IGBT Modules

1200V 100A

Features

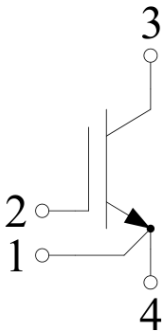
- Low Switching Losses
- Vce(sat) with positive temperature coefficient
- Low Inductance
- Isolated copper baseplate using DBC technology
- Maximum Junction Temperature 175℃
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note 1)("P" Suffix Designates RoHS Compliant. See Ordering Information)

Applications

- AC and DC motor control
- PFC
- SMPS
- Brake switch

GJ

Circuit Diagram



Parameter		Symbol	Rating	Unit
Collector-Emitter Voltage@V_{GE}=0V,I_C=1mA, T_{vj}=25ºC		V_{CES}	1200	V
Continuous Collector Current @T_C=80ºC		I_C	100	A
Repetitive Peak Collector Current @Tp=1ms		I_{CRM}	200	A
Gate-Emitter Voltage@T_{vj}=25ºC		V_{GE}	±20	V
Isolation Voltage @f=50Hz, t=1min		V_{isol}	2500(Min)	V
Weight of Module		G	35	g
Module Electrodes Torque:M4		M_t	0.7~1.5	N*m
Module-to-Sink Torque :M4		M_S	0.7~1.5	N*m
Total Power Dissipation (IGBT-Inverter)	T_C=25°C	P_{tot}	535	W
	T_{vjmax}=175°C			

Note:

1. High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate-emitter Threshold Voltage	$V_{GE(th)}$	I_C=4mA, V_{CE}=V_{GE}, T_{vj}=25°C	5.0	5.8	6.5	V
Collector-Emitter Cut-off Current	I_{CES}	V_{CE}=1200V, V_{GE}=0V,T_{vj}=25℃			1.0	mA
		V_{CE}=1200V, V_{GE}=0V,T_{vj}=125℃			5.0	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_c=100A,V_{GE}=15V, T_{vj}=25℃		1.75	2.25	V
		I_c=100A,V_{GE}=15V, T_{vj}=125°C		2.15		
		I_c=100A,V_{GE}=15V, T_{vj}=150℃		2.20		
Input Capacitance	C_{ies}	V_{CE}=25V,V_{GE}=0V,f=1MHz,T_{vj}=25°C		5.80		nF
Output Capacitance	C_{oes}			0.54		
Reverse Transfer Capacitance	C_{res}			0.35		
Internal Gate Resistance	R_{gint}			2.5		Ω
Turn-On Delay Time	$td_{(on)}$	V_{CE}=600V, I_C=100A, V_{GE}=±15V, R_G=10Ω, T_{vj}=25°C		122		ns
Rise Time	t_r			50		
Turn-Off Delay Time	$td_{(off)}$			335		
Fall Time	t_f			72		
Turn-On Energy	E_{on}			13.5		mJ
Turn-Off Energy	E_{off}			7.0		
Turn-On Delay Time	$td_{(on)}$	V_{CE}=600V, I_C=100A, V_{GE}=±15V, R_G=10Ω, T_J=125°C		135		ns
Rise Time	t_r			55		
Turn-Off Delay Time	$td_{(off)}$			460		
Fall Time	t_f			76		
Turn-On Energy	E_{on}			18.6		mJ
Turn-Off Energy	E_{off}			10.2		
SC Data	I_{sc}	t_p≤10us,V_{GE}=15V, T_{vj}=150℃,V_{cc}=600V, V_{CEM}≤1200V		350		A

Module Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
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	$R_{\theta JC}$	per IGBT			0.28	K/W
Thermal Resistance Case-to Sink	$R_{\theta CS}$	Conductive grease applied		0.15		K/W

Curve Characteristics

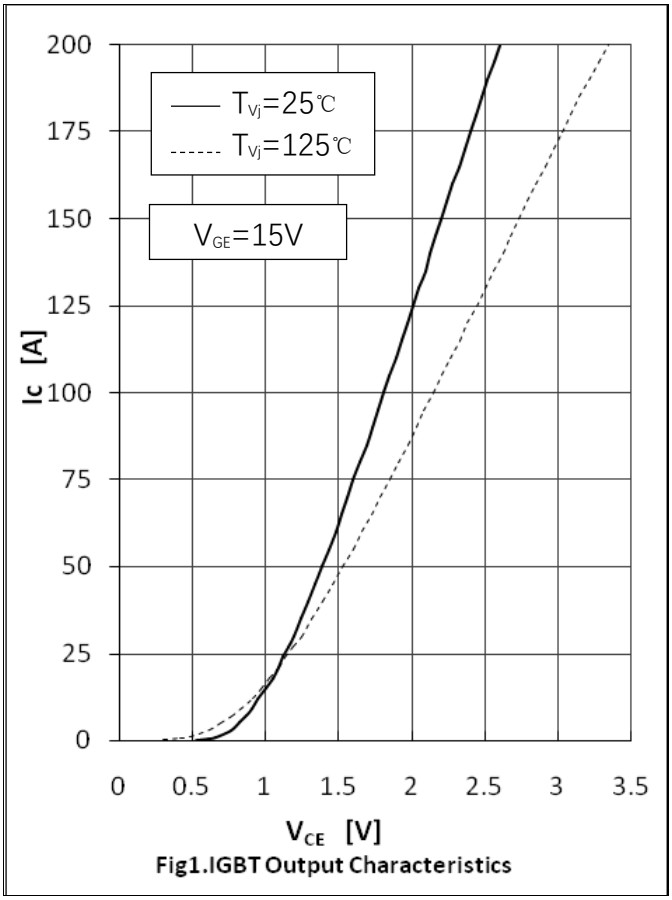


Fig1.IGBT Output Characteristics

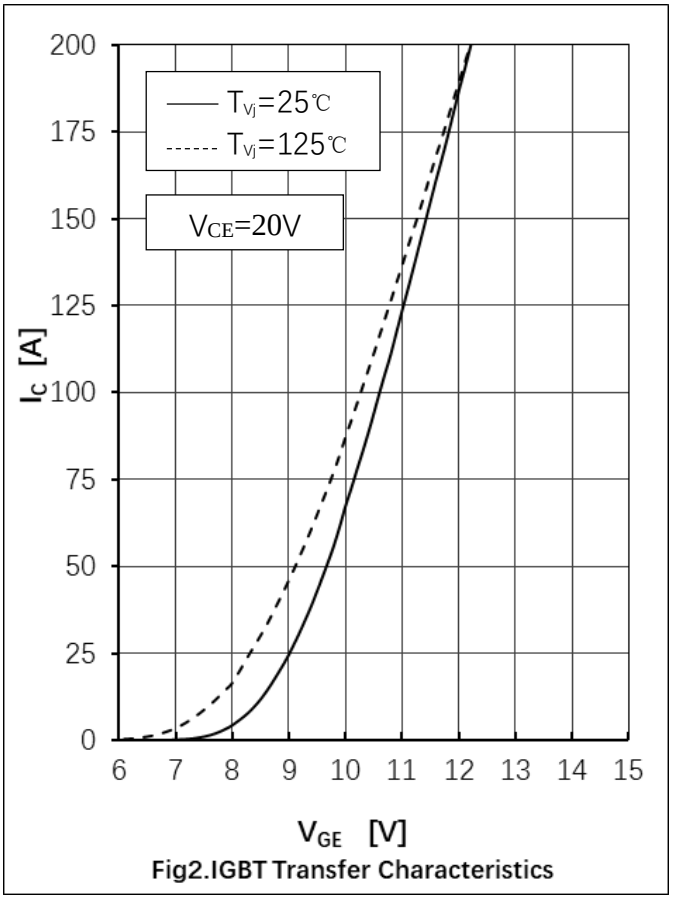


Fig2.IGBT Transfer Characteristics

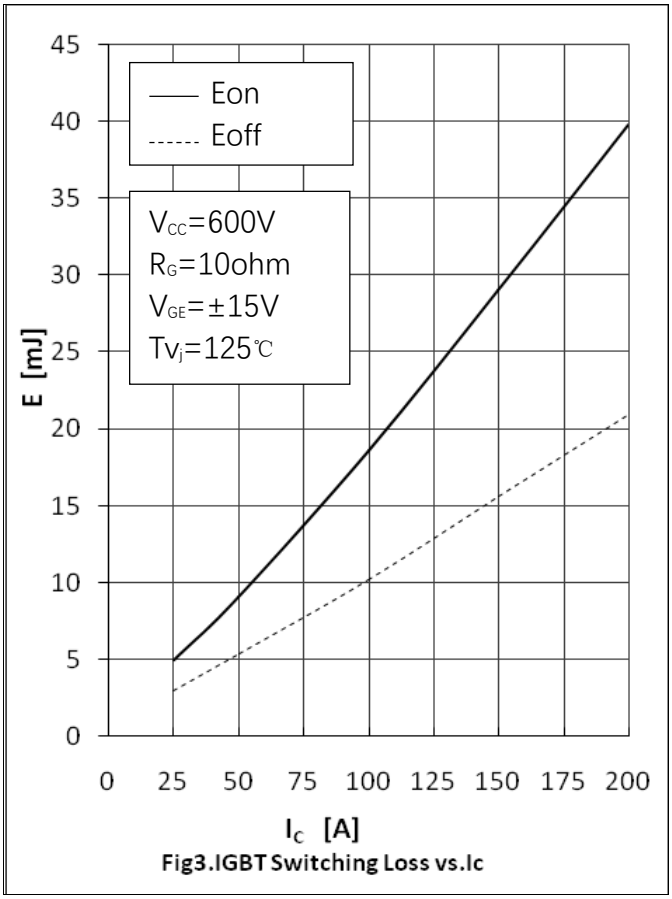


Fig3.IGBT Switching Loss vs.Ic

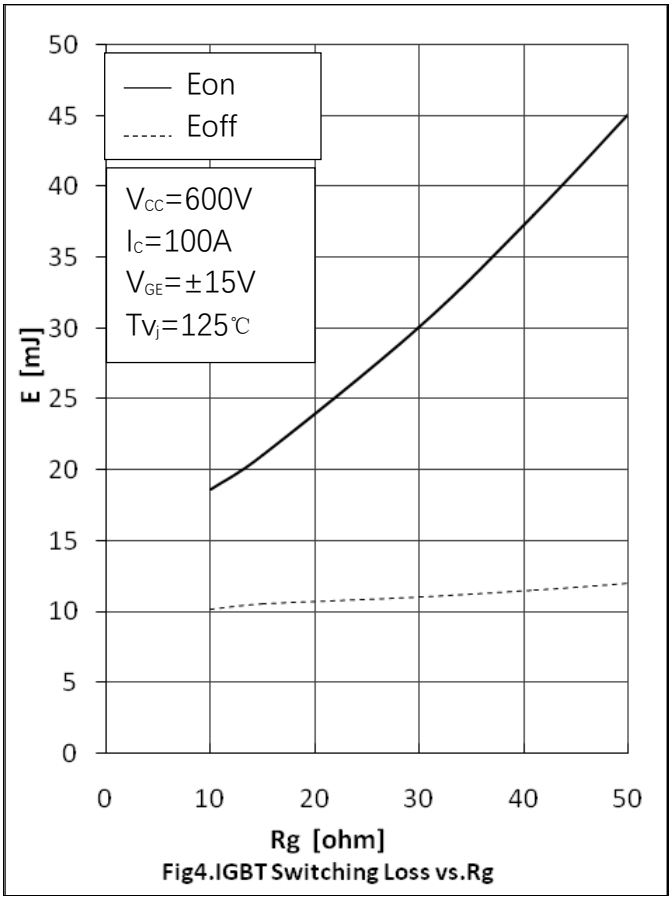


Fig4.IGBT Switching Loss vs.Rg

Curve Characteristics

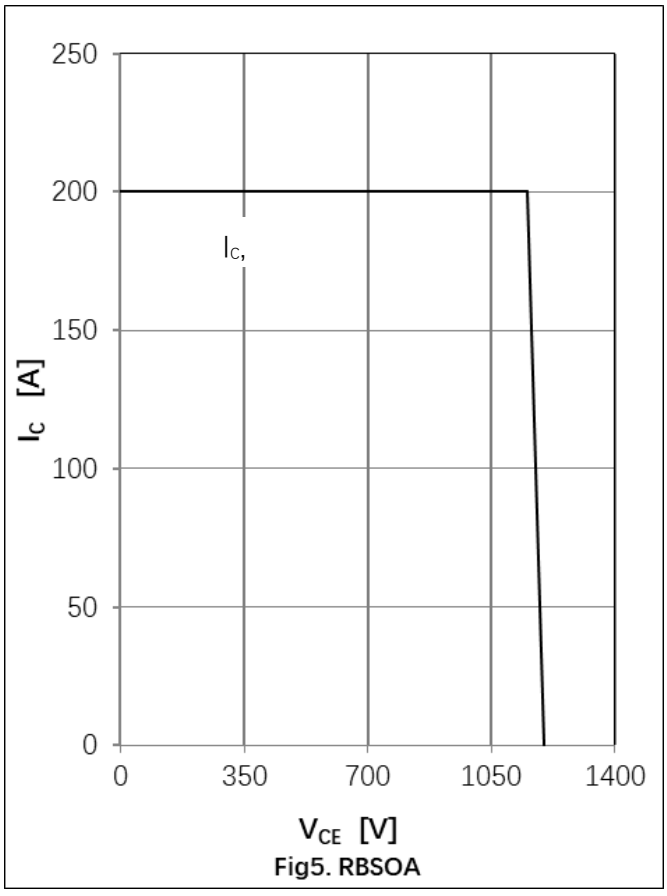


Fig5. RBSOA

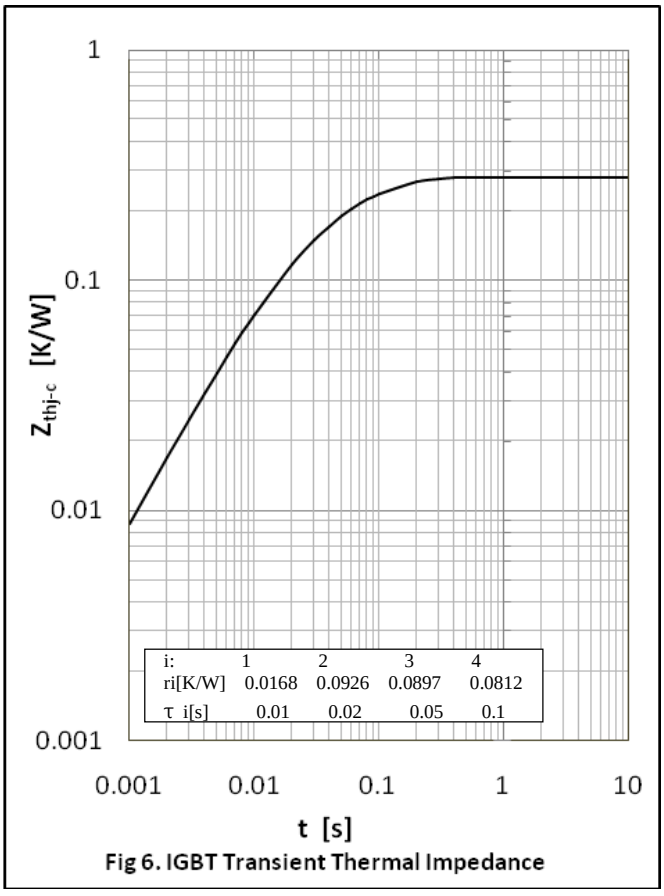
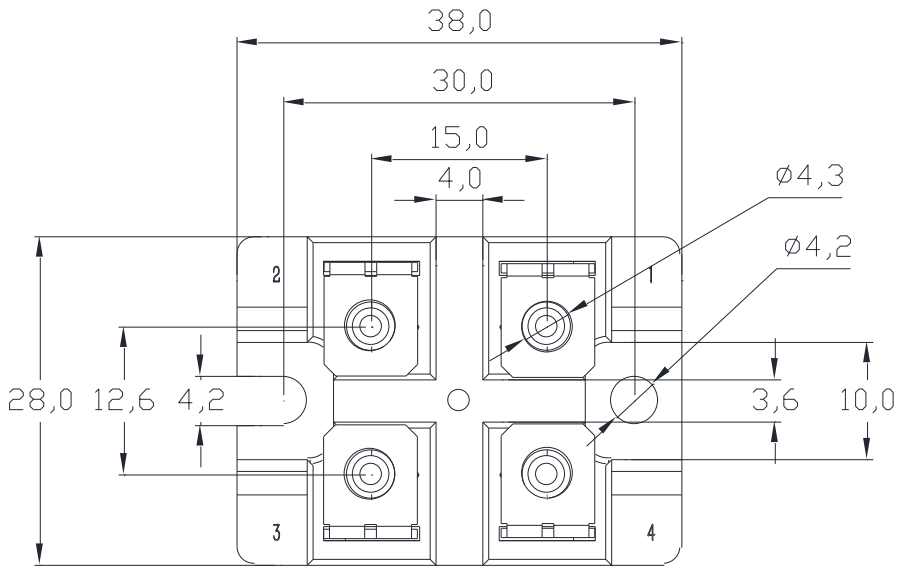


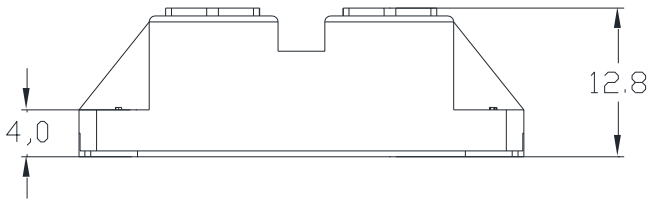
Fig 6. IGBT Transient Thermal Impedance

Package Dimensions

GJ

Dimensions in mm





Ordering Information

Device	Packing
Part Number-BP	Bulk: 25pcs/Box ; 250pcs/Ctn