

IGBT Modules

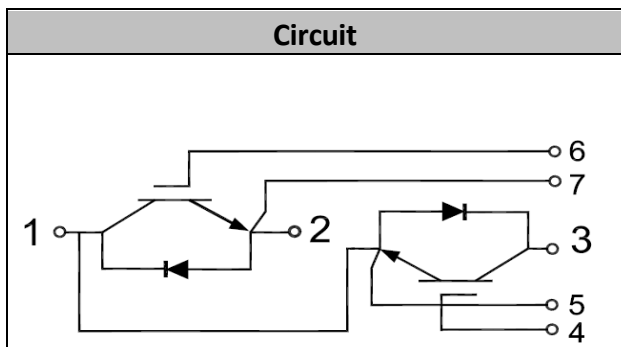
V_{CES} 1200V
 I_c 75A

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	$T_c=100^{\circ}C$	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}	$T_c=25^{\circ}C$ $T_{vjmax}=175^{\circ}C$	530	W



MG75HF12TLC1 RoHS COMPLIANT

Characteristic values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$, $I_C=3mA$, $T_{vj}=25^{\circ}C$	5.0	6.2	7.0	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	$V_{CE(sat)}$	$I_C=75A$, $V_{GE}=15V$, $T_{vj}=25^{\circ}C$		1.85		V
		$I_C=75A$, $V_{GE}=15V$, $T_{vj}=125^{\circ}C$		2.05		
Input Capacitance	C_{ies}	$V_{CE}=25V$, $V_{GE}=0V$, $f=1MHz$, $T_{vj}=25^{\circ}C$		5.52		nF
Reverse Transfer Capacitance	C_{res}			0.26		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V$, $V_{GE}=20V$, $T_{vj}=25^{\circ}C$			400	nA
Turn-on Delay Time	$t_{d(on)}$	$I_C=75A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=10\Omega$ $T_{vj}=25^{\circ}C$		305		ns
Rise Time	t_r			67		ns
Turn-off Delay Time	$t_{d(off)}$			328		ns
Fall Time	t_f			187		ns
Energy Dissipation During Turn-on Time	E_{on}			6.7		mJ
Energy Dissipation During Turn-off Time	E_{off}			4.3		mJ
Turn-on Delay Time	$t_{d(on)}$	$I_C=75A$ $V_{CE}=600V$ $V_{GE}=\pm 15V$ $R_G=10\Omega$ $T_{vj}=125^{\circ}C$		311		ns
Rise Time	t_r			70		ns
Turn-off Delay Time	$t_{d(off)}$			347		ns
Fall Time	t_f			337		ns
Energy Dissipation During Turn-on Time	E_{on}			9.7		mJ
Energy Dissipation During Turn-off Time	E_{off}			7.0		mJ
SC Data	I_{sc}	$T_p \leq 10\mu s$, $V_{GE}=15V$, $T_{vj}=150^{\circ}C$, $V_{cc}=600V$, $V_{CEM} \leq 1200V$		420		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		75	A
Repetitive Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$	150	A

Characteristic values

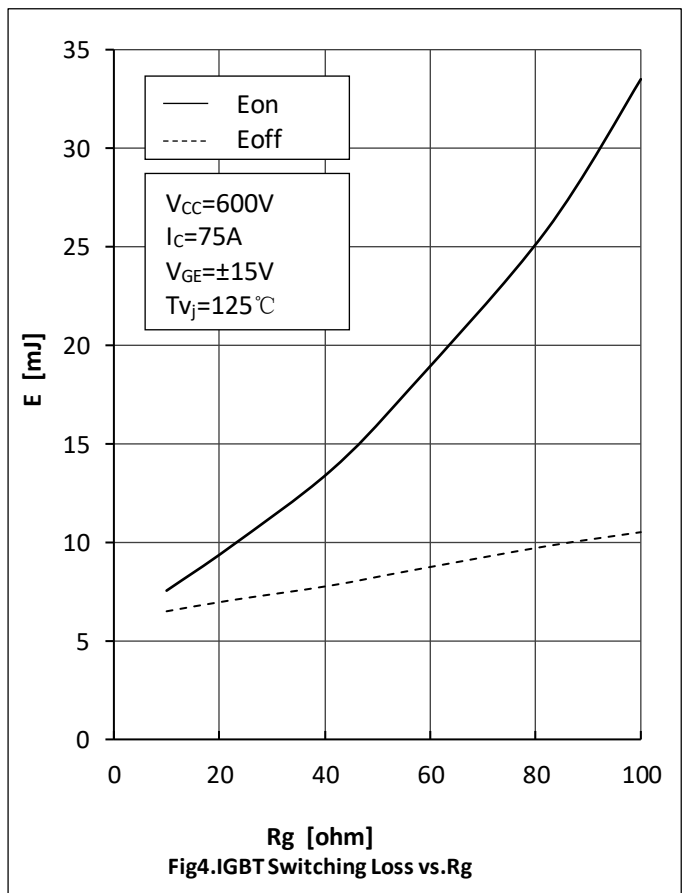
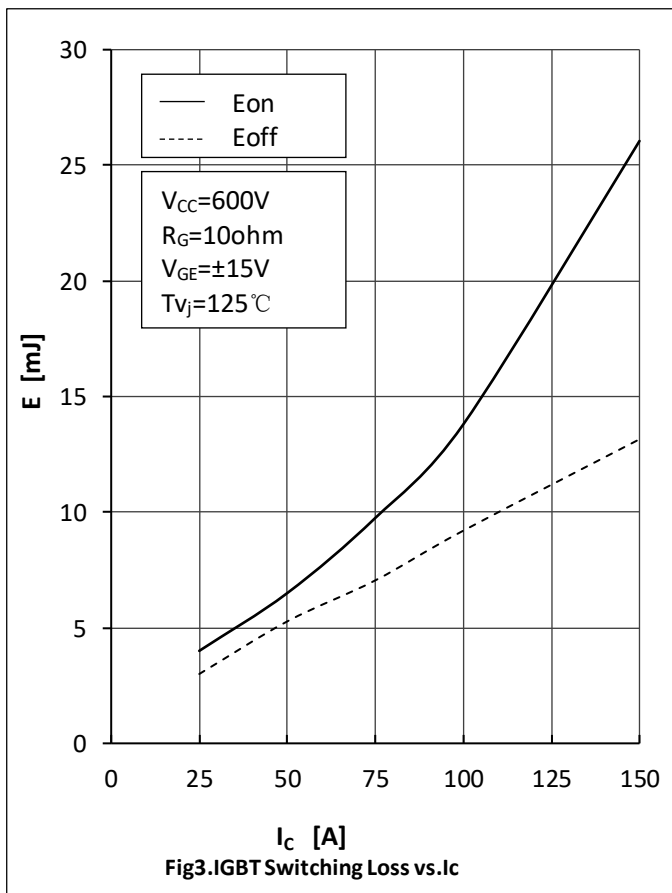
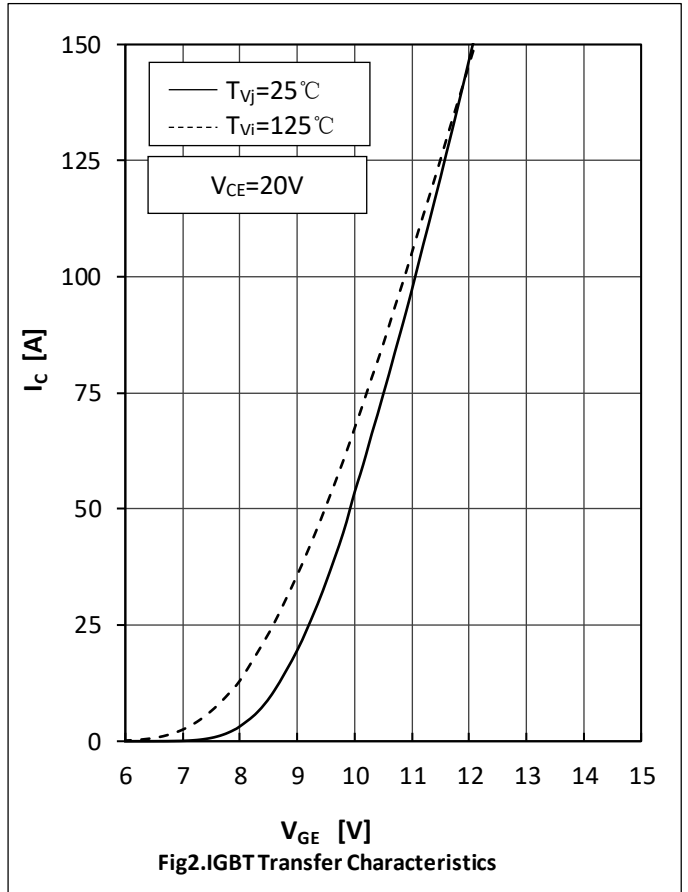
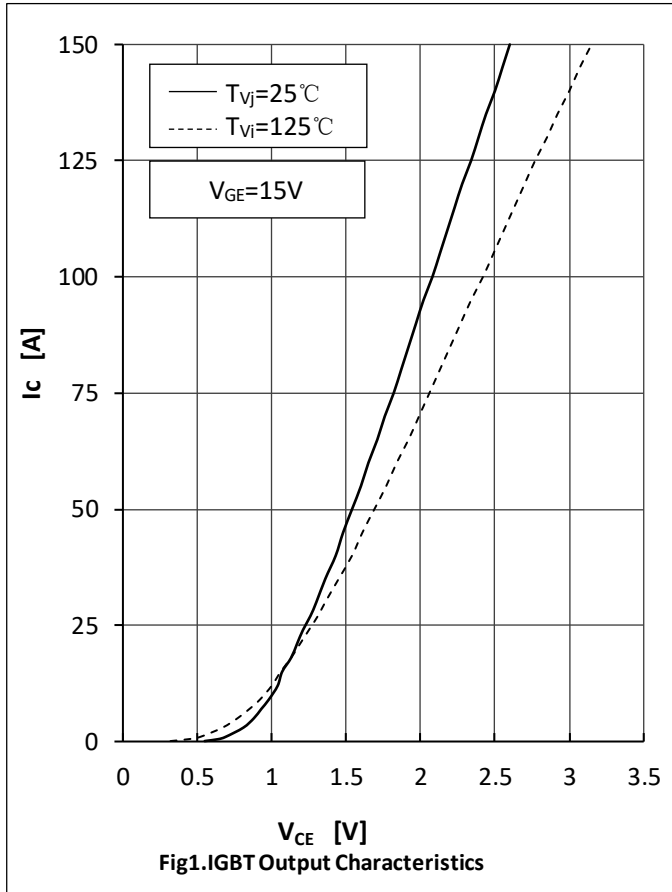
Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=75\text{A}, T_{vj}=25^{\circ}\text{C}$		2.10		V
		$I_F=75\text{A}, T_{vj}=125^{\circ}\text{C}$		2.00		
Recovered Charge	Q_{rr}	$I_F=75\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1200\text{A/us}$ $T_{vj}=25^{\circ}\text{C}$		4.8		μC
Peak Reverse Recovery Current	I_{rr}			60		A
Reverse Recovery Energy	E_{rec}			3.8		mJ
Recovered Charge	Q_{rr}	$I_F=75\text{A}$ $V_R=600\text{V}$ $-di_F/dt=1200\text{A/us}$ $T_{vj}=125^{\circ}\text{C}$		10.2		μC
Peak Reverse Recovery Current	I_{rr}			77		A
Reverse Recovery Energy	E_{rec}			5.7		mJ

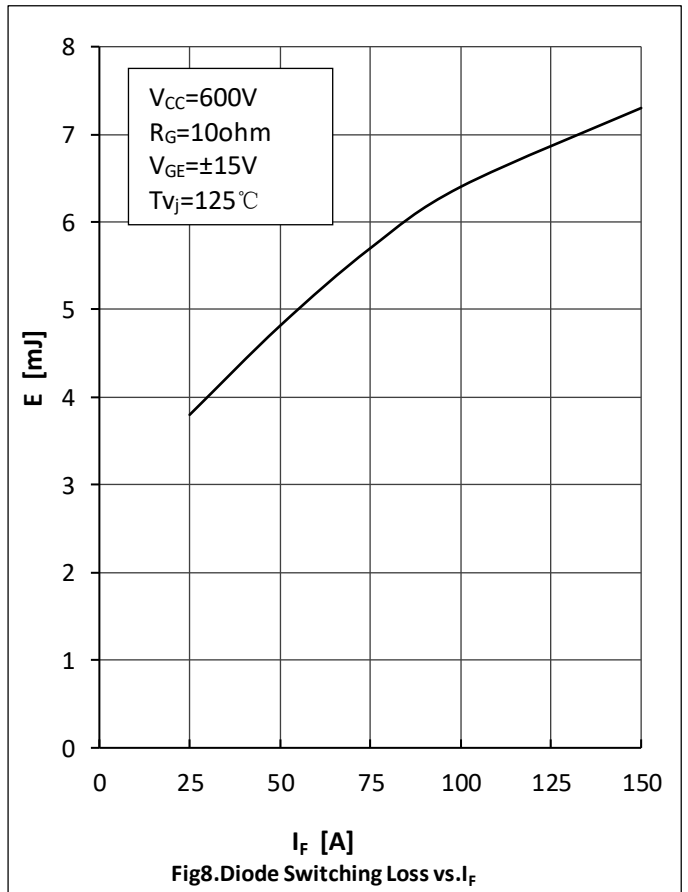
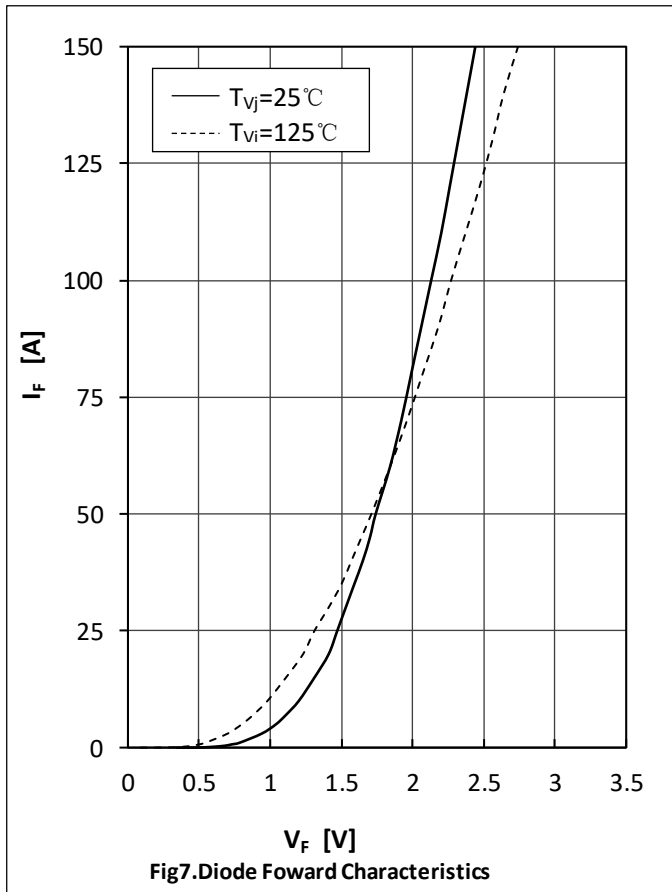
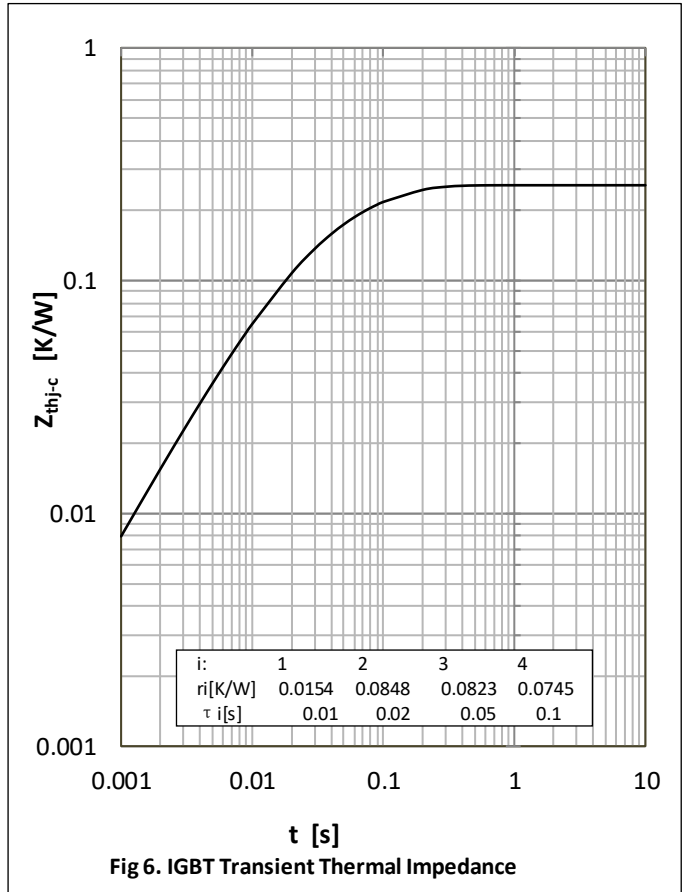
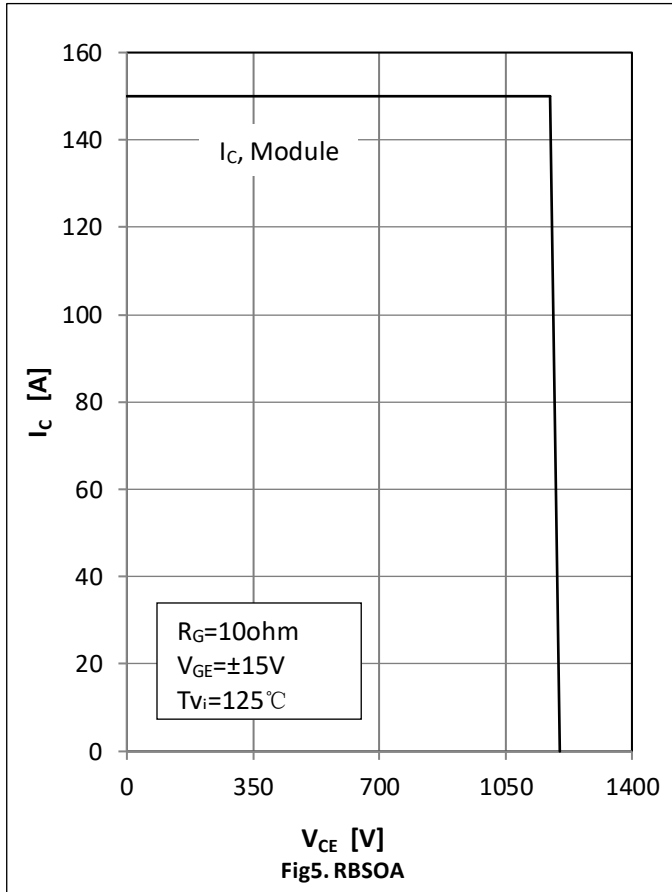


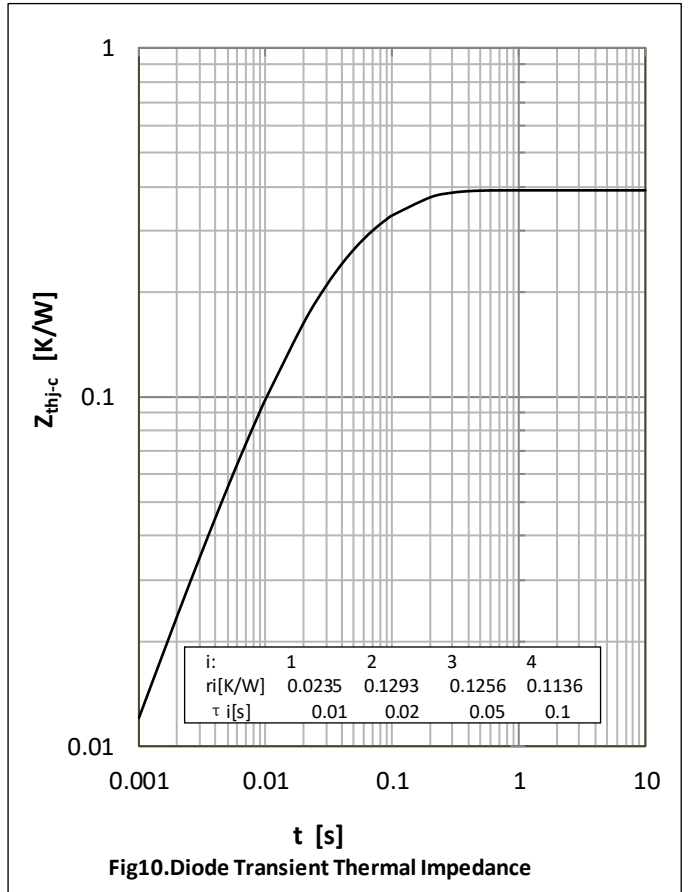
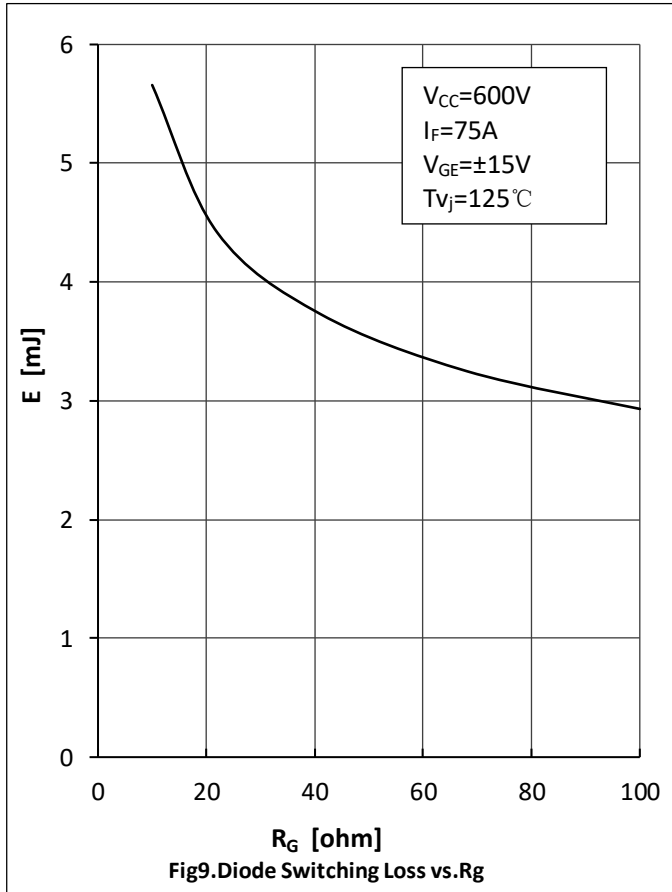
● Module Characteristics

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}				175	°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			0.26	K/W
		per Diode			0.42	
Thermal Resistance Case-to Sink	R _{θCS}	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







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