

Features

- Low $V_{CE(sat)}$ With SPT+ Technology
- $V_{CE(sat)}$ With Positive Temperature Coefficient
- Including Fast & Soft Recovery Anti-parallel FWD
- High Short Circuit Capability(10us)
- Low Inductance Module Structure
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Applications

- Inverter for Motor Drive
- AC and DC Servo Driver Amplifier
- UPS(Uninterruptible Power Supplies)
- Soft Switching Welding Machine

Maximum Ratings

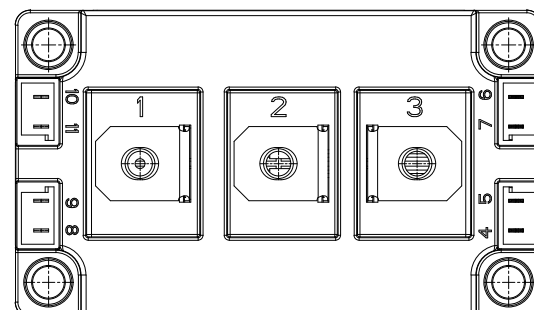
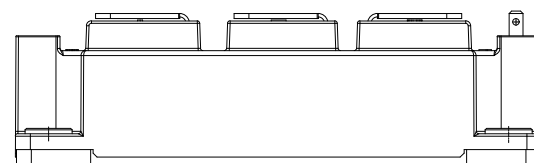
- Maximum Junction Temperature : 175°C
- Operating Junction Temperature Range : -40°C to +150°C
- Storage Temperature Range: -40°C to +125°C
- IGBT Thermal Resistance: 0.09 K/W Junction to Case
- Diode Thermal Resistance: 0.12 K/W Junction to Case
- Type Conductive Grease Applied Thermal Resistance: 0.035K/W Junction to Case-To-Sink

Parameter	Symbol	Rating	Unit	
Collector-Emitter Voltage@ $V_{GE}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	V_{CES}	1200	V	
Continuous Collector Current @ $T_C=100^{\circ}C$	I_C	300	A	
Peak Collector Current @ $T_p=1ms$	I_{CRM}	600	A	
Gate-Emitter Voltage@ $T_{vj}=25^{\circ}C$	V_{GE}	± 20	V	
Isolation Voltage @ $f=50Hz, t=1min$	V_{iso}	2500~4000	V	
Weight of Module	G	315	g	
Module Electrodes Torque:M5	M_t	2.5~5	N*m	
Module-to-Sink Torque:M6	M_s	3~5	N*m	
Total Power Dissipation (IGBT-Inverter)	$T_C=25^{\circ}C$	P_{tot}	1700	W
	$T_{vjmax}=150^{\circ}C$			

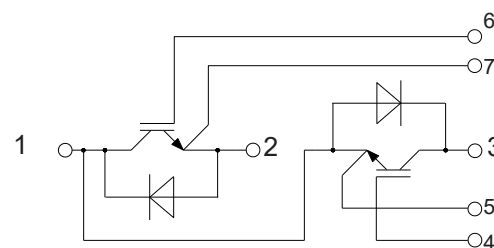
IGBT Modules

1200V 300A

C2



Circuit Diagram



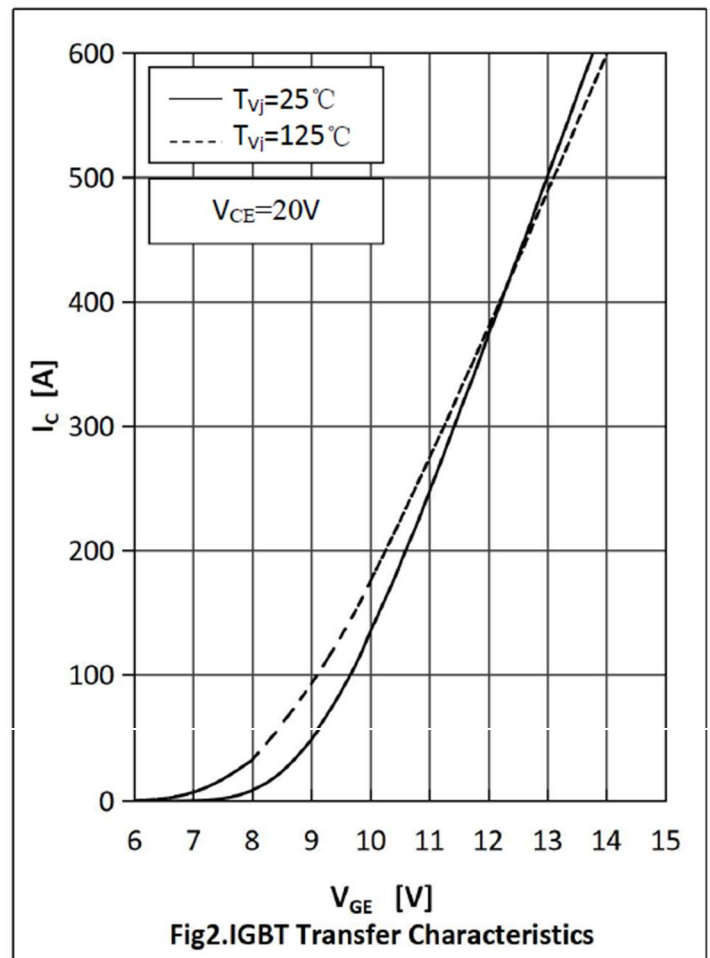
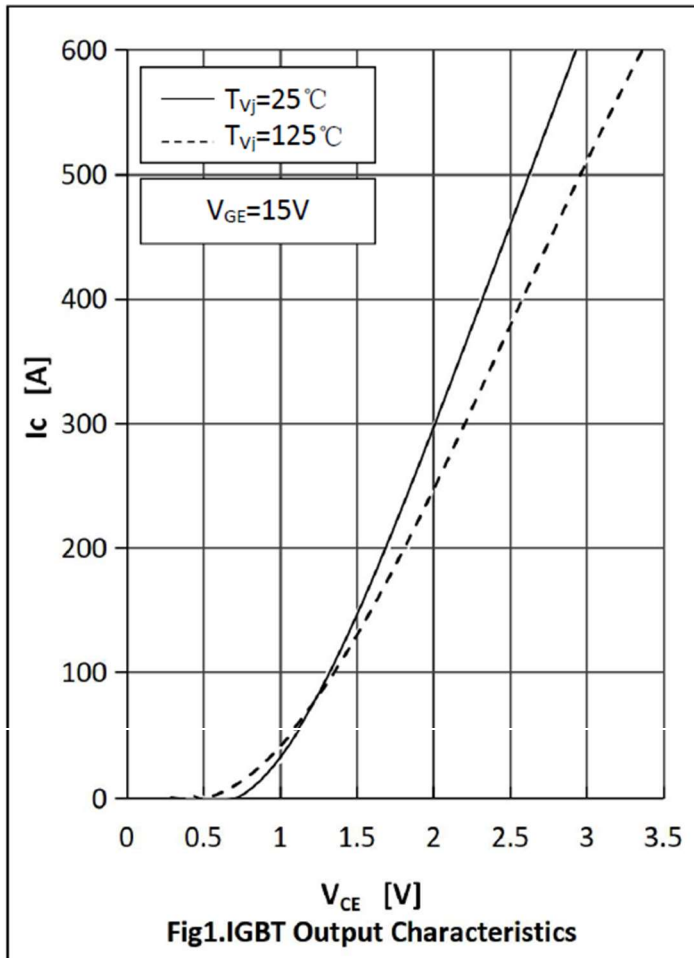
Electrical Characteristics of IGBT @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}, I_C=8mA, T_{vj}=25^{\circ}C$	5.2	5.8	6.4	V
Collector-Emiter Cut-off Current	I_{CES}	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=300A, T_{vj}=25^{\circ}C$		1.85	2.20	V
		$V_{GE}=15V, I_C=300A, T_{vj}=125^{\circ}C$		2.2		
		$V_{GE}=15V, I_C=300A, T_{vj}=150^{\circ}C$		2.3		
Gate Charge	Q_G			2.6		uC
Input Capacitance	C_{ies}	$V_{CE}=25V, V_{GE}=0V, f=1MHz, T_{vj}=25^{\circ}C$		18.4		nF
Reverse Transfer Capacitance	C_{res}			0.9		
Internal Gate Resistance	R_{gint}			2.5		Ω
Gate Emitter Leakage Current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA
Turn-On Delay Time	$t_{d(on)}$	$V_{CE}=600V, I_C=300A, V_{GE}=\pm 15V, R_G=1.8\Omega, T_{vj}=25^{\circ}C$		174		ns
Rise Time	t_r			38		
Turn-Off Delay Time	$t_{d(off)}$			425		
Fall Time	t_f			104		
Energy Dissipation During Turn-on Time	E_{on}			17.4		
Energy Dissipation During Turn-off Time	E_{off}		21.0			
Turn-On Delay Time	$t_{d(on)}$	$V_{CE}=600V, I_C=300A, V_{GE}=\pm 15V, R_G=1.8\Omega, T_{vj}=125^{\circ}C$		185		ns
Rise Time	t_r			42		
Turn-Off Delay Time	$t_{d(off)}$			495		
Fall Time	t_f			170		
Energy Dissipation During Turn-on Time	E_{on}			26.5		
Energy Dissipation During Turn-off Time	E_{off}		31.4			
Turn-On Delay Time	$t_{d(on)}$	$V_{CE}=600V, I_C=300A, V_{GE}=\pm 15V, R_G=1.8\Omega, T_{vj}=150^{\circ}C$		191		ns
Rise Time	t_r			45		
Turn-Off Delay Time	$t_{d(off)}$			437		
Fall Time	t_f			112		
Energy Dissipation During Turn-on Time	E_{on}			29.3		
Energy Dissipation During Turn-off Time	E_{off}		33.5			
SC data	I_{sc}	$T_P \leq 10\mu s, V_{GE}=15V, T_{vj}=150^{\circ}C, V_{CC}=900, V_{CEM} \leq 1200V$		1500		A

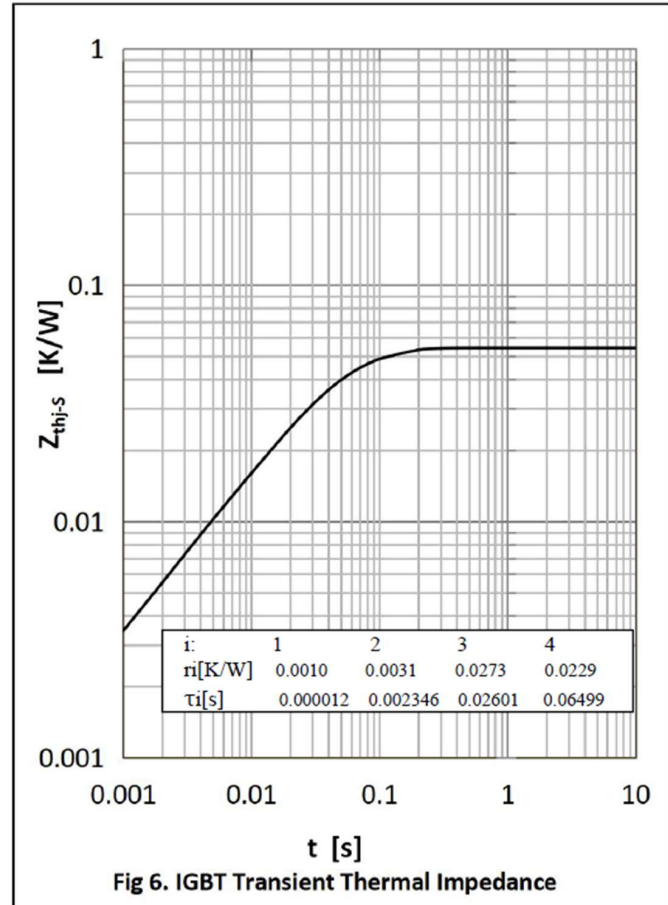
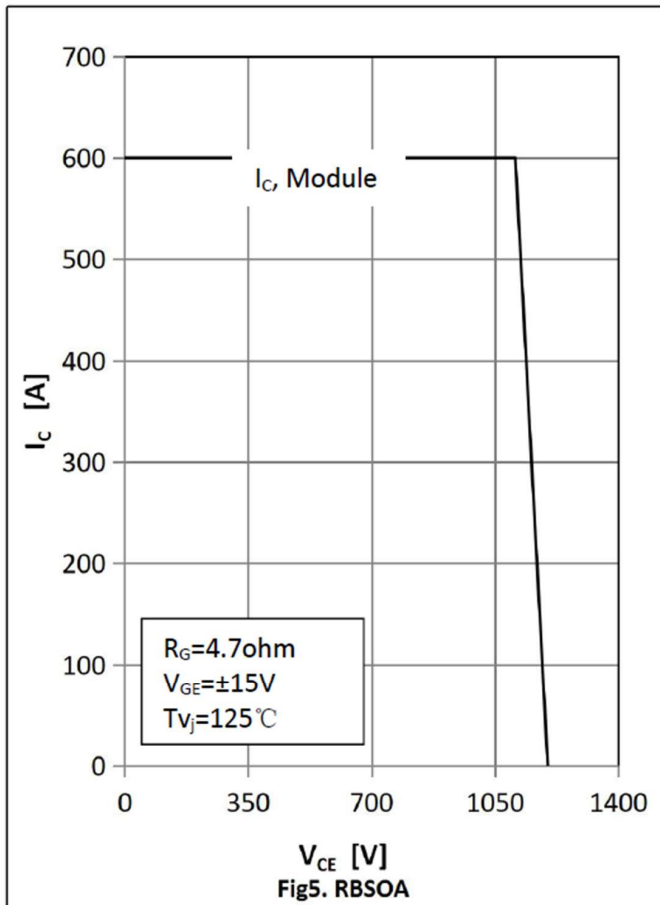
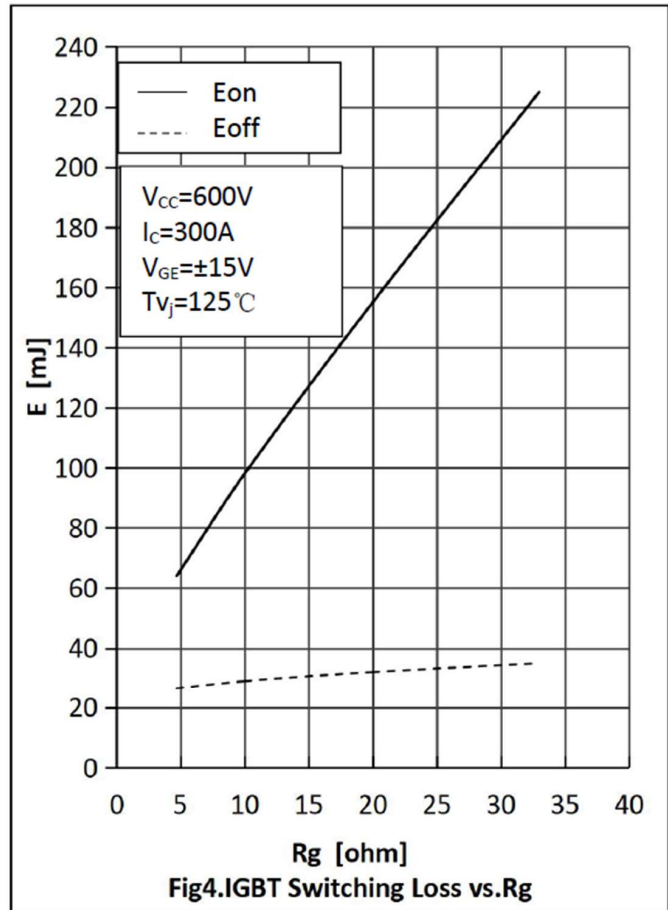
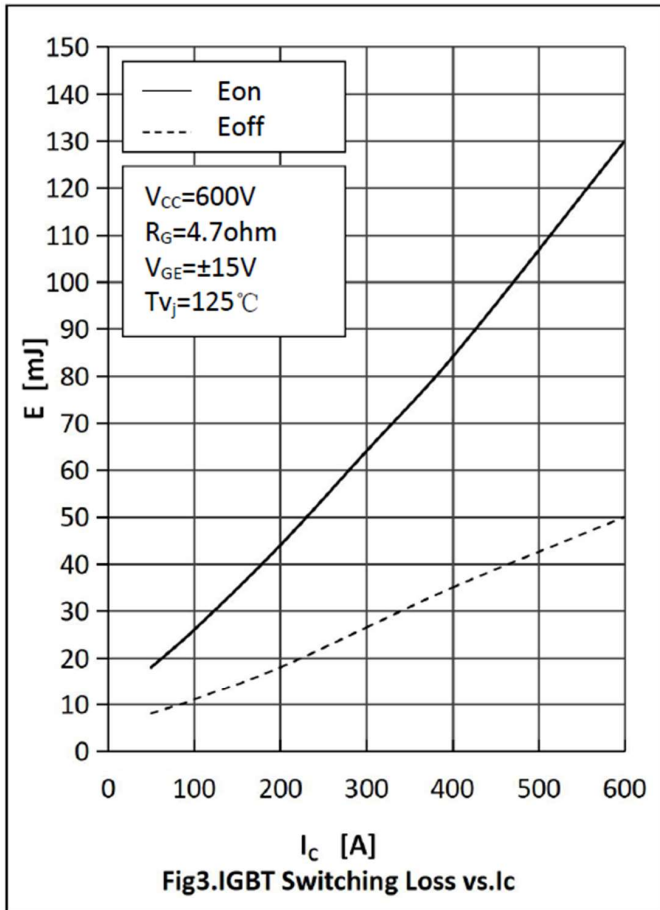
Electrical Characteristics of DIODE @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Diode DC Forward Current	I_F	$T_C=100^\circ\text{C}$		300		A
Diode Peak Forward Current	I_{FRM}	$t_p=1\text{ms}$		600		A
Forward Voltage	V_F	$I_F=300\text{A}, T_{vj}=25^\circ\text{C}$		2.1		V
		$I_F=300\text{A}, T_{vj}=125^\circ\text{C}$		2.15		
		$I_F=300\text{A}, T_{vj}=150^\circ\text{C}$		2.17		
Recovered Charge	Q_{rr}	$V_R=600\text{V}, I_F=300\text{A},$ $-di_F/dt=6500\text{A/us},$ $T_{vj}=25^\circ\text{C}$		34.0		μC
Peak Reverse Recovery Current	I_{rr}			375		A
Reverse Recovery Energy	E_{rec}			16.0		mJ
Recovered Charge	Q_{rr}	$V_R=600\text{V}, I_F=300\text{A},$ $-di_F/dt=6500\text{A/us},$ $T_{vj}=125^\circ\text{C}$		54.0		μC
Peak Reverse Recovery Current	I_{rr}			410		A
Reverse Recovery Energy	E_{rec}			27.4		mJ
Recovered Charge	Q_{rr}	$V_R=600\text{V}, I_F=300\text{A},$ $-di_F/dt=6500\text{A/us},$ $T_{vj}=150^\circ\text{C}$		58		μC
Peak Reverse Recovery Current	I_{rr}			416		A
Reverse Recovery Energy	E_{rec}			29.2		mJ

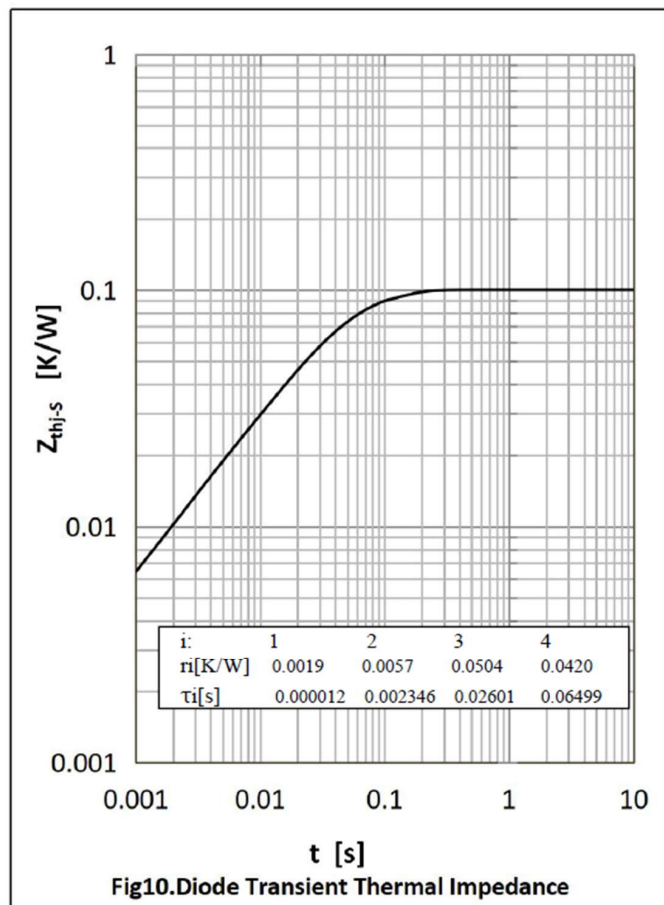
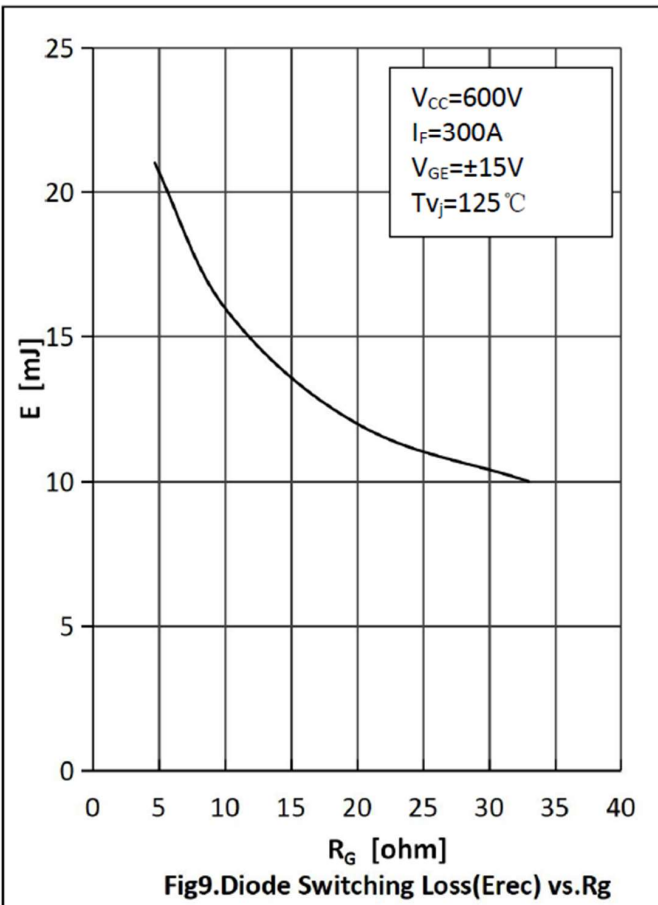
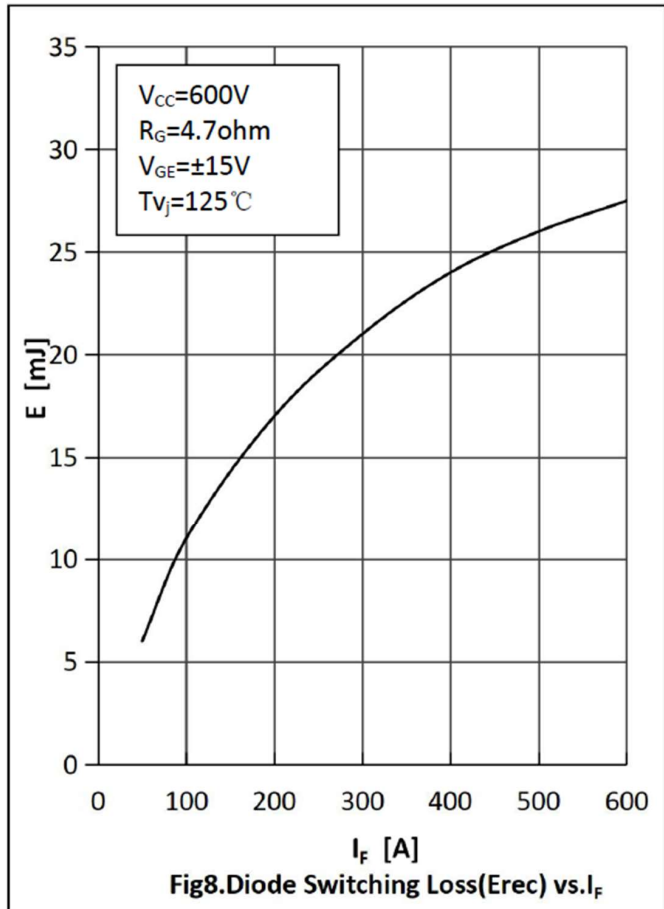
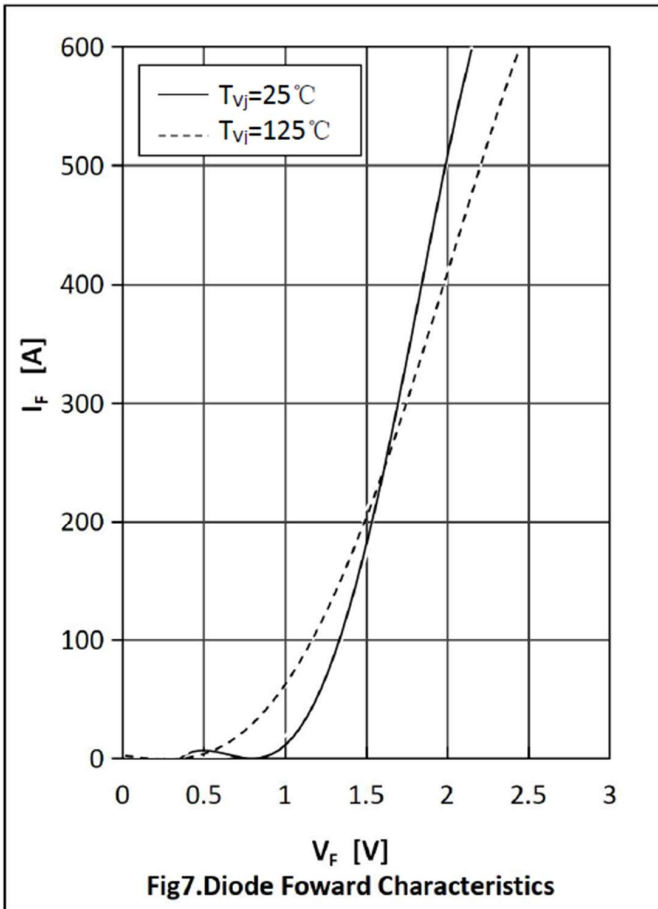
Curve Characteristics



Curve Characteristics

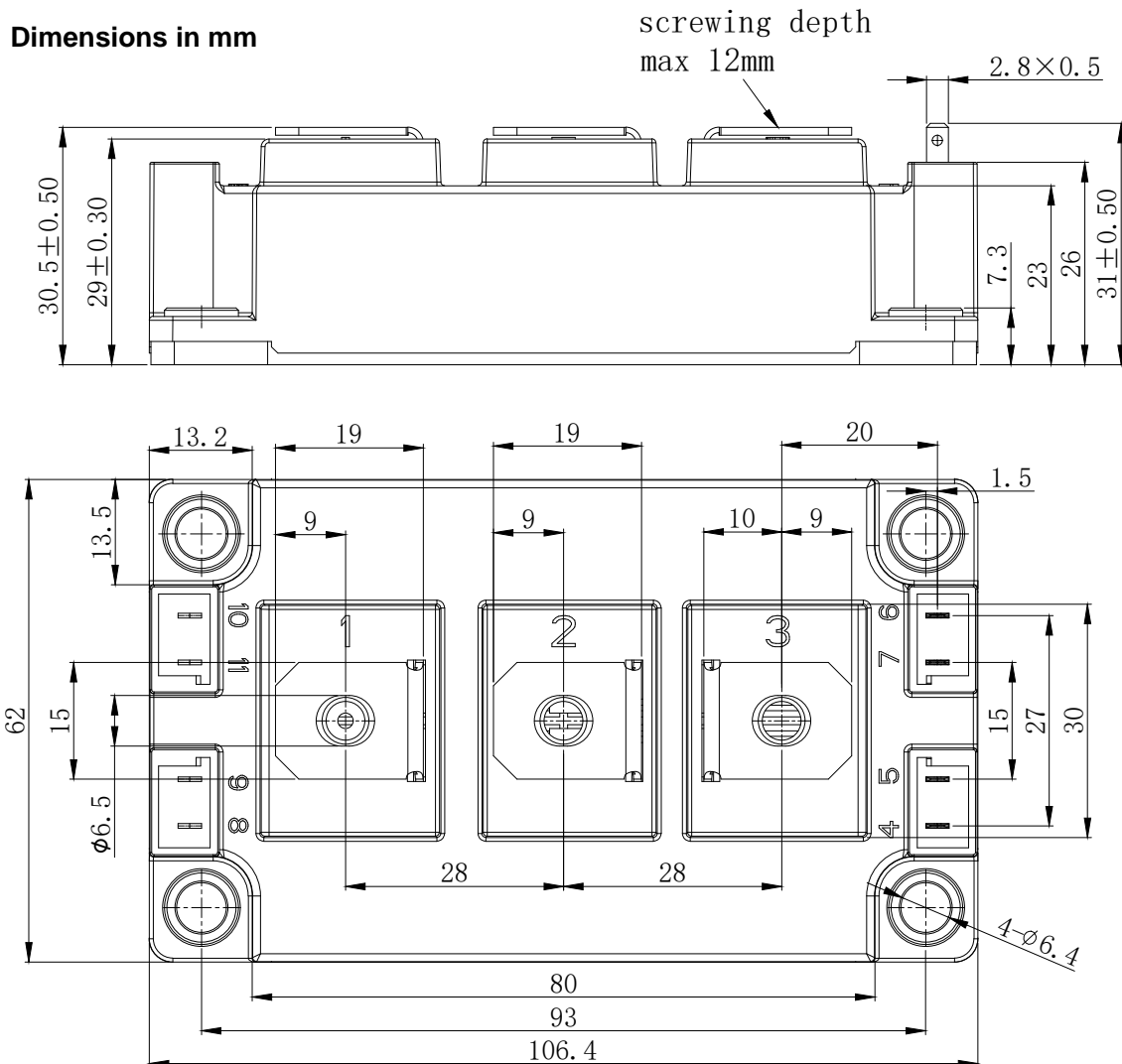


Curve Characteristics



Package Dimensions

C2



Ordering Information

Device	Packing
Part Number-BP	Bulk: 8pcs/Box ; 48pcs/Ctn

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