

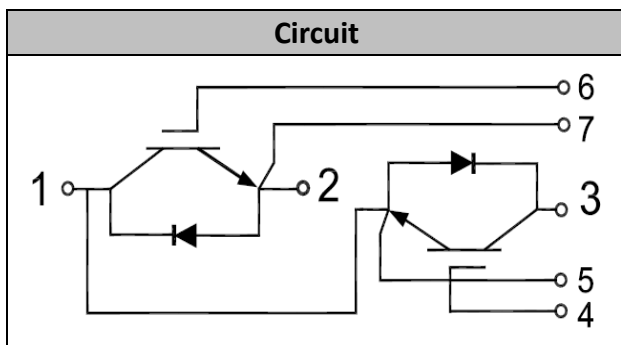


IGBT Modules

V_{CES} 1200V
 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
- 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	$T_C=100^{\circ}C$	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}	$T_C=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	785	W



MG100HF12TLC1 RoHS COMPLIANT

Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=4mA, T_{vj}=25^{\circ}C$	5.2	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	$V_{CE(sat)}$	$I_C=100A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.85	2.20	V
		$I_C=100A, V_{GE}=15V, T_{vj}=150^{\circ}C$		2.25		
		$I_C=100A, V_{GE}=15V, T_{vj}=175^{\circ}C$		2.33		
Gate Charge	Q_G			0.68		uC
Internal Gate Resistance	R_{gint}			7.5		Ω
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V,$		8.8		nF
Reverse Transfer Capacitance	C_{res}	$f=1MHz, T_{vj}=25^{\circ}C$		0.27		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=1.1\Omega$ $T_{vj}=25^{\circ}C$		84		ns
Rise Time	t_r			34		ns
Turn-off Delay Time	$t_{d(off)}$			196		ns
Fall Time	t_f			182		ns
Energy Dissipation During Turn-on Time	E_{on}			6.12		mJ
Energy Dissipation During Turn-off Time	E_{off}			6.44		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=1.1\Omega$ $T_{vj}=150^{\circ}C$		101		ns
Rise Time	t_r			42		ns
Turn-off Delay Time	$t_{d(off)}$			242		ns
Fall Time	t_f			269		ns
Energy Dissipation During Turn-on Time	E_{on}			10.83		mJ
Energy Dissipation During Turn-off Time	E_{off}			8.89		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=100A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=1.1\Omega$ $T_{vj}=175^{\circ}C$		103		ns
Rise Time	t_r			43		ns
Turn-off Delay Time	$t_{d(off)}$			251		ns
Fall Time	t_f			282		ns
Energy Dissipation During Turn-on Time	E_{on}			11.95		mJ
Energy Dissipation During Turn-off Time	E_{off}			9.26		mJ
SC Data	I_{sc}	$t_p \leq 10\mu s, V_{GE}=15V, T_{vj}=150^{\circ}C,$ $V_{cc}=900V, V_{CEM} \leq 1200V$		460		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		100	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	200	A

Characteristic values

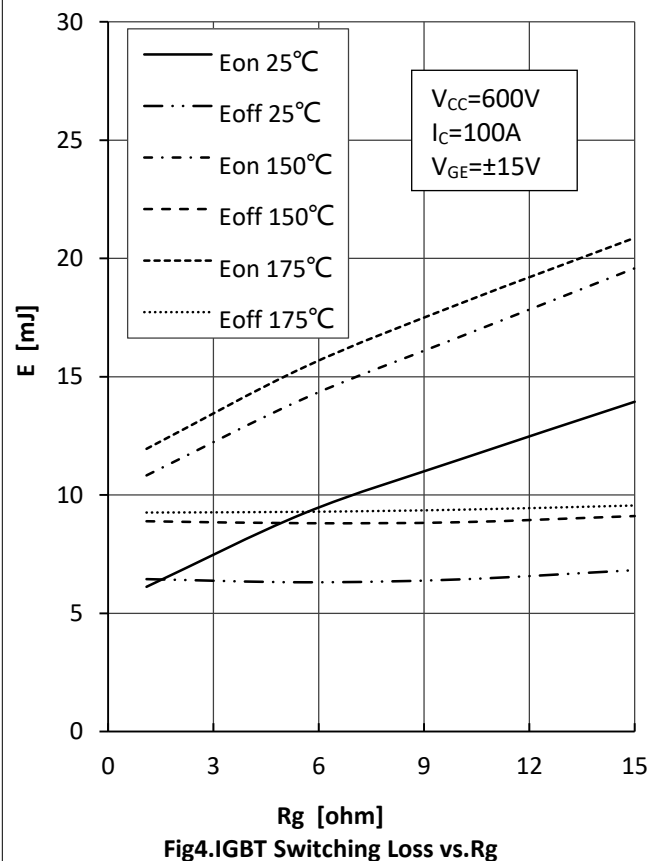
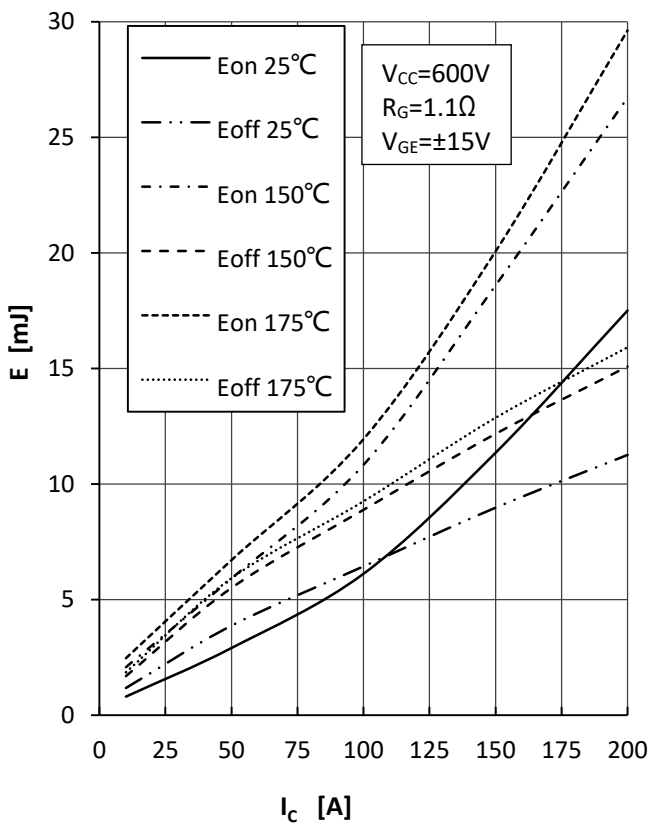
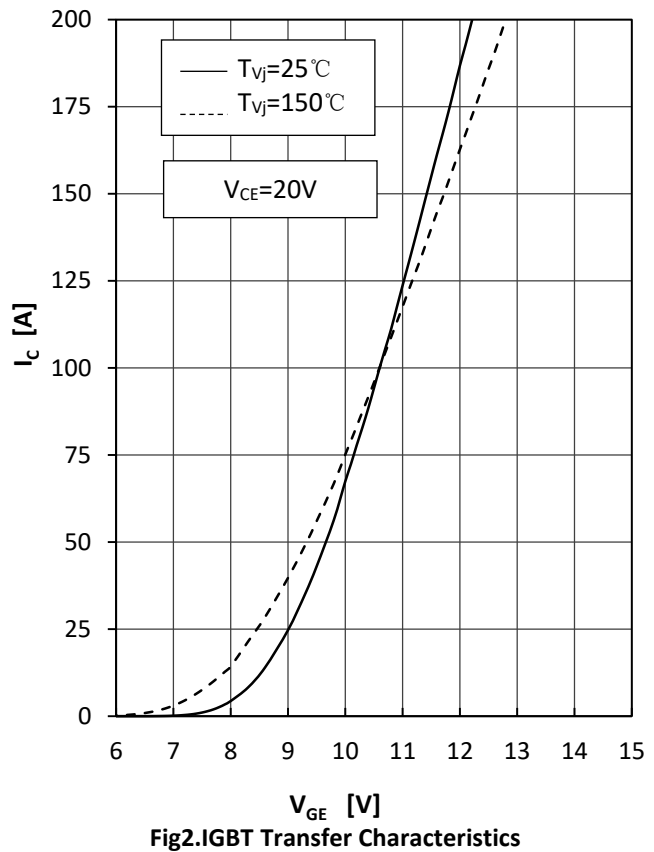
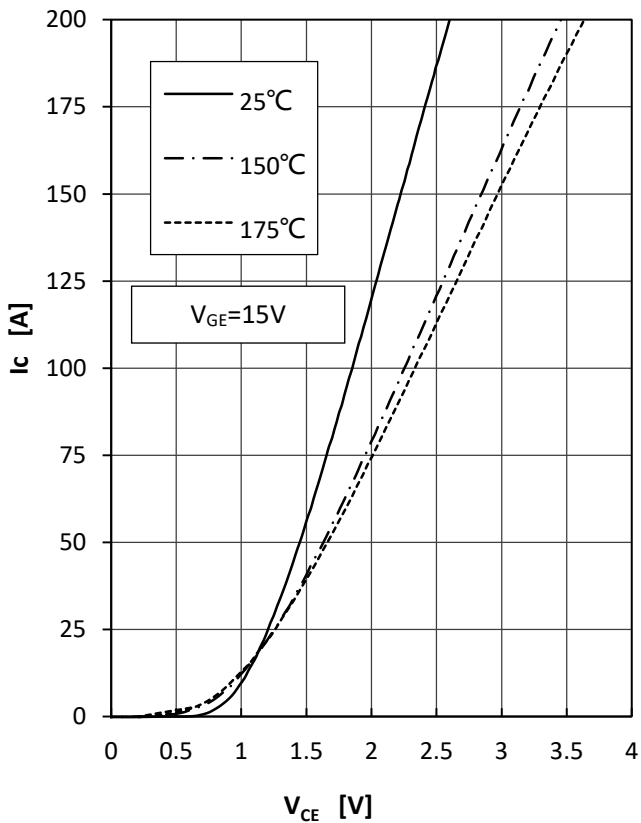
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=100\text{A}, T_{vj}=25^{\circ}\text{C}$		1.85	2.80	V
		$I_F=100\text{A}, T_{vj}=150^{\circ}\text{C}$		1.52		
		$I_F=100\text{A}, T_{vj}=175^{\circ}\text{C}$		1.43		
Recovered Charge	Q_{rr}	$I_F=100\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1900\text{A/us}$ $T_{vj}=25^{\circ}\text{C}$		7.5		μC
Peak Reverse Recovery Current	I_{rr}			85		A
Reverse Recovery Energy	E_{rec}			2.73		mJ
Recovered Charge	Q_{rr}	$I_F=100\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1900\text{A/us}$ $T_{vj}=150^{\circ}\text{C}$		21.4		μC
Peak Reverse Recovery Current	I_{rr}			118		A
Reverse Recovery Energy	E_{rec}			8.25		mJ
Recovered Charge	Q_{rr}	$I_F=100\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1900\text{A/us}$ $T_{vj}=175^{\circ}\text{C}$		25.5		μC
Peak Reverse Recovery Current	I_{rr}			125		A
Reverse Recovery Energy	E_{rec}			10.0		mJ

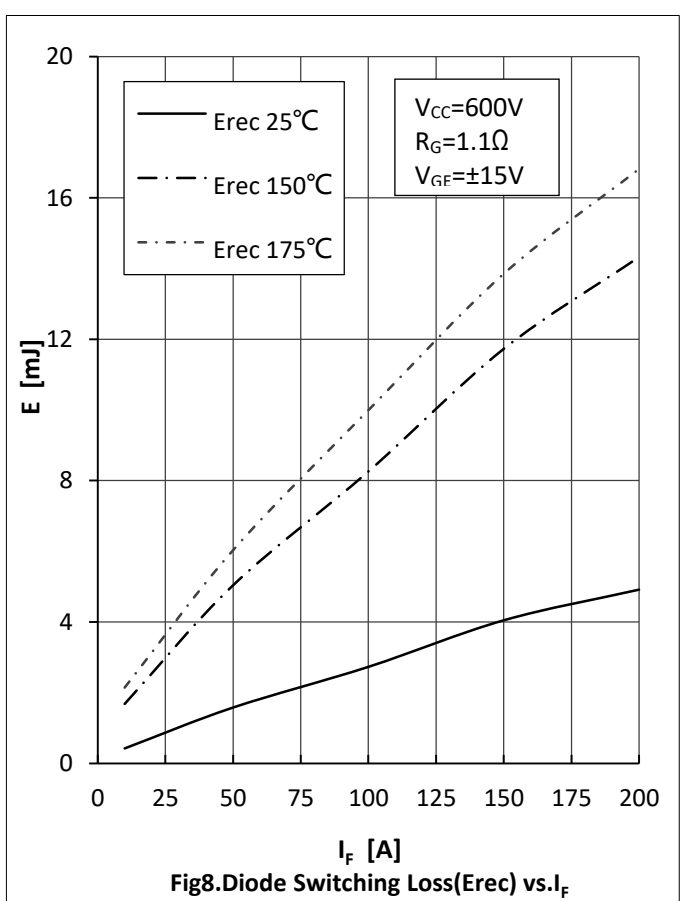
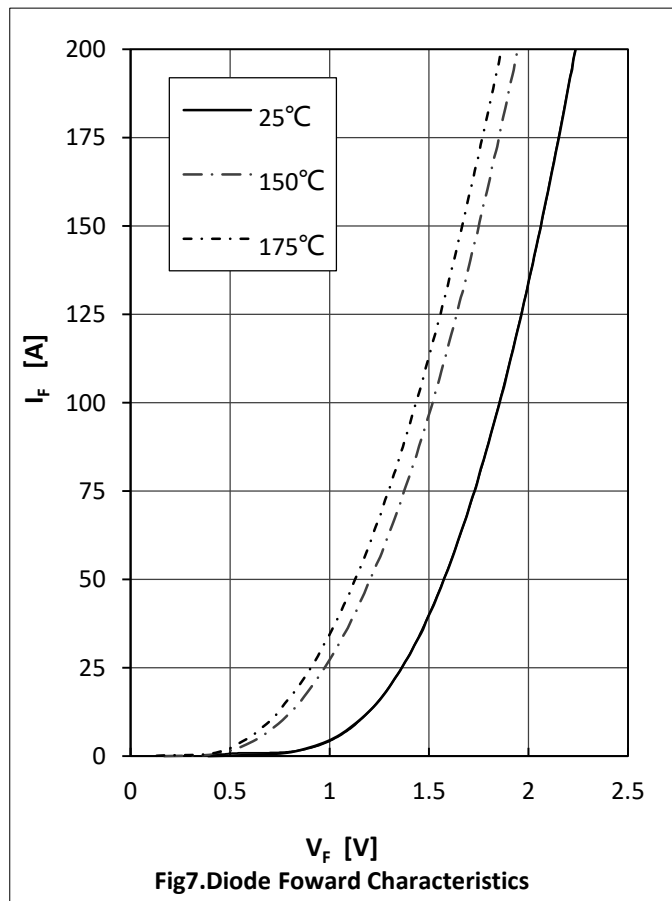
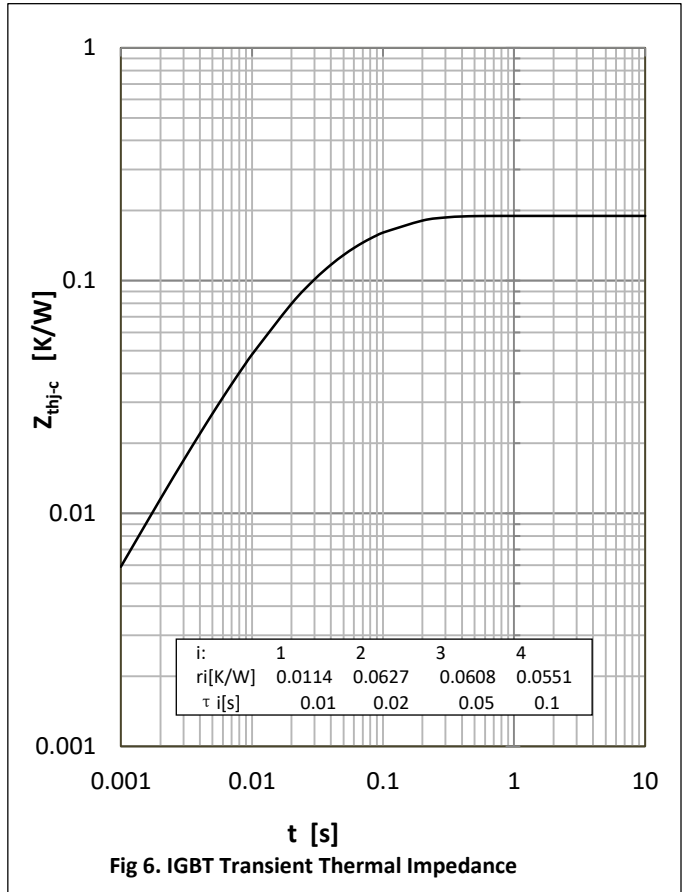
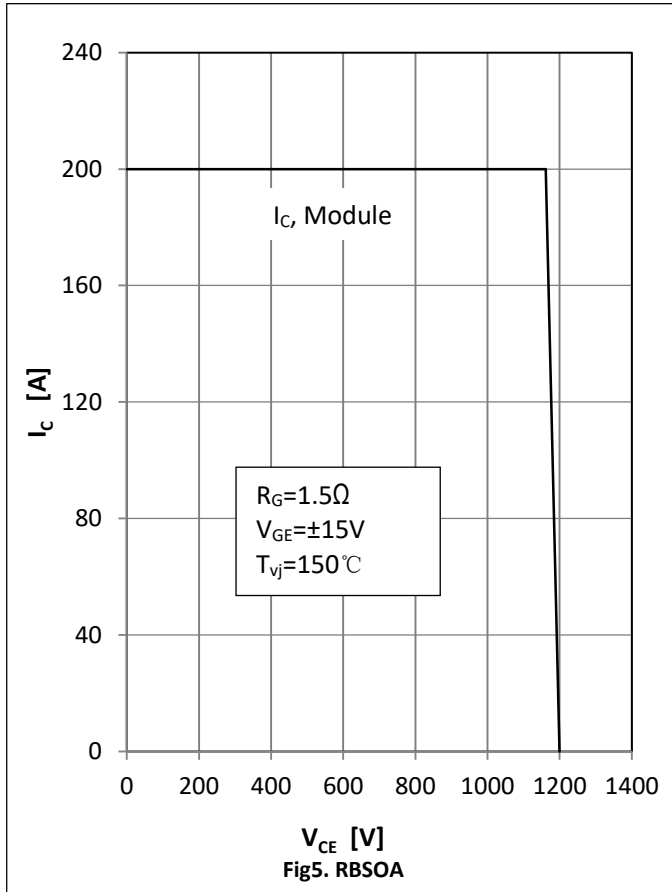


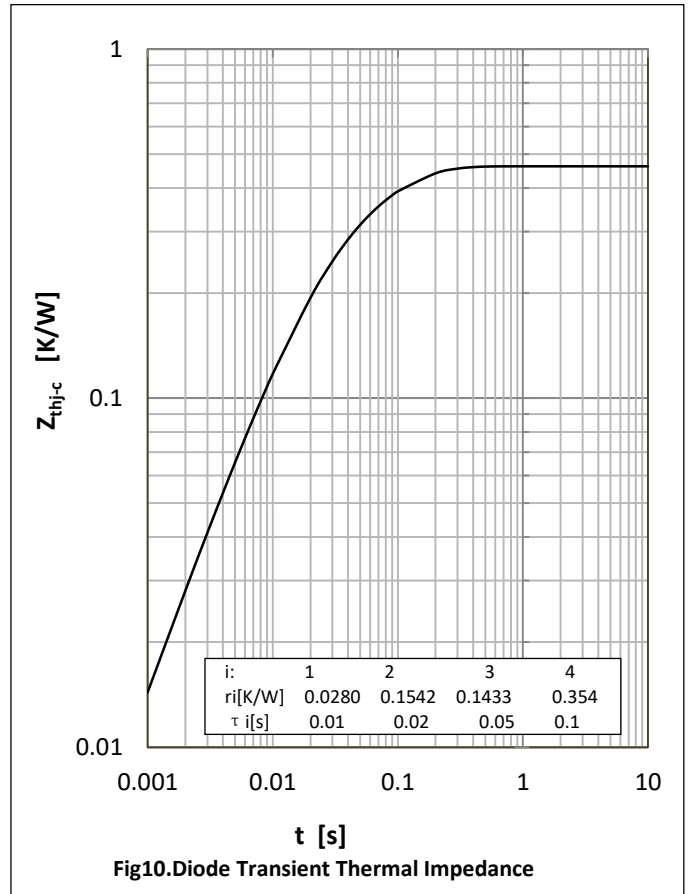
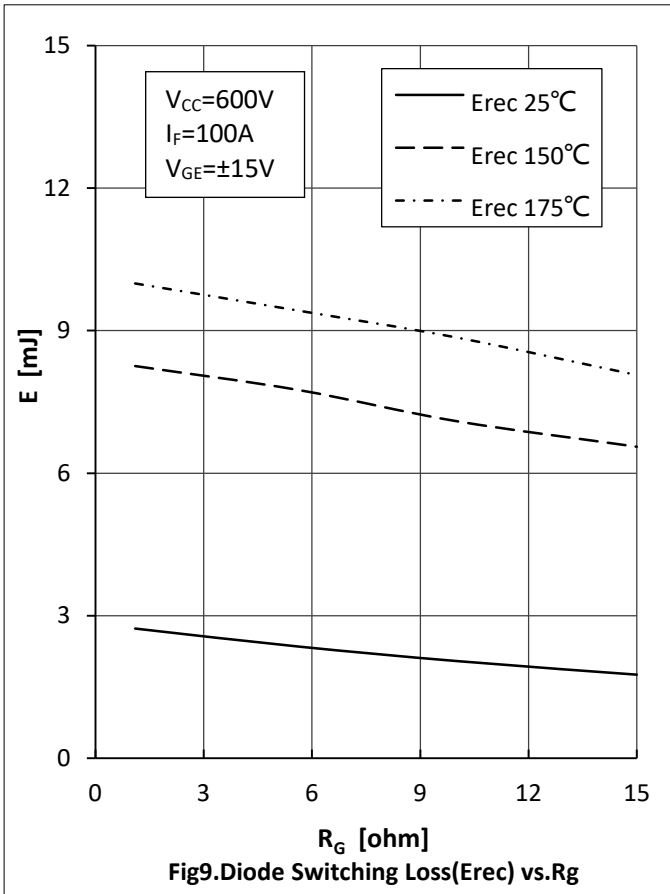
● Module Characteristics

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

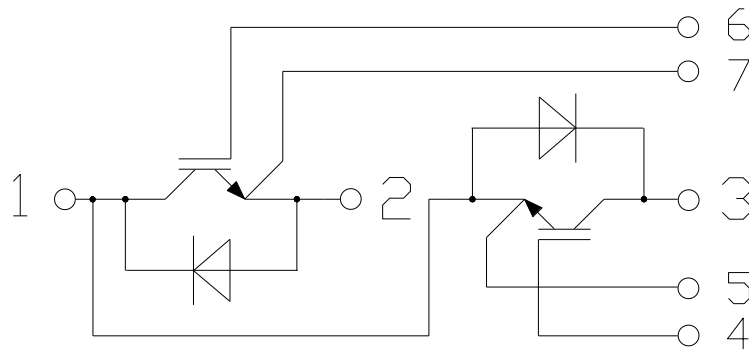
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Thermal Resistance Junction to Case	$R_{\theta\text{JC}}$	per IGBT			0.19	K/W
		per Diode			0.46	
Thermal Resistance Case to Sink	$R_{\theta\text{CS}}$	Conductive grease applied		0.05		K/W
Module Electrodes Torque	M_t	Recommended(M5)	2.5		5.0	N·m
Module-to-Sink Torque	M_s	Recommended(M6)	3.0		5.0	N·m
Weight of Module	G			150		g





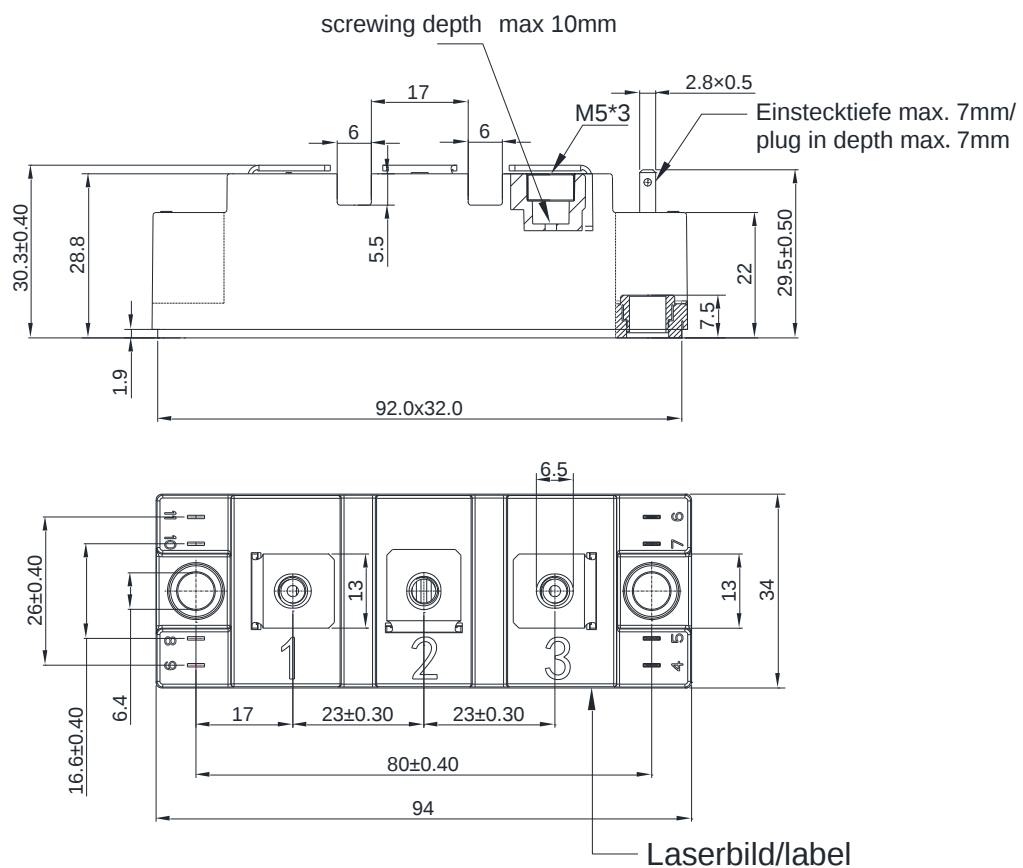


● Circuit Diagram



● 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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