

IGBT Modules



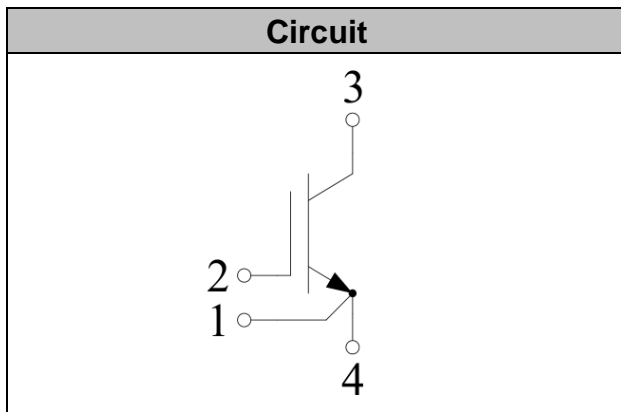
V_{CES}	1200V
I_C	100A

Applications

- AC and DC motor control
- PFC
- SMPS
- Brake switch

Features

- Low $V_{CE(sat)}$ with Trench Field-stop technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Small temperature coefficient
- Low inductance
- Isolated copper baseplate using DBC technology
- SOT-227 package



● 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	$T_C=100^{\circ}C$	100	A
Peak Collector Current	I_{CRM}	$t_p=1ms$	200	A
Gate-Emitter Voltage	V_{GES}	$T_{vj}=25^{\circ}C$	± 20	V
Total Power Dissipation (IGBT-inverter)	P_{tot}	$T_C=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	535	W



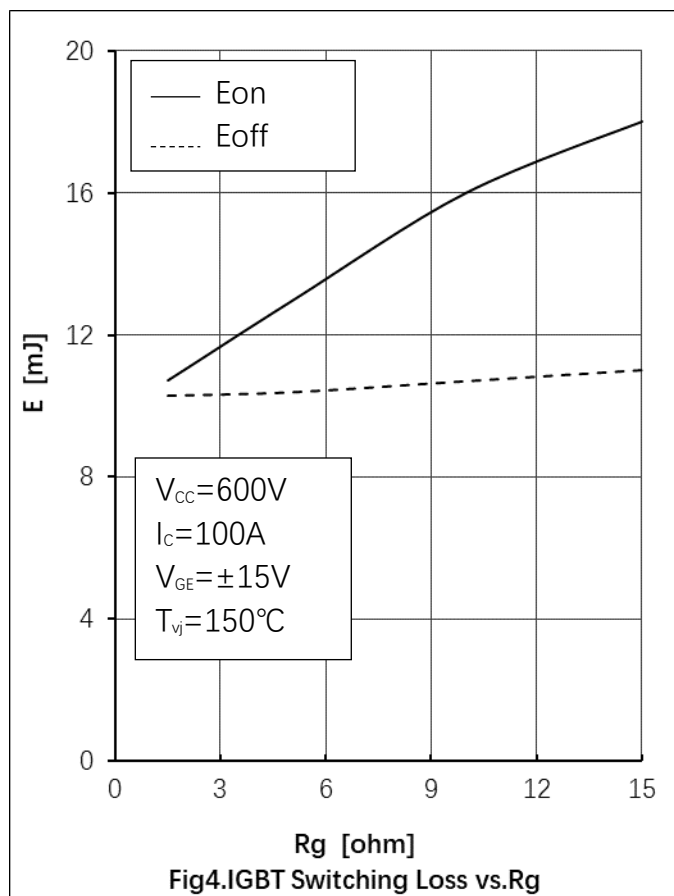
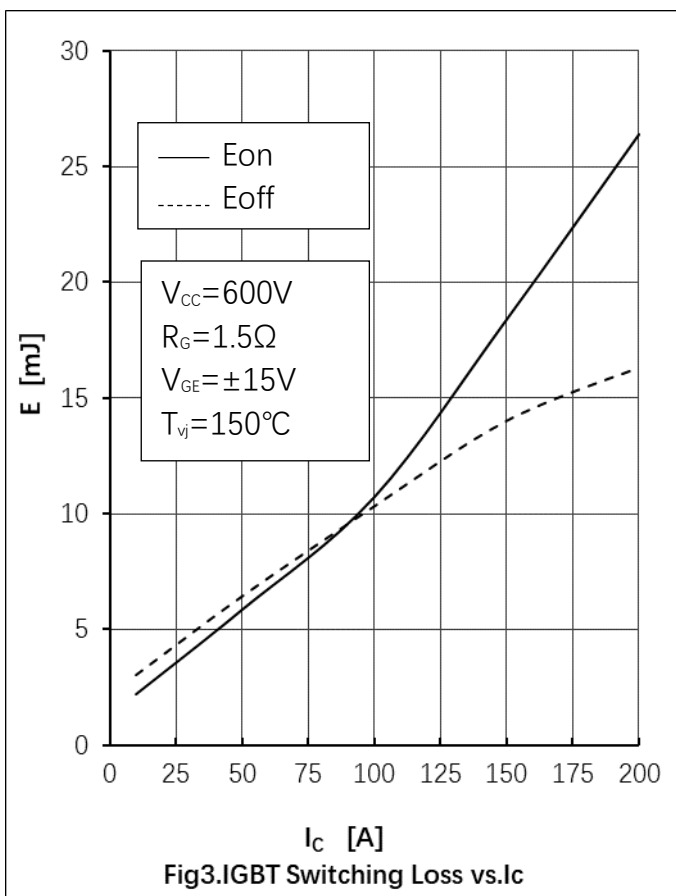
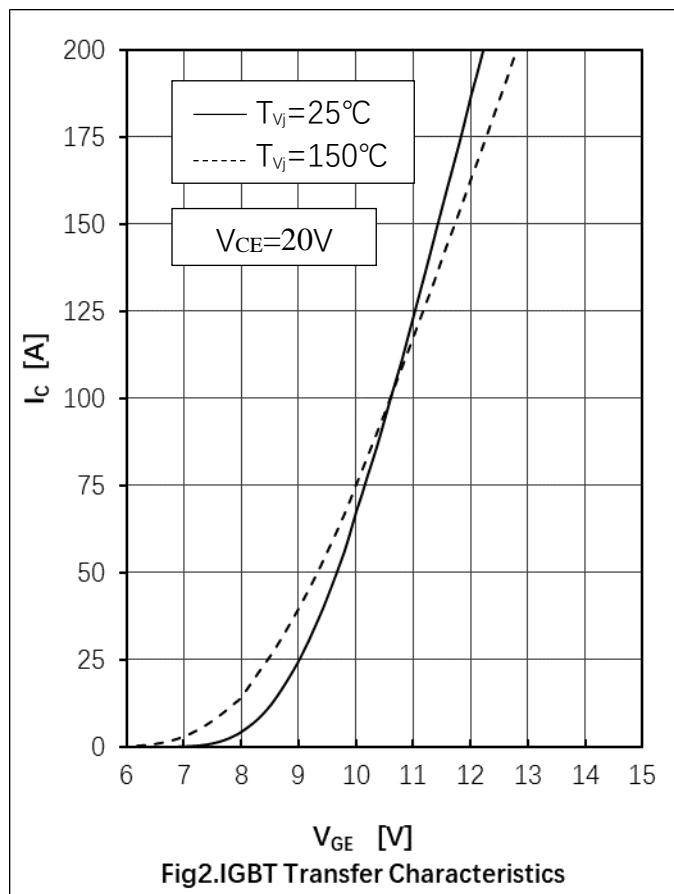
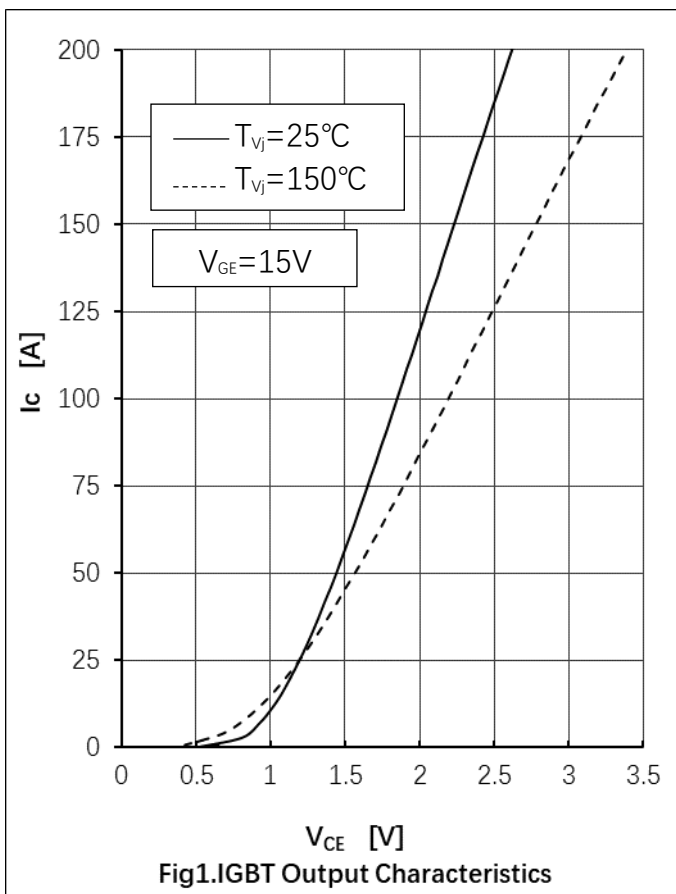
● IGBT Characteristics

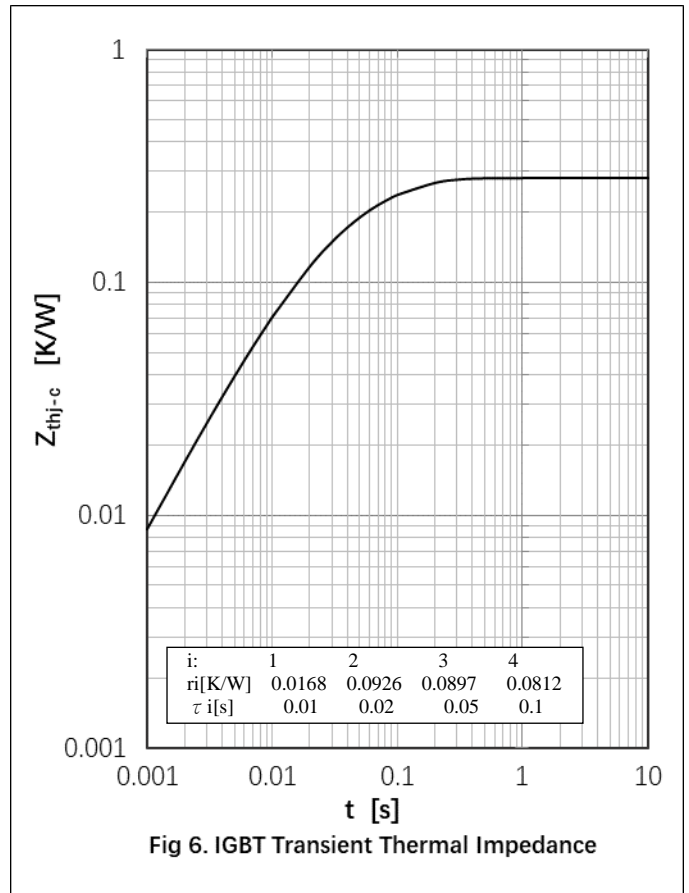
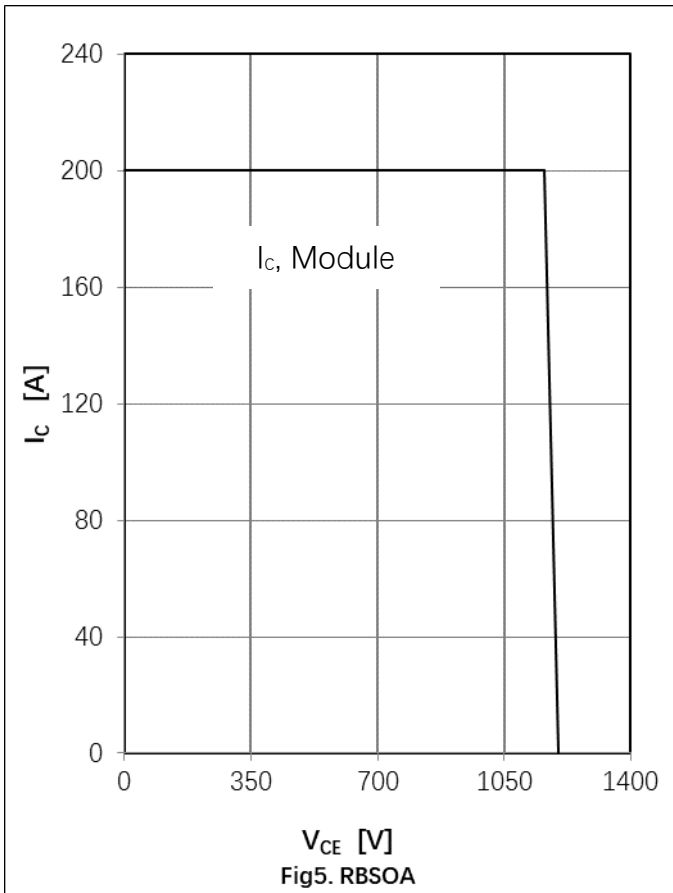
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=4mA, T_{vj}=25^{\circ}C$	5.0	5.8	6.5	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1.0	mA
		$V_{CE}=1200V, V_{GE}=0V, T_{vj}=125^{\circ}C$			5.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.85	2.25	V
		$I_C=100A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.10		V
		$I_C=100A, V_{GE}=15V, T_{vj}=150^{\circ}C$		2.20		V
Gate Charge	Q_G			0.68		uC
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz, T_{vj}=25^{\circ}C$		8.8		nF
Reverse Transfer Capacitance	C_{res}			0.27		nF
Internal Gate Resistance	R_{gint}			7.5		Ω
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=1.5\Omega$ $T_{vj}=25^{\circ}C$		129		ns
Rise Time	t_r			40		ns
Turn-off Delay Time	$t_{d(off)}$			232		ns
Fall Time	t_f			176		ns
Energy Dissipation During Turn-on Time	E_{on}			6.2		mJ
Energy Dissipation During Turn-off Time	E_{off}			6.7		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=1.5\Omega$ $T_{vj}=150^{\circ}C$		105		ns
Rise Time	t_r			46		ns
Turn-off Delay Time	$t_{d(off)}$			260		ns
Fall Time	t_f			309		ns
Energy Dissipation During Turn-on Time	E_{on}			10.7		mJ
Energy Dissipation During Turn-off Time	E_{off}			10.3		mJ
SC Data	I_{sc}	$t_p \leq 10\mu s, V_{GE}=15V,$ $T_{vj}=150^{\circ}C, V_{CC}=600V,$ $V_{CEM} \leq 1200V$		400		A



● **Module Characteristics** $T_c=25^{\circ}\text{C}$ unless otherwise specified

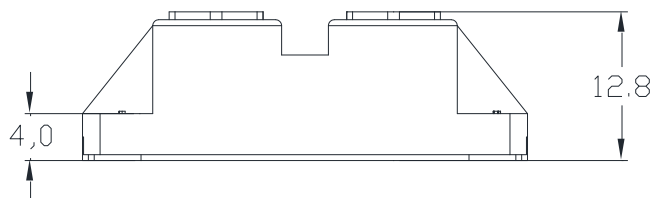
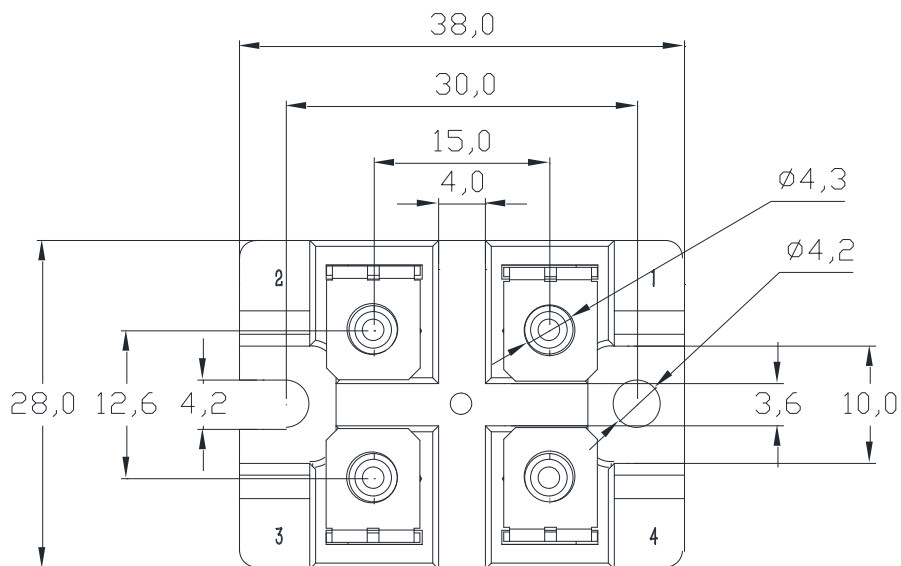
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Junction to Case	$R_{\theta\text{jc}}$	per IGBT			0.28	K/W
Case to Sink	$R_{\theta\text{cs}}$	Conductive grease applied		0.15		K/W
Module Electrodes Torque	M_t	Recommended(M4)	0.7	1.0	1.5	N·m
Module to Sink Torque	M_s	Recommended(M4)	0.7	1.0	1.5	N·m
Weight of Module	G			32		g





Package Outline Information

CASE: GJ





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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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