



IGBT Modules

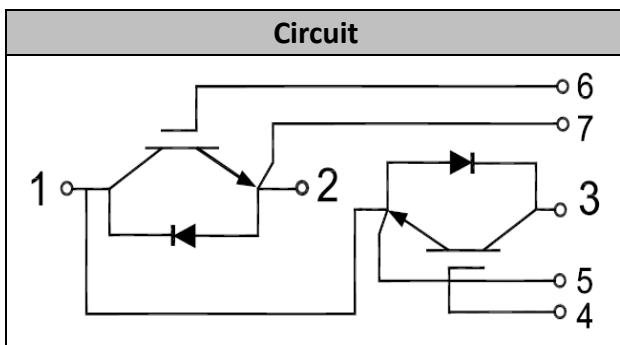
V_{CES}	1200V
I_C	150A

Applications

- Motion/servo control
- High frequency switching application
- UPS (Uninterruptible Power Supplies)
- Welding machine

Features

- High speed IGBT in Planar FS
- Low switching losses especially Eoff
- $V_{CE(sat)}$ with positive temperature coefficient
- Including ultra fast & soft recovery anti-parallel FWD
- Low inductance package
- Maximum junction temperature 150°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	$T_C=100^{\circ}C$	150	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	300	A
Gate-Emitter Voltage	V_{GES}	$T_{vj}=25^{\circ}C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25^{\circ}C$ $T_{vjmax}=150^{\circ}C$	735	W



Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=4mA, T_{vj}=25^{\circ}C$	5.0	5.8	6.6	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	$V_{CE(sat)}$	$I_C=150A, V_{GE}=15V, T_{vj}=25^{\circ}C$		2.20	2.80	V
		$I_C=150A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.40		
		$I_C=150A, V_{GE}=15V, T_{vj}=150^{\circ}C$		2.45		
Gate Charge	Q_G			1.95		uC
Internal Gate Resistance	R_{gint}			1		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}			0.46		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA
Turn-on Delay Time	$t_{d(on)}$	$I_C=150A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=5.1\Omega$ $T_{vj}=25^{\circ}C$		69		ns
Rise Time	t_r			81		ns
Turn-off Delay Time	$t_{d(off)}$			309		ns
Fall Time	t_f			89		ns
Energy Dissipation During Turn-on Time	E_{on}			13.3		mJ
Energy Dissipation During Turn-off Time	E_{off}			6.7		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=150A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=5.1\Omega$ $T_{vj}=150^{\circ}C$		71		ns
Rise Time	t_r			84		ns
Turn-off Delay Time	$t_{d(off)}$			370		ns
Fall Time	t_f			216		ns
Energy Dissipation During Turn-on Time	E_{on}			20.6		mJ
Energy Dissipation During Turn-off Time	E_{off}			11.8		mJ
SC Data	I_{sc}	$t_p \leq 10\mu s, V_{GE}=15V,$ $T_{vj}=150^{\circ}C, V_{CC}=900V,$ $V_{CEM} \leq 1200V$		450		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		150	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	300	A

Characteristic Values

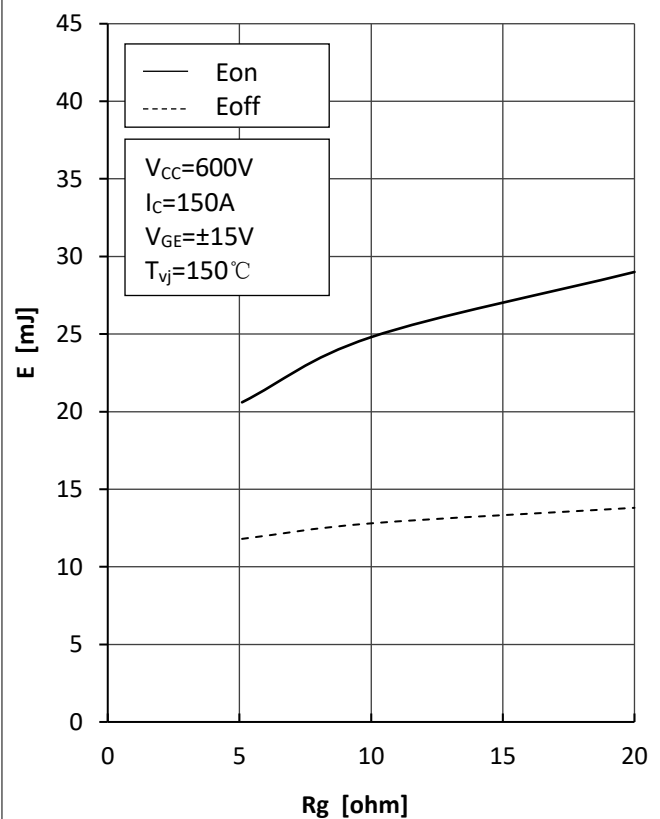
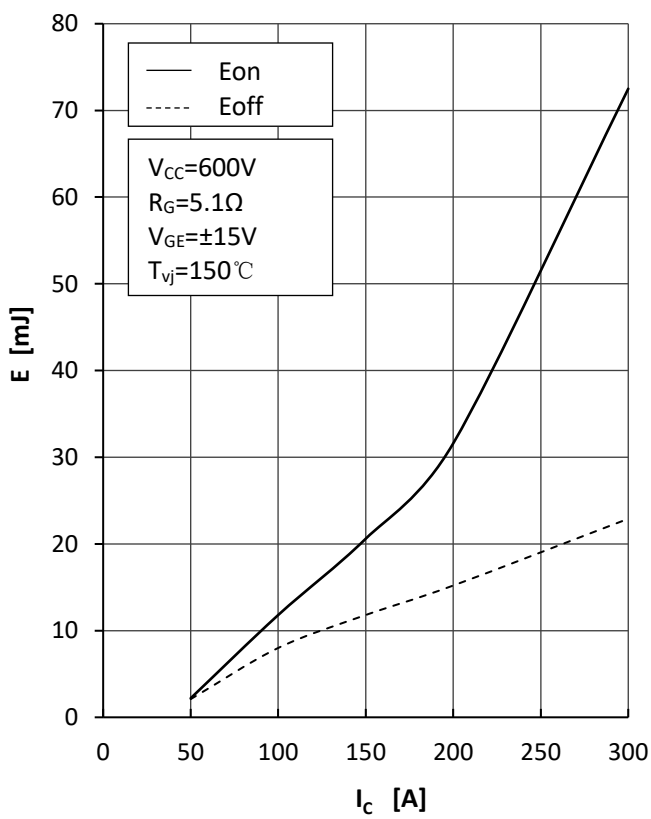
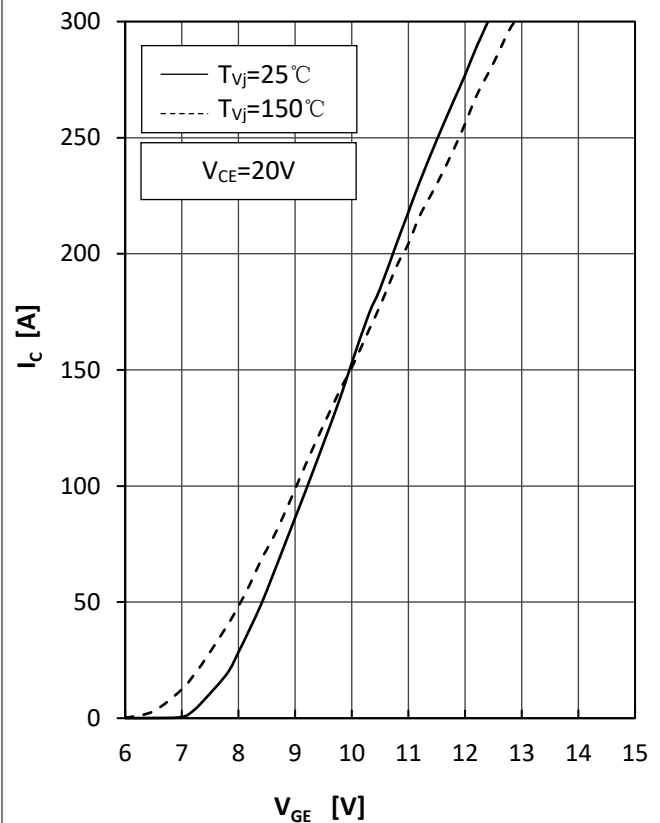
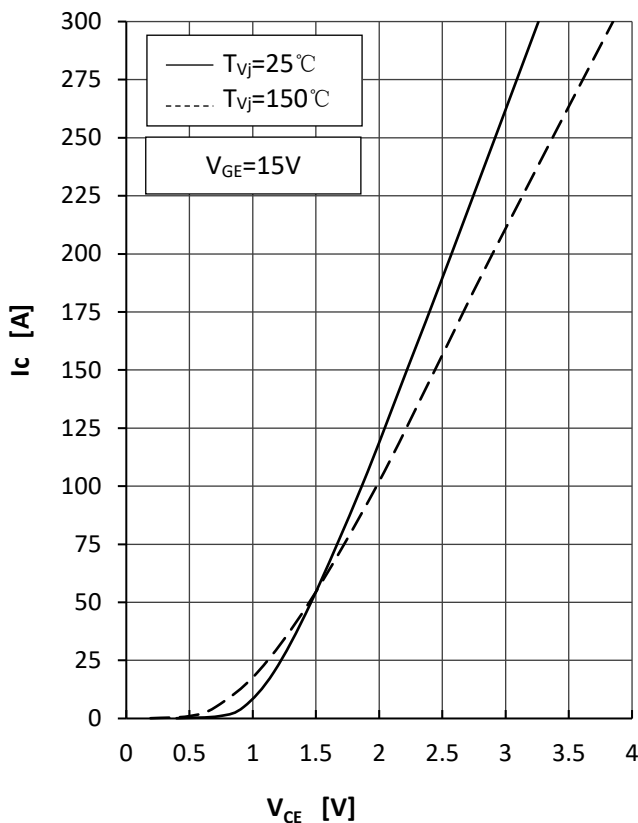
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=150\text{A}, T_{vj}=25^{\circ}\text{C}$		2.30	2.90	V
		$I_F=150\text{A}, T_{vj}=125^{\circ}\text{C}$		2.05		
		$I_F=150\text{A}, T_{vj}=150^{\circ}\text{C}$		1.90		
Recovered Charge	Q_{rr}	$I_F=150\text{A}$ $V_R=600\text{V}$ $-di_F/dt=2250\text{A/us}$ $T_{vj}=25^{\circ}\text{C}$		4.96		μC
Peak Reverse Recovery Current	I_{rr}			38		A
Reverse Recovery Energy	E_{rec}			1.4		mJ
Recovered Charge	Q_{rr}	$I_F=150\text{A}$ $V_R=600\text{V}$ $-di_F/dt=2250\text{A/us}$ $T_{vj}=150^{\circ}\text{C}$		13.37		μC
Peak Reverse Recovery Current	I_{rr}			62		A
Reverse Recovery Energy	E_{rec}			3.5		mJ

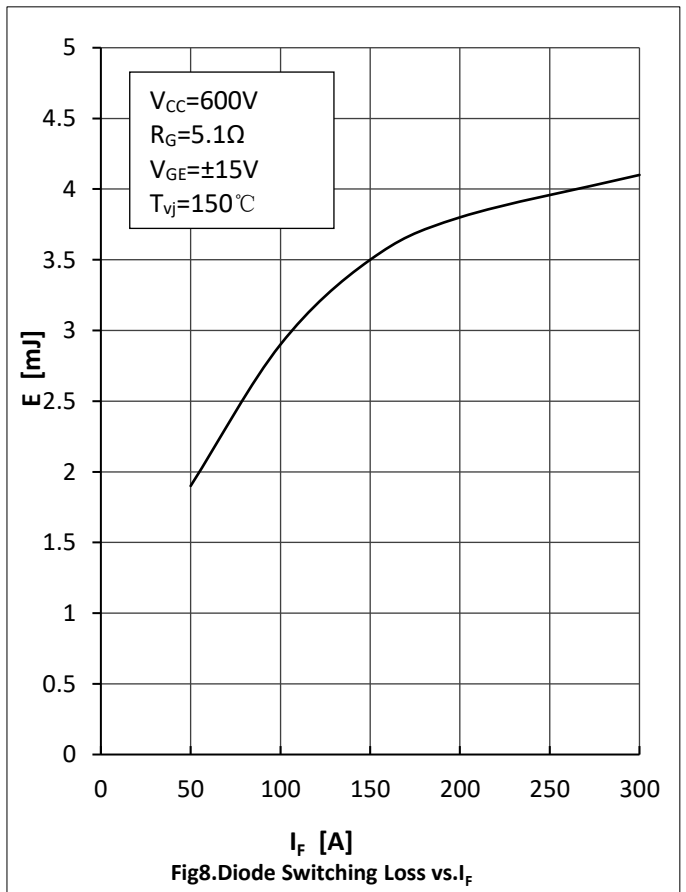
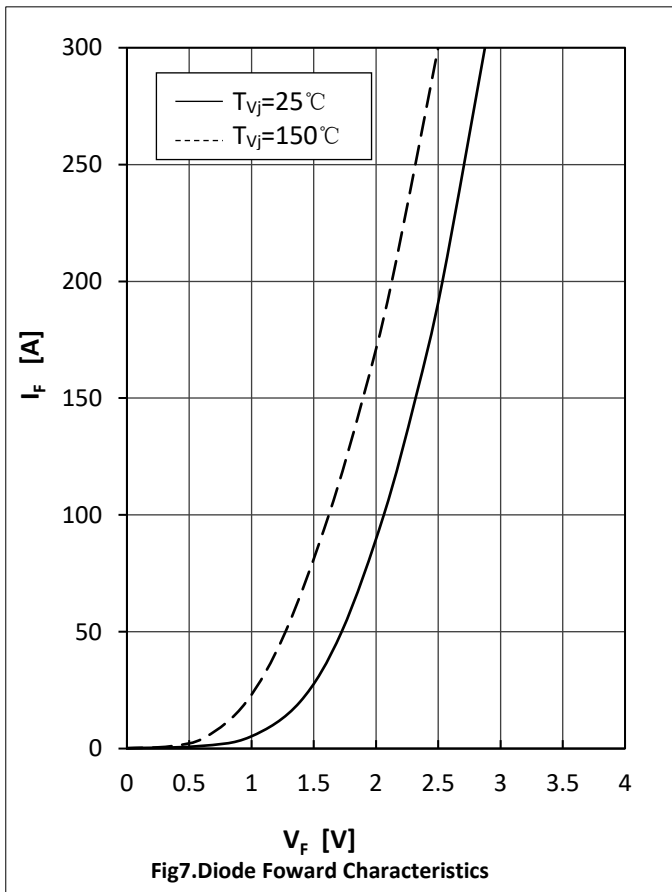
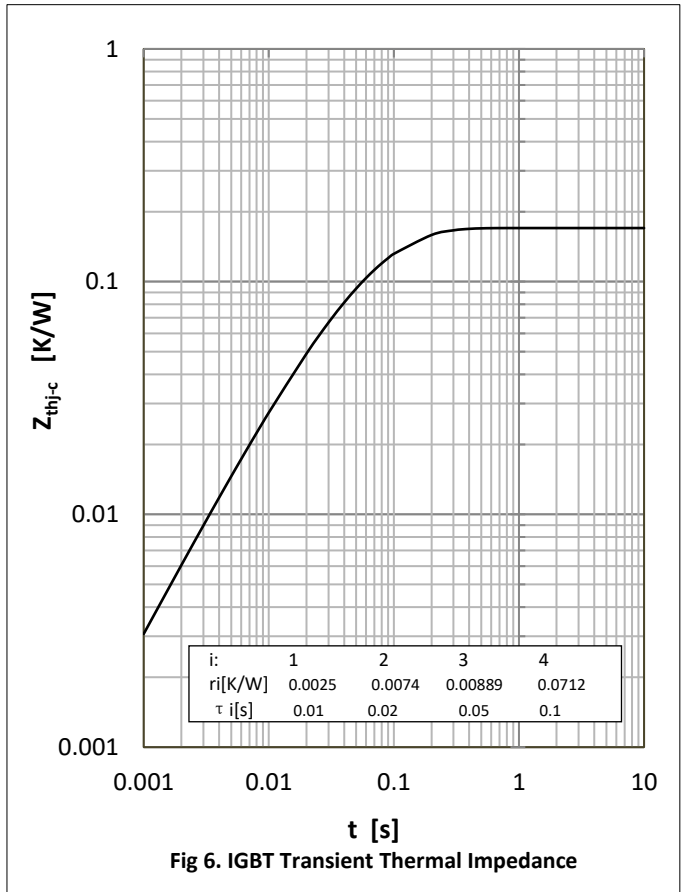
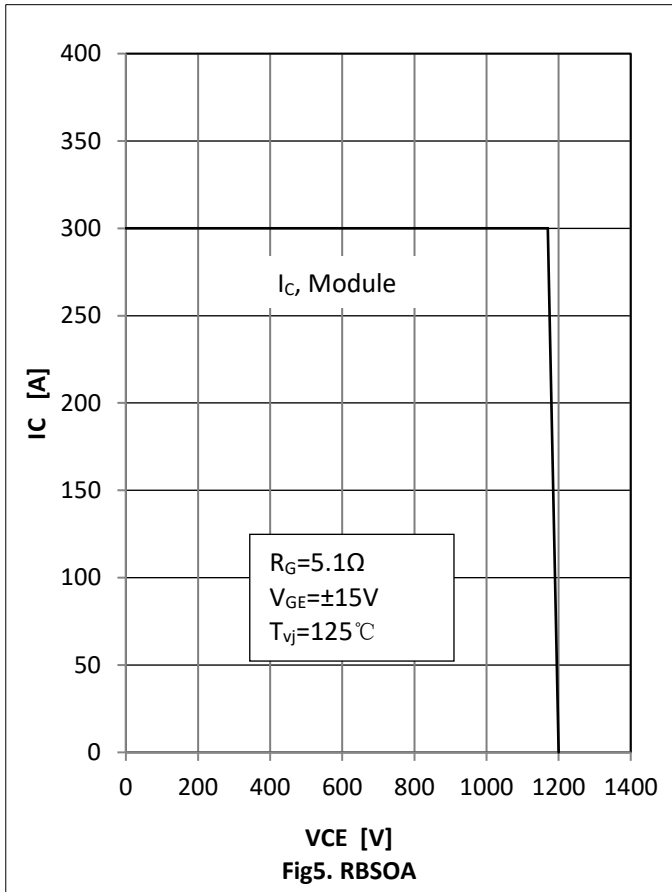


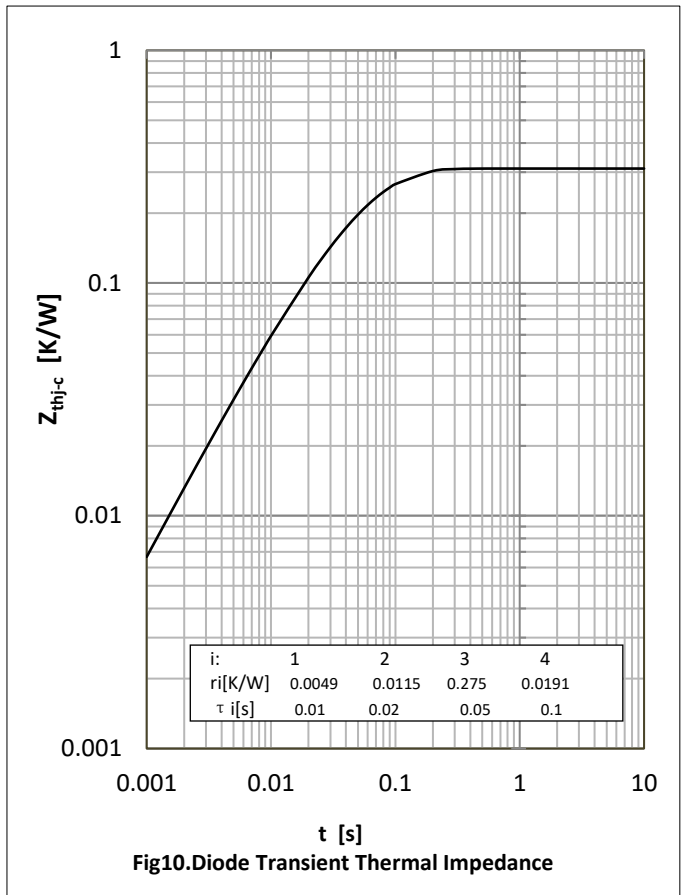
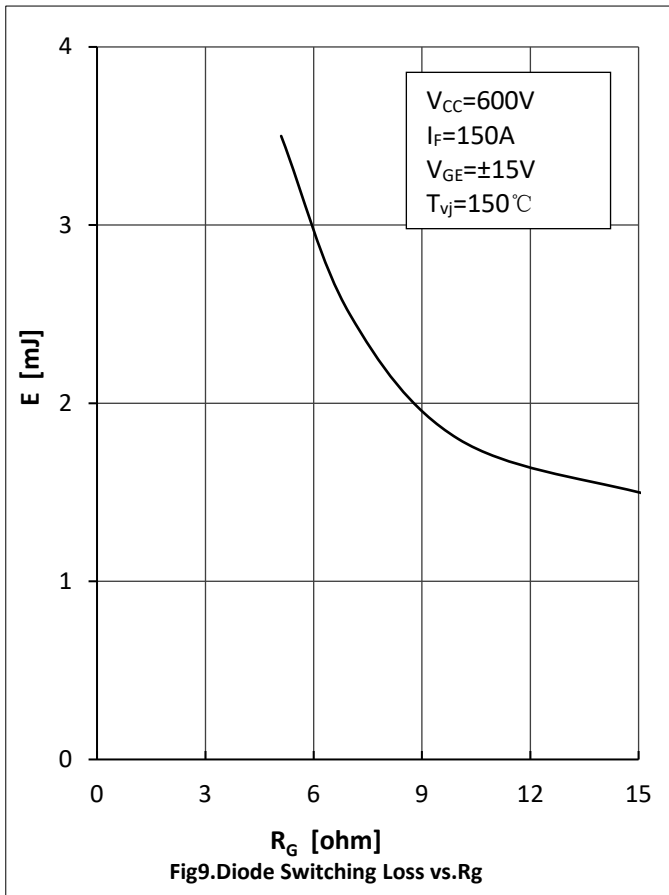
● Module Characteristics

T_C=25°C unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation voltage	V _{isol}	t=1min,f=50Hz	2500			V
Maximum Junction Temperature	T _{jmax}				150	°C
Operating Junction Temperature	T _{vj op}		-40		150	°C
Storage Temperature	T _{stg}		-40		125	°C
Thermal Resistance Junction to Case	R _{θJC}	per IGBT			0.17	K/W
		per Diode			0.31	
Thermal Resistance Case to Sink	R _{θCS}	Conductive grease applied		0.012	0.035	K/W
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

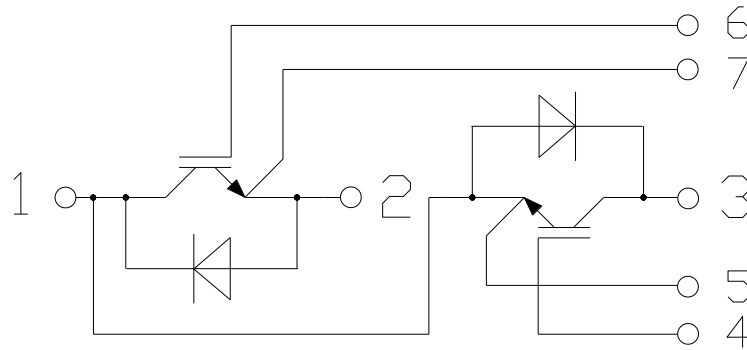






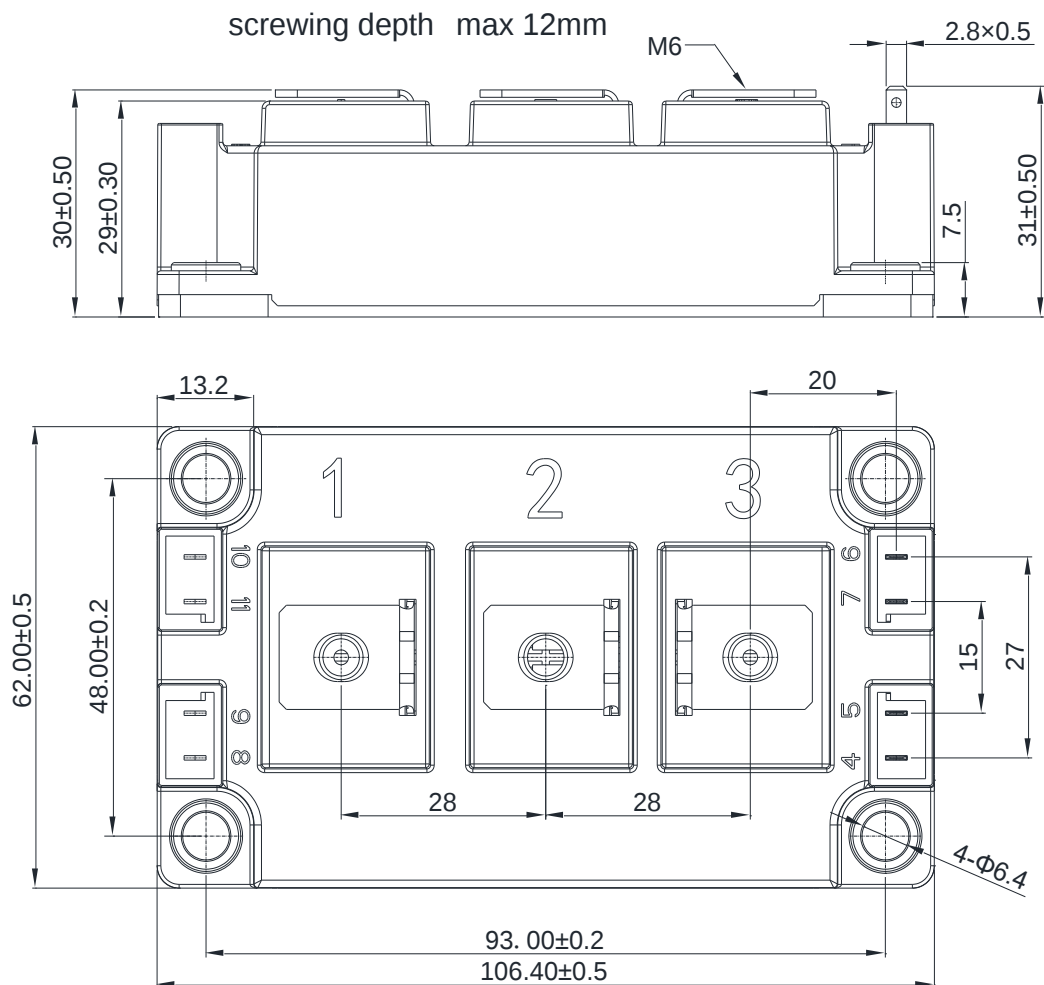


● Circuit Diagram



● Package Outline Information

Dimensions in Millimeters





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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.

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