



IGBT Modules

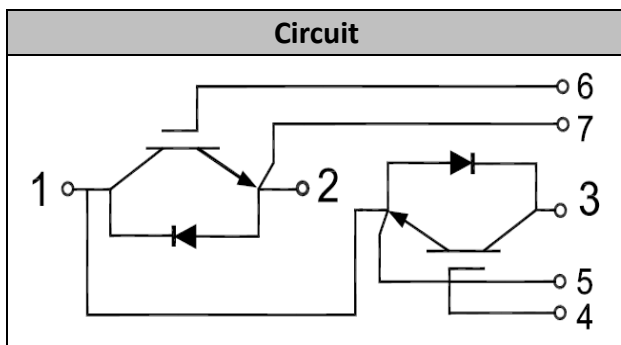
V_{CES}	650V
I_c	100A

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
- 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}	$V_{GE}=0V, I_c=4mA, T_{vj}=25^{\circ}C$	650	V
Continuous Collector Current	I_c	$T_c=100^{\circ}C$	100	A
Repetitive 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	P_{tot}	$T_c=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	416	W

**Characteristic Values**

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, $I_C=2.4mA$, $T_{vj}=25^{\circ}C$	5.0	5.8	6.5	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=650V$, $V_{GE}=0V$, $T_{vj}=25^{\circ}C$			1.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100A$, $V_{GE}=15V$, $T_{vj}=25^{\circ}C$		1.45		V
		$I_C=100A$, $V_{GE}=15V$, $T_{vj}=125^{\circ}C$		1.65		
		$I_C=100A$, $V_{GE}=15V$, $T_{vj}=150^{\circ}C$		1.70		
Input Capacitance	C_{ies}	$V_{CE}=25V$, $V_{GE}=0V$,		7.91		nF
Reverse Transfer Capacitance	C_{res}	$f=1MHz$, $T_{vj}=25^{\circ}C$		0.35		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$, $T_{vj}=25^{\circ}C$			400	nA
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=3.9\Omega$ $T_{vj}=25^{\circ}C$		152		ns
Rise Time	t_r			112		ns
Turn-off Delay Time	$t_{d(off)}$			233		ns
Fall Time	t_f			131		ns
Energy Dissipation During Turn-on Time	E_{on}			4.4		mJ
Energy Dissipation During Turn-off Time	E_{off}			2.6		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=300V$ $V_{GE}=\pm 15V$ $R_G=3.9\Omega$ $T_{vj}=150^{\circ}C$		143		ns
Rise Time	t_r			101		ns
Turn-off Delay Time	$t_{d(off)}$			265		ns
Fall Time	t_f			180		ns
Energy Dissipation During Turn-on Time	E_{on}			4.95		mJ
Energy Dissipation During Turn-off Time	E_{off}			3.45		mJ



● Diode

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_{vj}=25^{\circ}\text{C}$	650	V
Continuous DC Forward Current	I_F		100	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	200	A

Characteristic Values

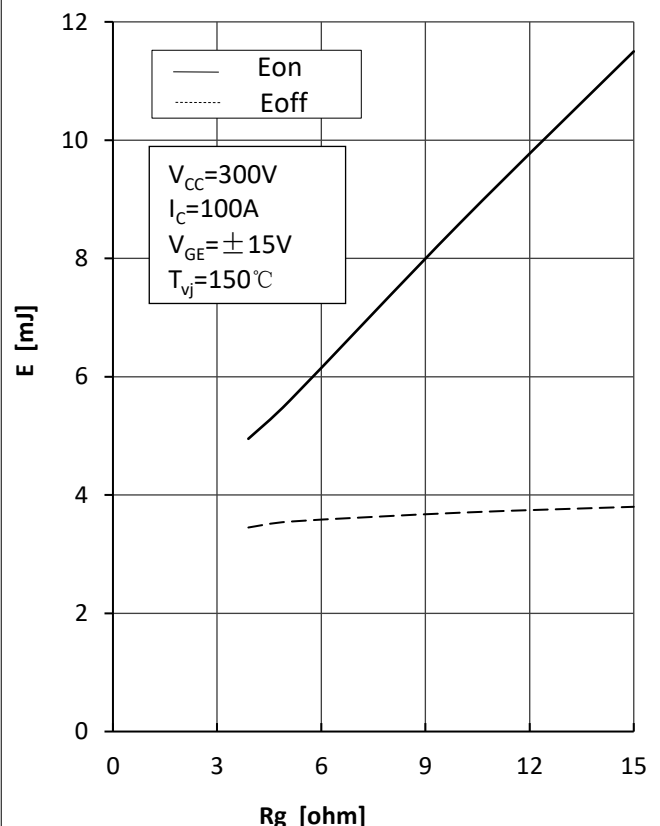
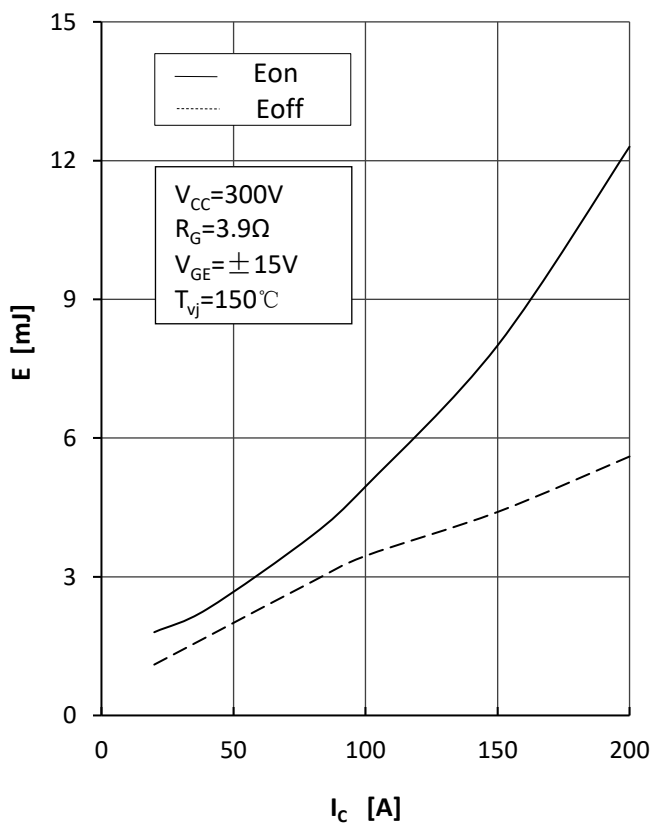
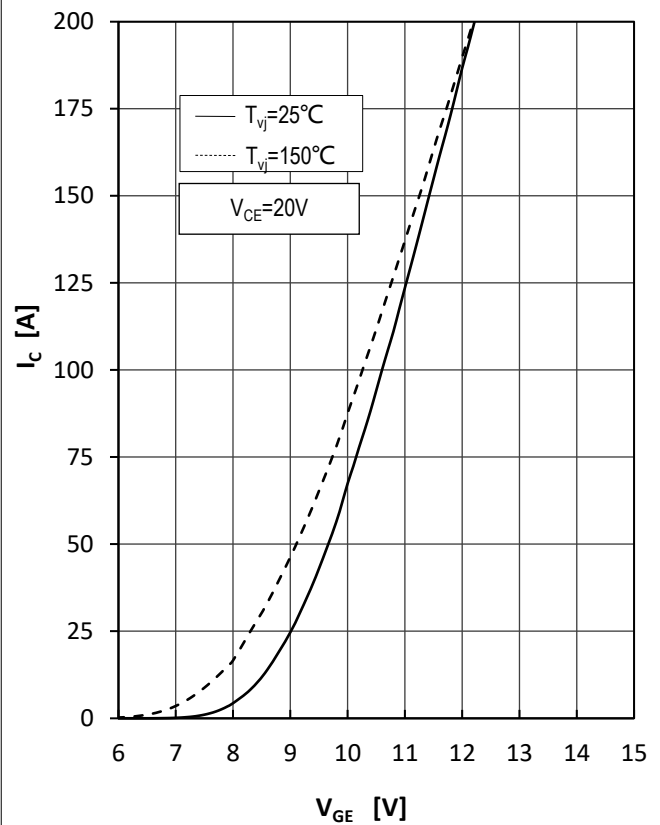
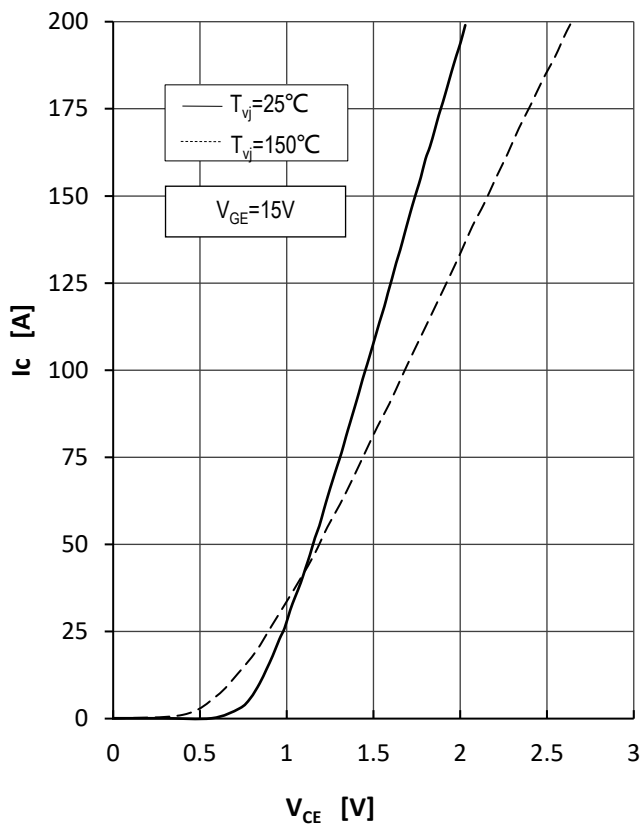
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=100\text{A}, T_{vj}=25^{\circ}\text{C}$		1.70		V
		$I_F=100\text{A}, T_{vj}=125^{\circ}\text{C}$		1.50		
		$I_F=100\text{A}, T_{vj}=150^{\circ}\text{C}$		1.45		
Recovered Charge	Q_{rr}	$I_F=100\text{A}$		1.0		μC
Peak Reverse Recovery Current	I_{rr}	$V_R=300\text{V}$		17		A
Reverse Recovery Energy	E_{rec}	$-di_F/dt=1000\text{A}/\mu\text{s}$		0.1		mJ
Recovered Charge	Q_{rr}	$I_F=100\text{A}$		2.5		μC
Peak Reverse Recovery Current	I_{rr}	$V_R=300\text{V}$		26		A
Reverse Recovery Energy	E_{rec}	$-di_F/dt=1000\text{A}/\mu\text{s}$		0.29		mJ
		$T_{vj}=150^{\circ}\text{C}$				

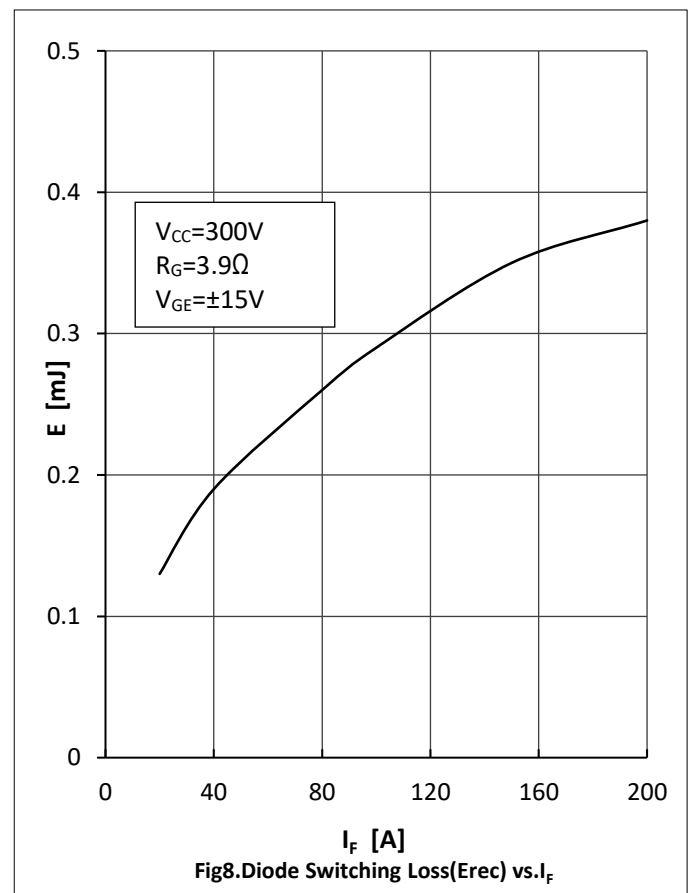
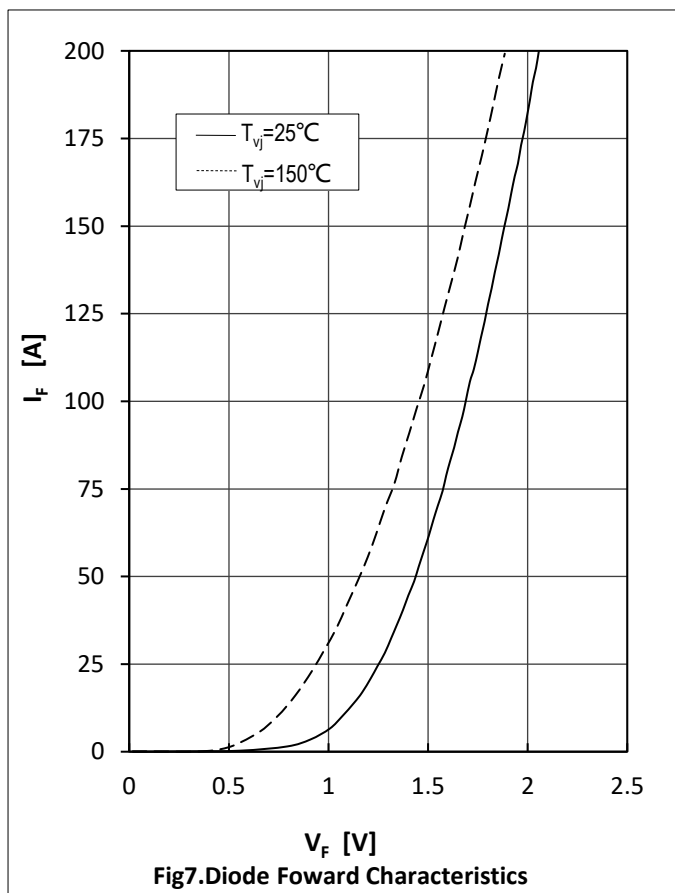
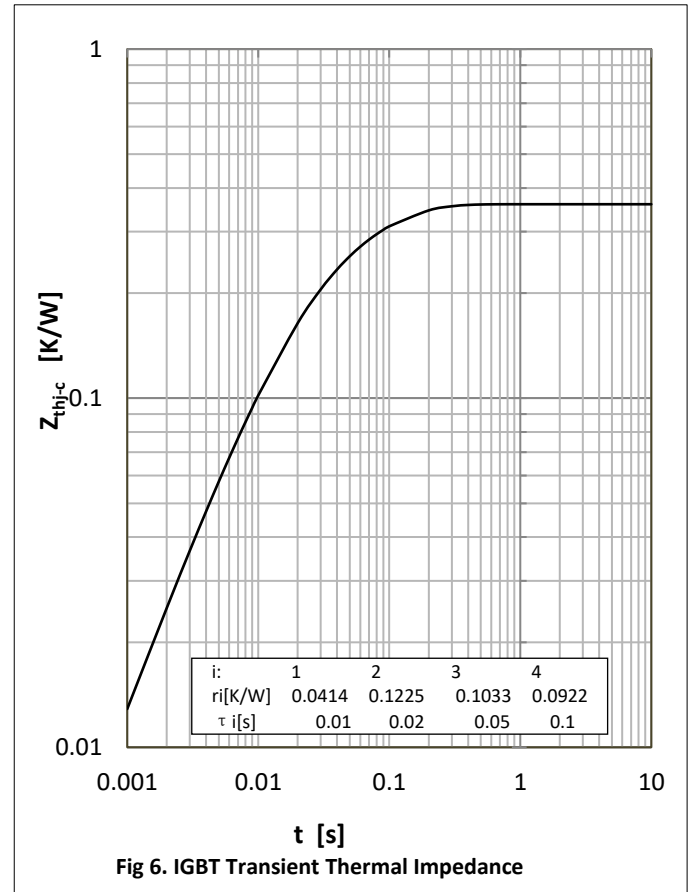
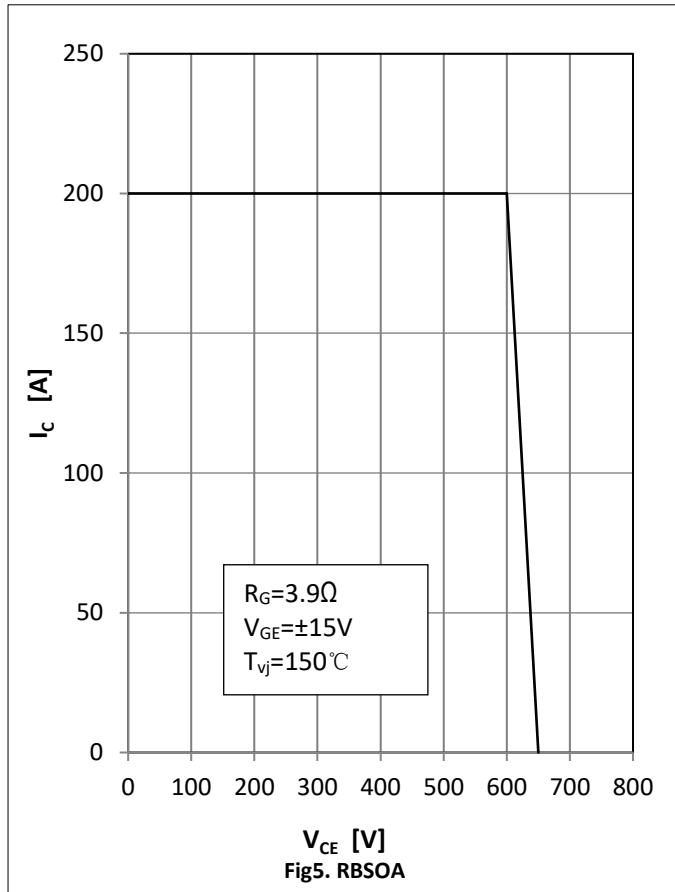


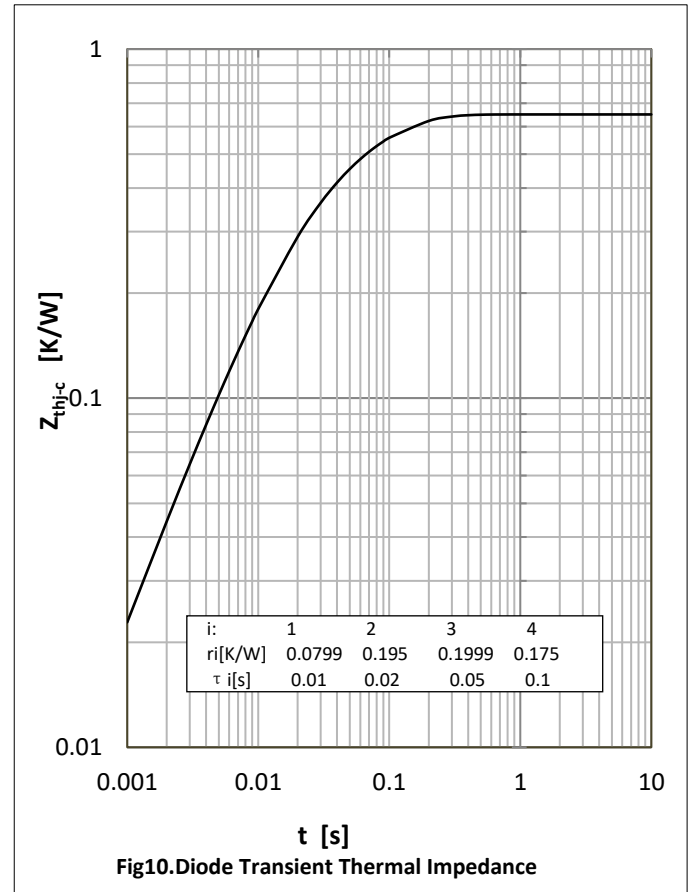
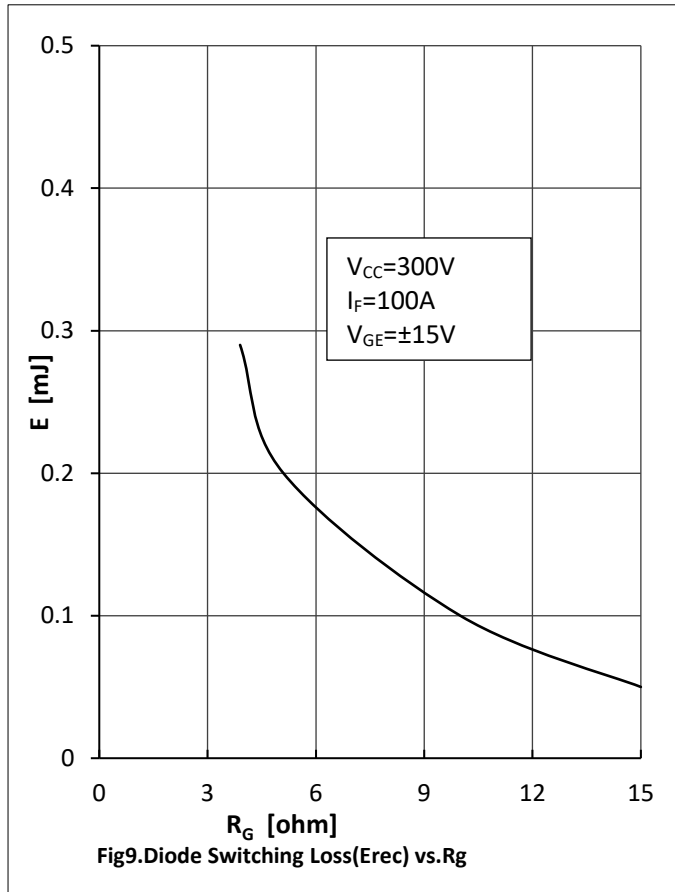
● Module Characteristics

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

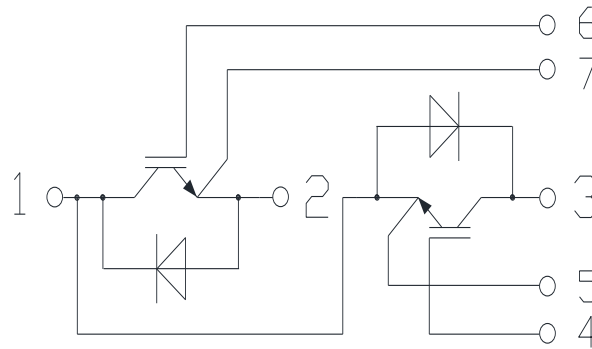
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Thermal Resistance Junction to Case	$R_{\theta\text{JC}}$	per IGBT			0.36	K/W
		per Diode			0.65	
Thermal Resistance Case to Sink	$R_{\theta\text{CS}}$	Conductive grease applied		0.05		K/W
Comparative Tracking Index	CTI		200			
Module Electrodes Torque	M_t	Recommended(M5)	3.0		5.0	N·m
Module-to-Sink Torque	M_s	Recommended(M6)	3.0		5.0	N·m
Weight of Module	G			150		g





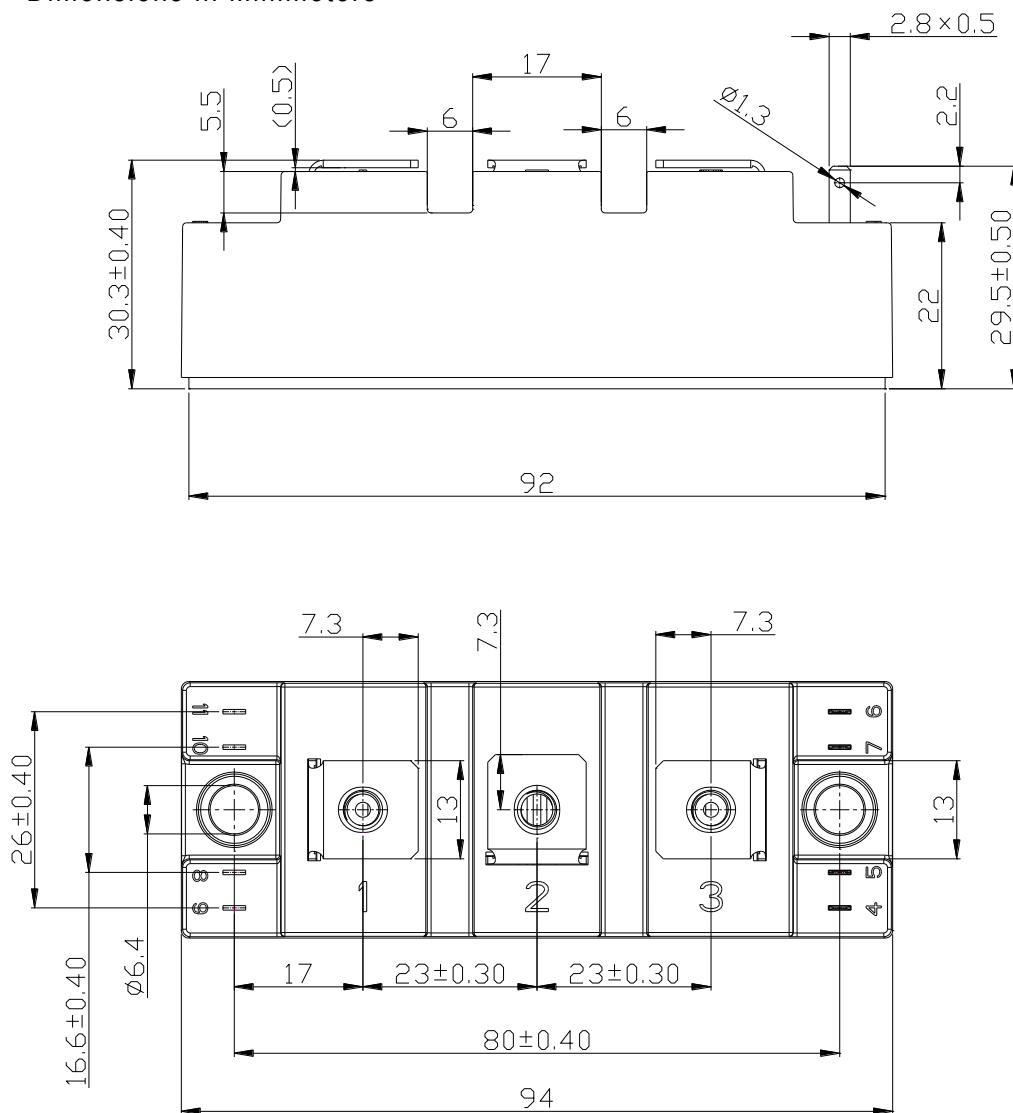


● Circuit Diagram



● 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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