



IGBT Modules

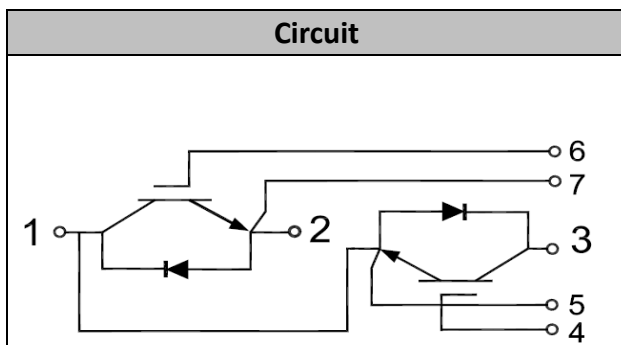
V_{CES} 1200V
 I_C 75A

Applications

- High frequency drivers
- Electric welding machine
- Solar inverters
- UPS (Uninterruptible Power Supplies)

Features

- High speed IGBT with Trench technology
- Low switching losses
- Including ultra fast & soft recovery anti-parallel FWD
- Low inductance package
- 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	$T_C=100^{\circ}C$	75	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	150	A
Gate-Emitter Voltage	V_{GES}	$T_{vj}=25^{\circ}C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	575	W



MG75HF12TFC1

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Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, $I_C=3mA$, $T_{vj}=25^{\circ}C$	5.0	5.8	6.4	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	$V_{CE(sat)}$	$I_C=75A$, $V_{GE}=15V$, $T_{vj}=25^{\circ}C$		2.15		V
		$I_C=75A$, $V_{GE}=15V$, $T_{vj}=125^{\circ}C$		2.45		
		$I_C=75A$, $V_{GE}=15V$, $T_{vj}=150^{\circ}C$		2.55		
Gate Charge	Q_G			0.62		uC
Input Capacitance	C_{ies}	$V_{CE}=25V$, $V_{GE}=0V$, $f=1MHz$, $T_{vj}=25^{\circ}C$		5.75		nF
Reverse Transfer Capacitance	C_{res}			0.24		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$, $T_{vj}=25^{\circ}C$			400	nA
Turn-on Delay Time	$t_{d(on)}$	$I_C=75A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=10\Omega$ $T_{vj}=25^{\circ}C$		317		ns
Rise Time	t_r			32		ns
Turn-off Delay Time	$t_{d(off)}$			409		ns
Fall Time	t_f			115		ns
Energy Dissipation During Turn-on Time	E_{on}			17.3		mJ
Energy Dissipation During Turn-off Time	E_{off}			3.4		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=75A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=10\Omega$ $T_{vj}=150^{\circ}C$		277		ns
Rise Time	t_r			39		ns
Turn-off Delay Time	$t_{d(off)}$			445		ns
Fall Time	t_f			146		ns
Energy Dissipation During Turn-on Time	E_{on}			20.2		mJ
Energy Dissipation During Turn-off Time	E_{off}			4.4		mJ



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● 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		75	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	150	A

Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=75\text{A}, T_{vj}=25^{\circ}\text{C}$		2.15		V
		$I_F=75\text{A}, T_{vj}=125^{\circ}\text{C}$		1.85		
		$I_F=75\text{A}, T_{vj}=150^{\circ}\text{C}$		1.75		
Recovered Charge	Q_{rr}	$I_F=75\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1900\text{A/us}$ $T_{vj}=25^{\circ}\text{C}$		1.95		μC
Peak Reverse Recovery Current	I_{rr}			73		A
Reverse Recovery Energy	E_{rec}			0.51		mJ
Recovered Charge	Q_{rr}	$I_F=75\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1900\text{A/us}$ $T_{vj}=150^{\circ}\text{C}$		7.56		μC
Peak Reverse Recovery Current	I_{rr}			70		A
Reverse Recovery Energy	E_{rec}			2.5		mJ

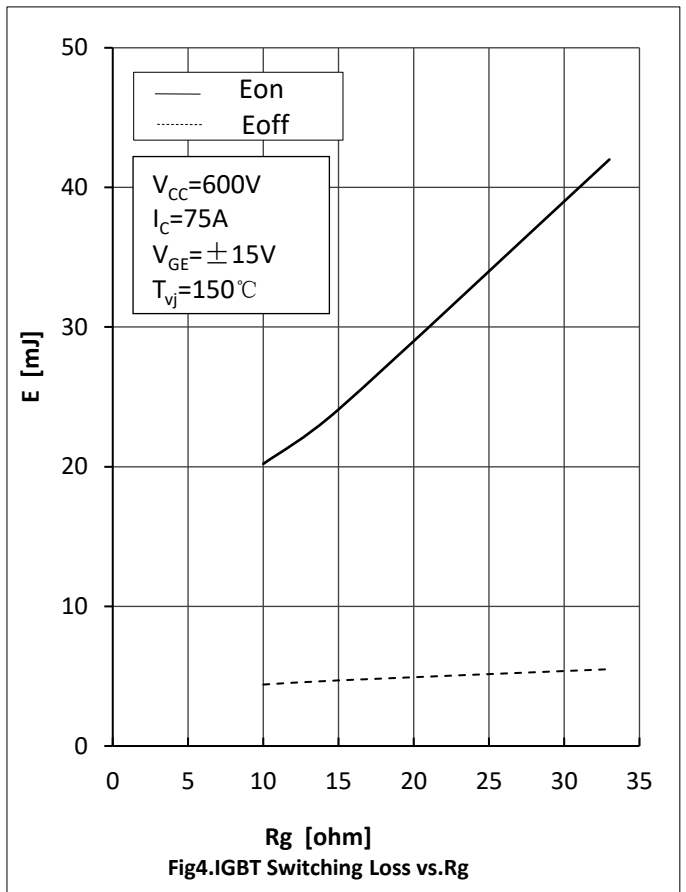
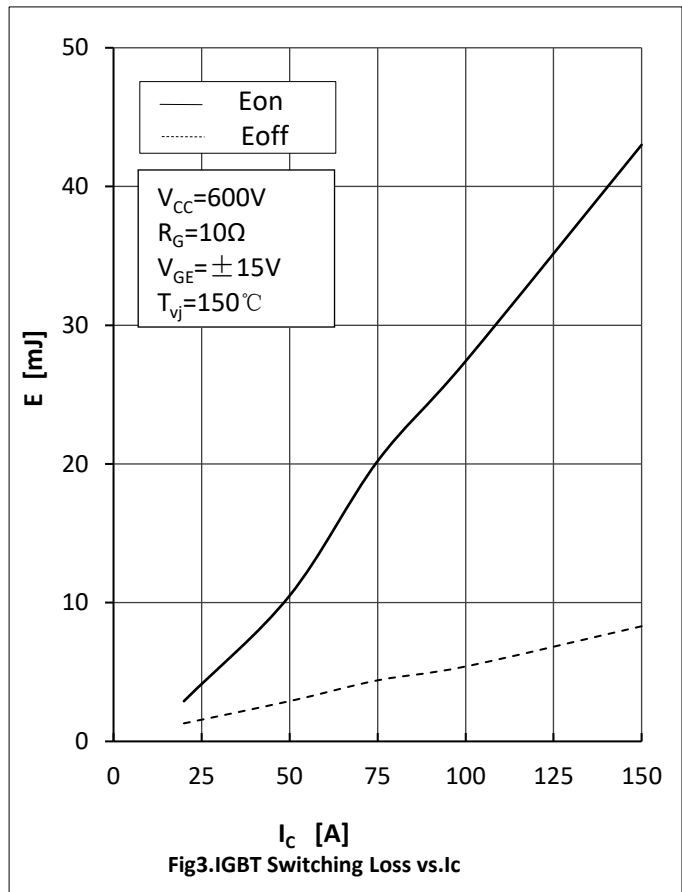
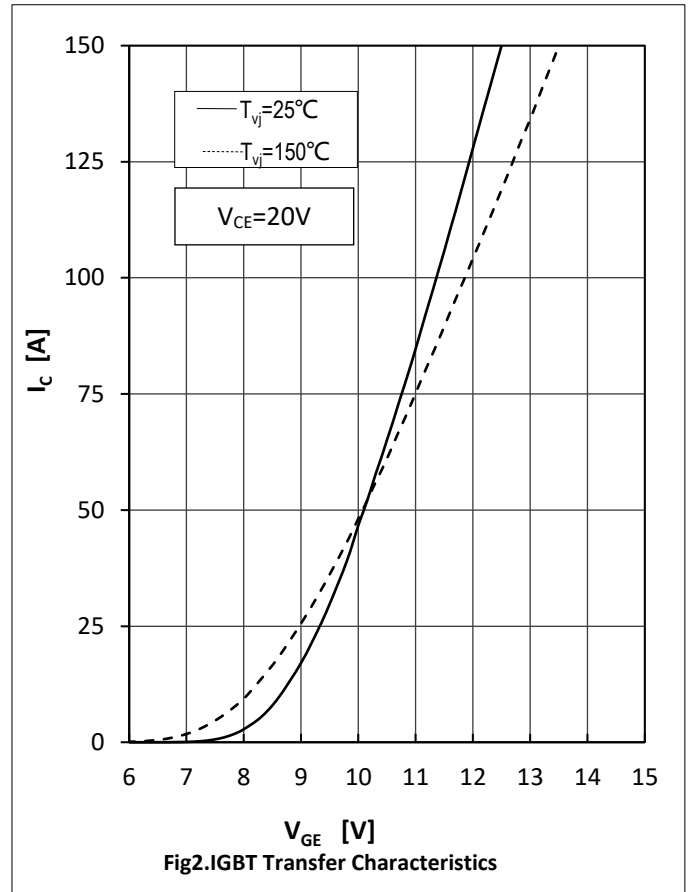
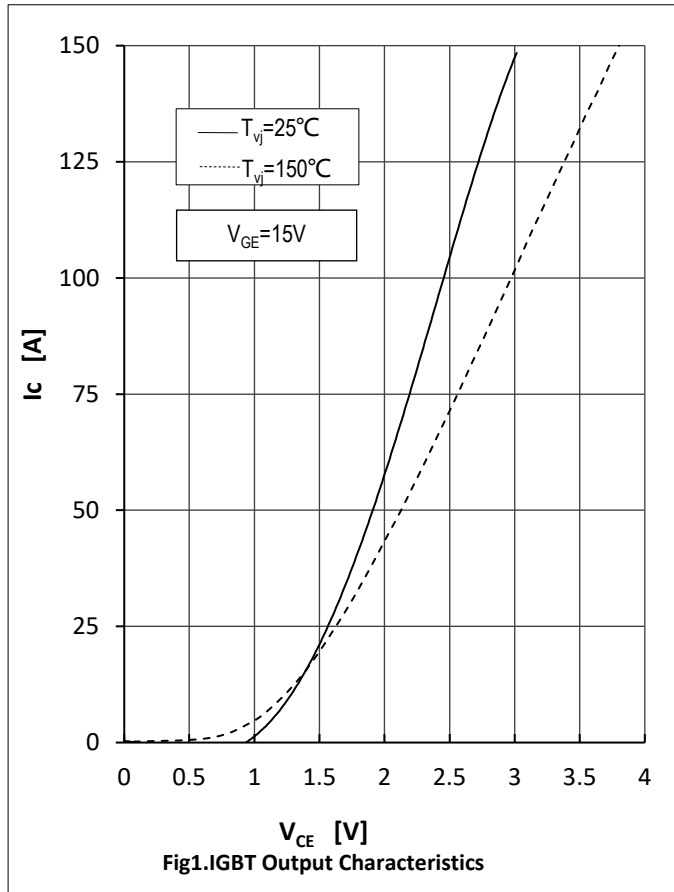


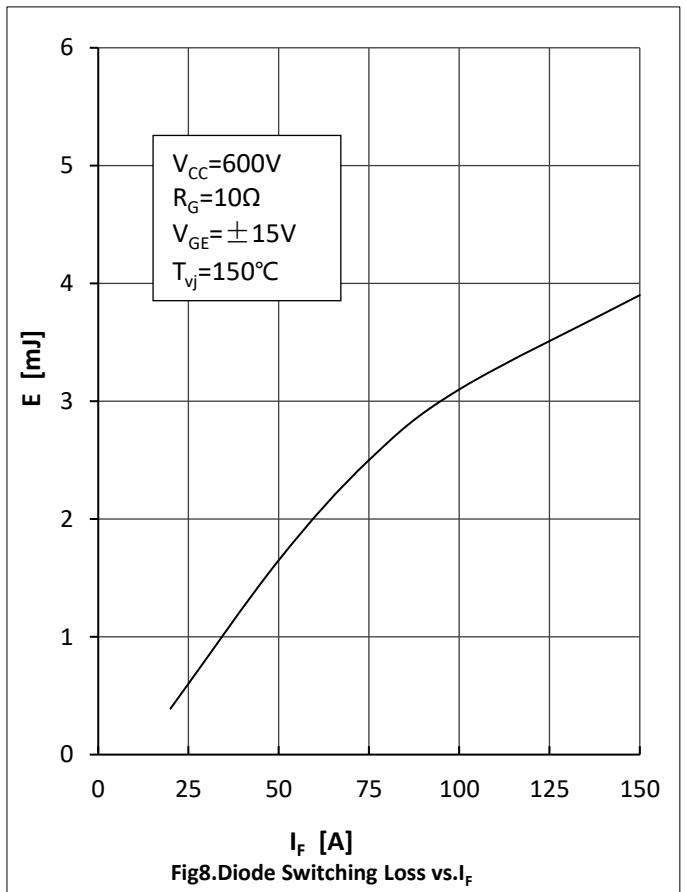
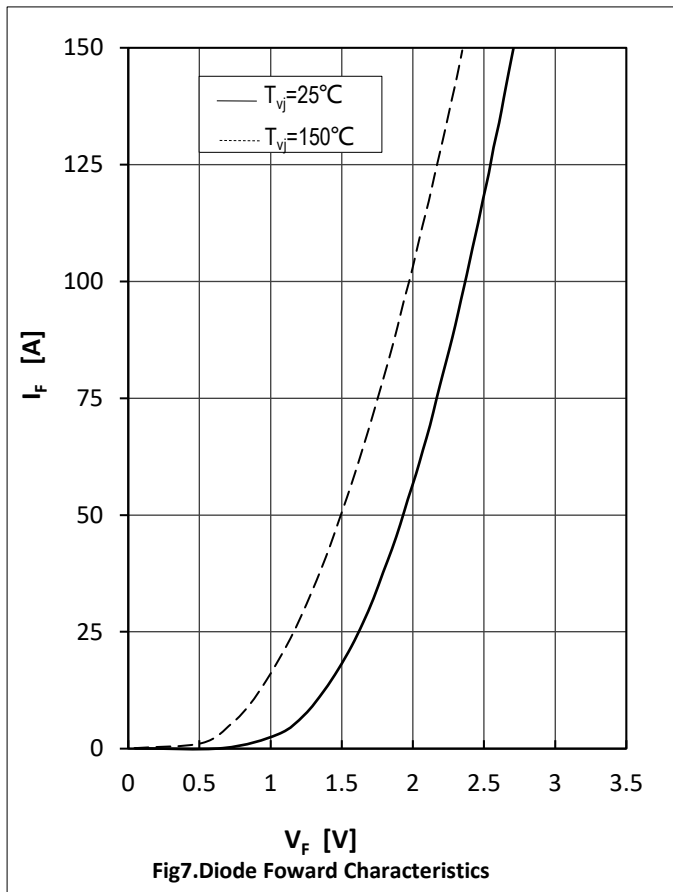
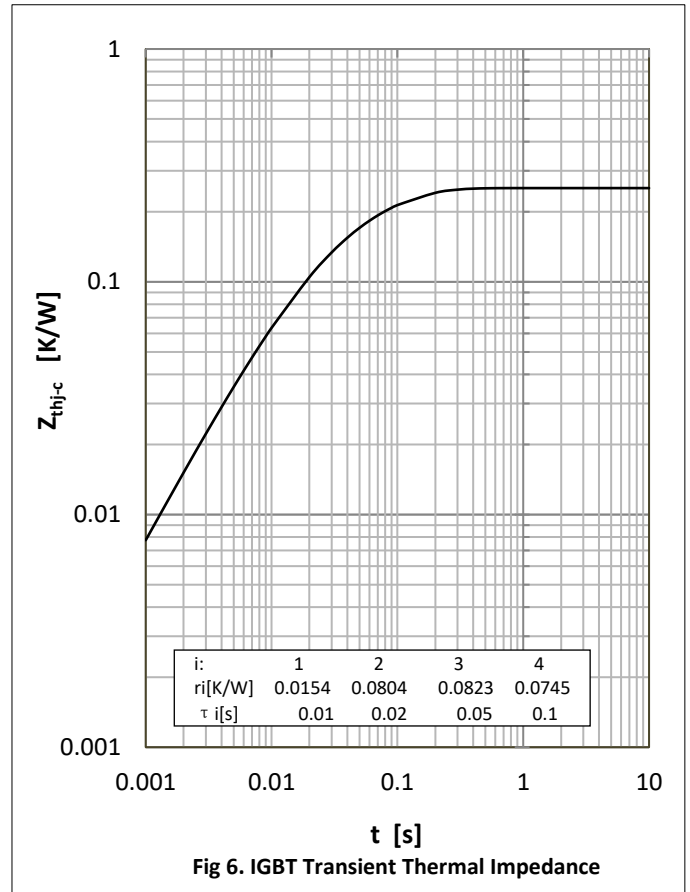
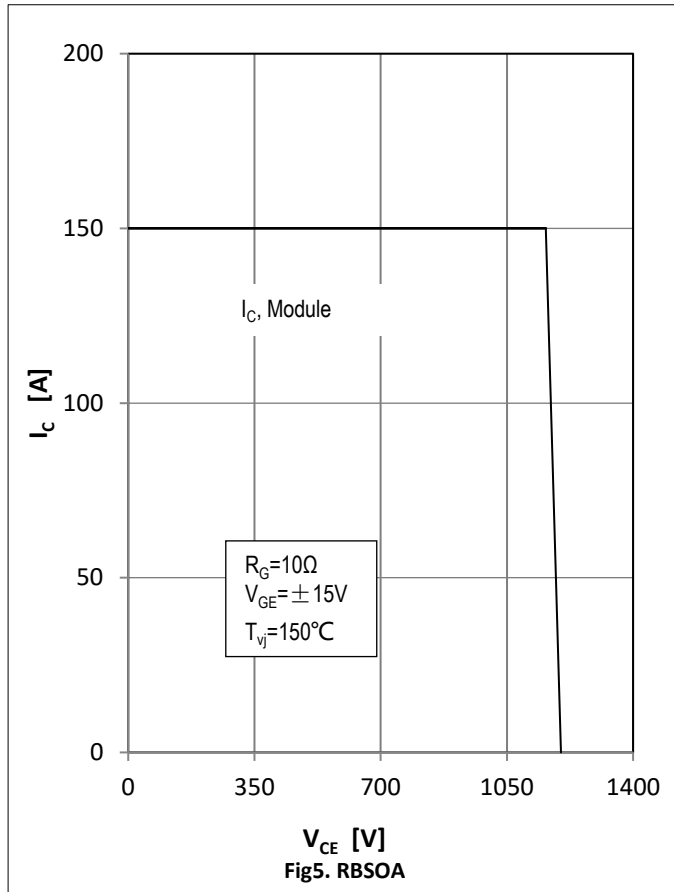
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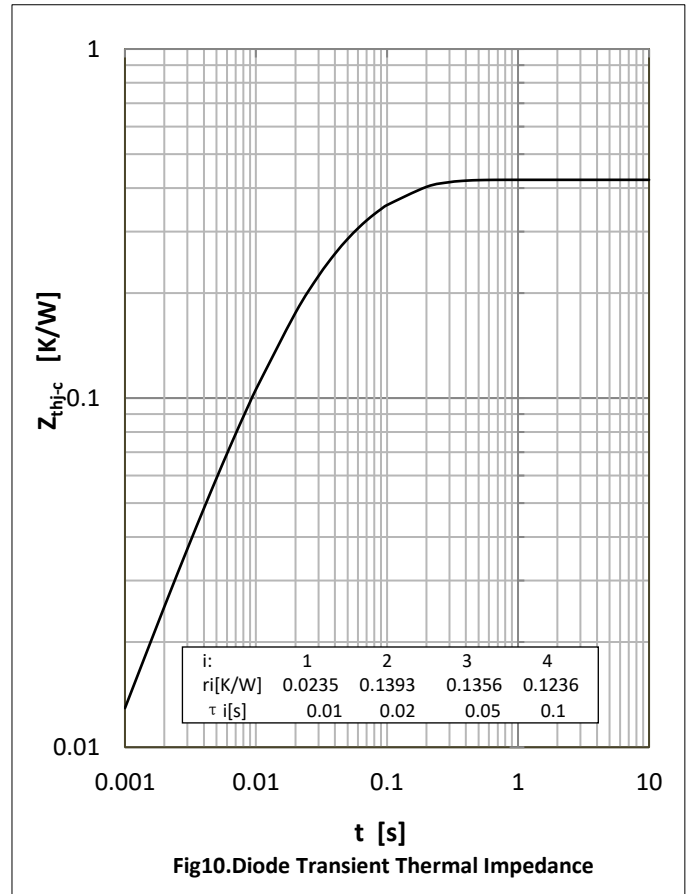
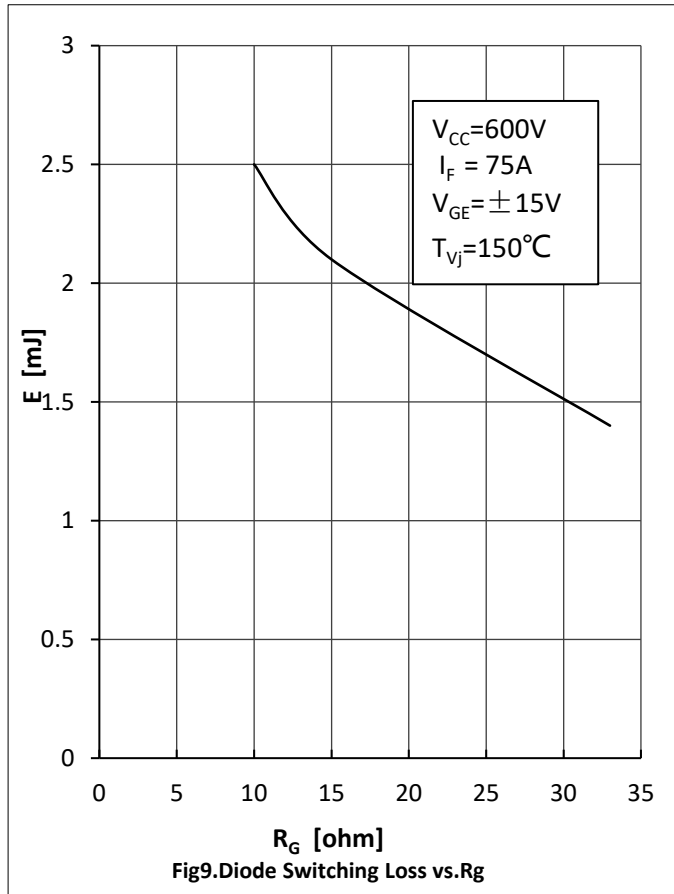
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● **Module Characteristics** $T_C=25^{\circ}\text{C}$ unless otherwise specified

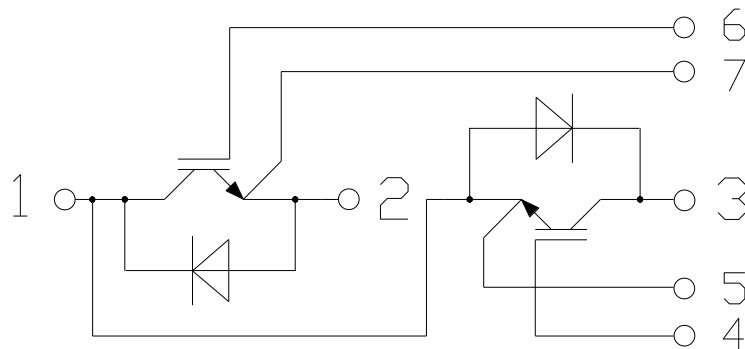
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{isol}	$t=1\text{min}, f=50\text{Hz}$	2500			V
Maximum Junction Temperature	T_{jmax}				175	$^{\circ}\text{C}$
Operating Junction Temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-40		125	$^{\circ}\text{C}$
Thermal Resistance Junction to Case	$R_{\theta\text{JC}}$	per IGBT			0.26	K/W
		per Diode			0.42	
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





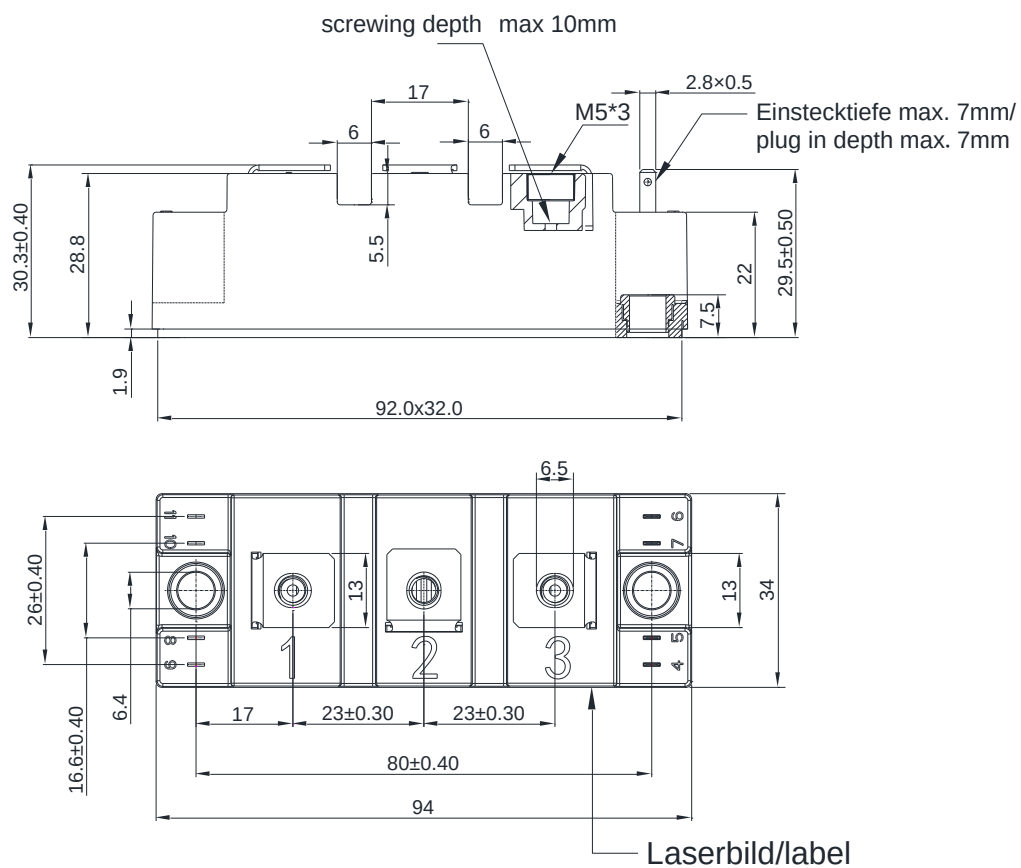


- **Circuit Diagram**



● 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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