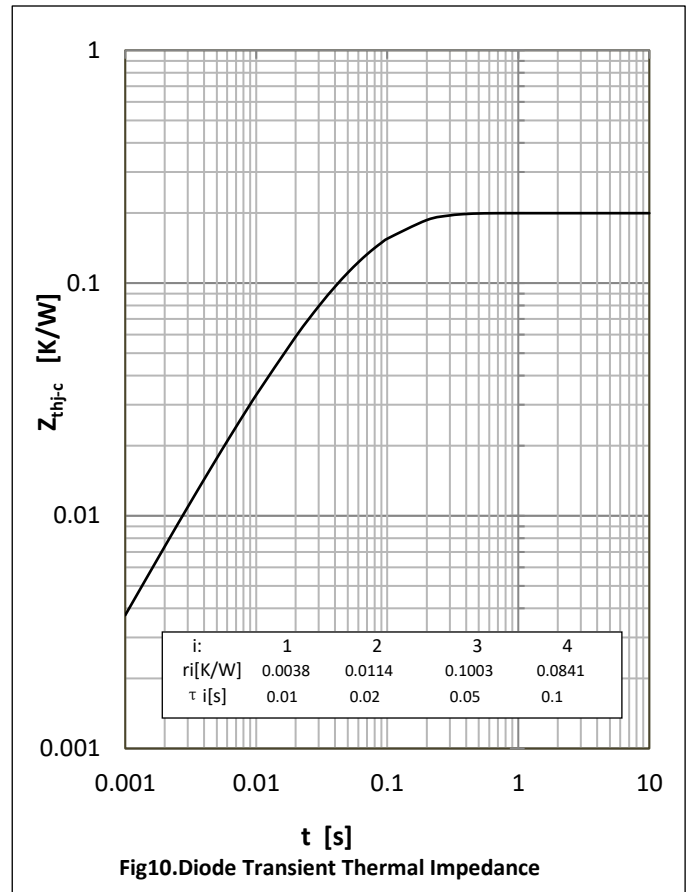
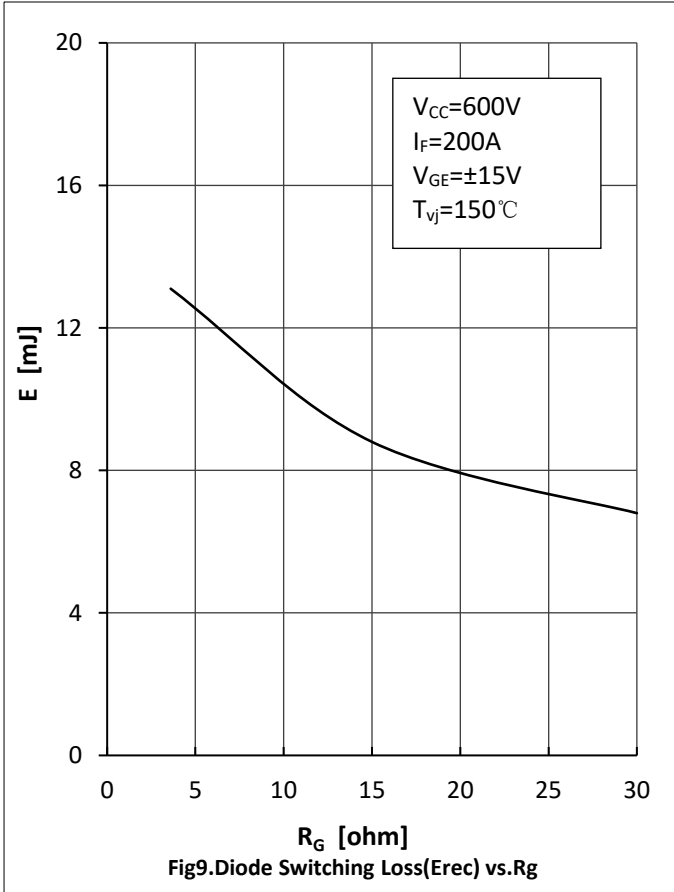
● Module Characteristics

$T_c=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Thermal Resistance Junction to Case	R_{eJC}	per IGBT			0.12	K/W
		per Diode			0.20	
Thermal Resistance Case to Sink	R_{eCS}	Conductive grease applied		0.012	0.035	K/W
Comparative Tracking Index	CTI		400			
Module Electrodes Torque	M_t	Recommended(M6)	3.0		5.0	N·m
Module-to-Sink Torque	M_s	Recommended(M6)	3.0		5.0	N·m
Weight of Module	G			315		g

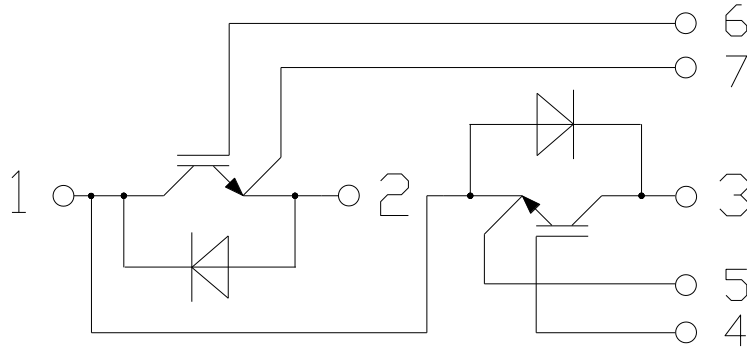






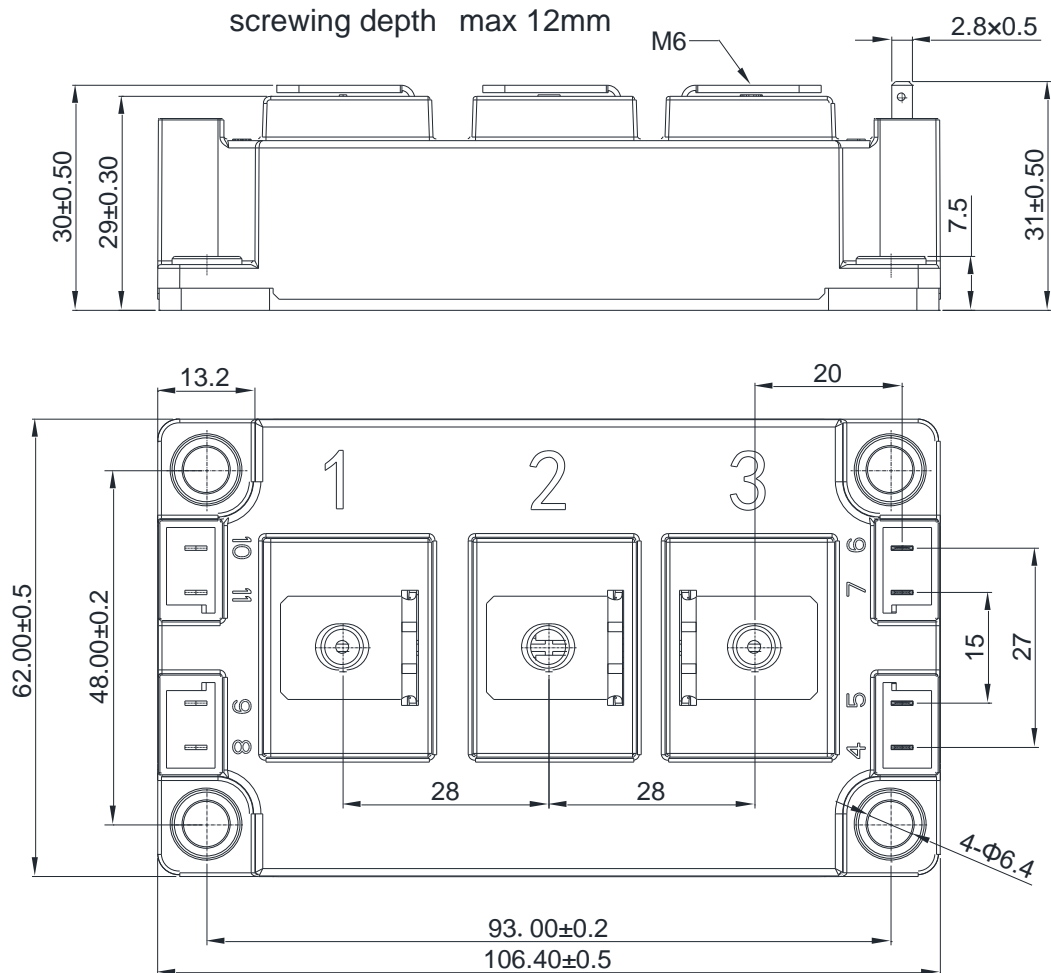


● Circuit Diagram



● Package Outline Information

Dimensions in Millimeters





Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The data provided in this specification comes from professional testing equipment of Yangjie Electronic Laboratory, not general testing equipment. All the data is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

IGBTs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.