Insulated Gate Bipolar Transistor

JB40N120JP3

This Insulated Gate Bipolar Transistor (IGBT) features a robust and cost effective. Provides superior performance in demanding switching applications, offering both low on state voltage and minimal switching loss.

Features

- Optimized for High Speed Switching
- These are Pb−Free Devices

Typical Applications

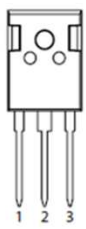
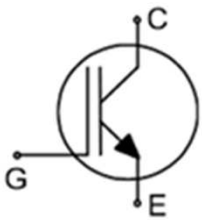
- Solar Inverter
- Uninterruptible Power Inverter Supplies (UPS)
- Welding

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CE}	1200	V
DC collector current, limited by T_{jmax} T_C = 25°C T_C = 100°C	I_C	 80 40	A
Pulsed collector current, tp limited by T_{jmax}	I_{Cpuls}	120	A
Gate-emitter voltage Transient Gate-emitter voltage (tp ≦10μs, D < 0.010)	V_{GE}	±20 ±30	V
Power dissipation T_C = 25°C Power dissipation T_C = 100°C	PD	314 157	W
Operating junction temperature	T_j	-40 to +175	°C
Storage temperature	T_{stg}	-55 to +175	°C

1.Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
2.The specifications described are tentative and subject to change without notice.

Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	G	Gate		
2	C	Collector		
3	E	Emitter		

ELECTRICAL CHARACTERISTICS (T_j= 25℃ unless otherwise specified)

Characteristics		Symbol	Test Condition	Min	Typ	Max	Unit
Gate leakage current		I_{GES}	V_{GE}=±30 V, V_{CE}=0	—	—	±500	nA
Collector cut-off current		I_{CES}	V_{CE} = 1200V, V_{GE}=0V	—	—	10	uA
Gate-emitter cut-off voltage		$V_{GE\ (OFF)}$	I_C = 40mA, V_{CE} = 5V	5.5	6.5	7.5	V
Collector-emitter saturation voltage	T_j=25℃	$V_{CE\ (sat)}$	I_C = 40A, V_{GE} = 15V	—	1.8	2.2	V
	T_j=100℃			—	2.1	—	
Gate–emitter threshold voltage		$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 350μA	4.6	5.6	6.6	V
Input capacitance		C_{ies}	V_{CE}=25V, V_{GE} = 0V, f = 1MHz	—	9000	—	pF
Output capacitance		C_{oes}		—	160	—	
Reverse transfer capacitance		C_{res}		—	155	—	
Switching time	Rise time	t_r	T_j = 25 °C VCE = 600V, VGE = 0V/15V, RG =10Ω, IC = 40A, L=100μH	—	100	—	ns
	Turn-on time	$t_{d(on)}$		—	150	—	
	Fall time	t_f		—	60	—	
	Turn-off time	$t_{d(off)}$		—	600	—	
Thermal Resistance		$R_{th\ (j-c)}$		—	—	0.48	°C / W

1.The specifications described are tentative and subject to change without notice.
2.Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated
by the Electrical Characteristics if operated under different conditions.

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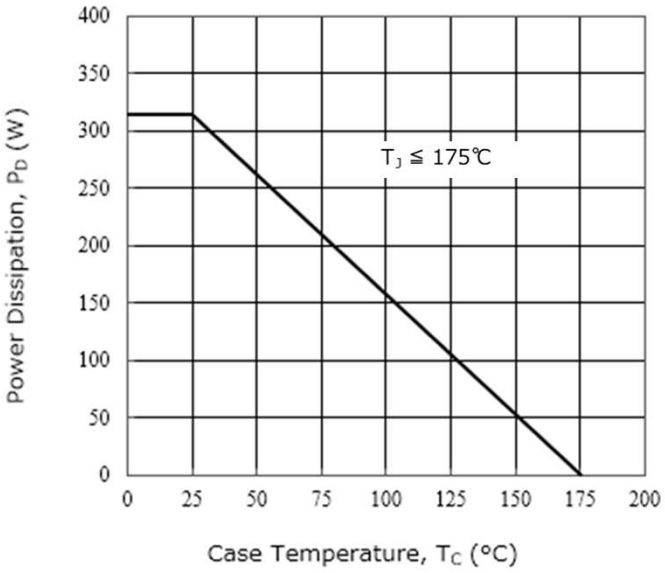
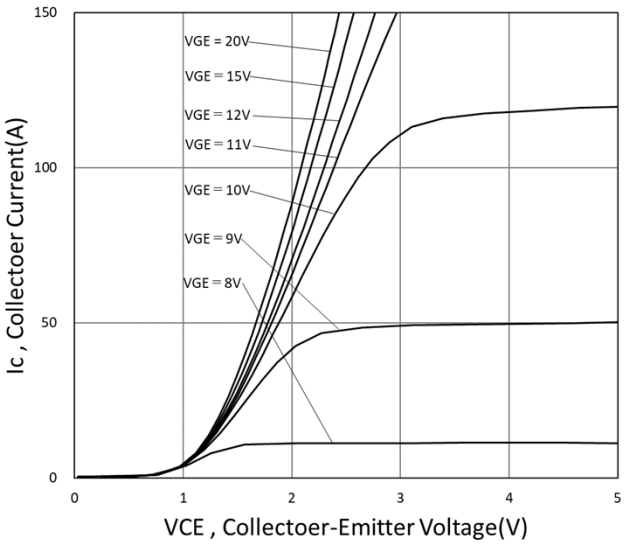
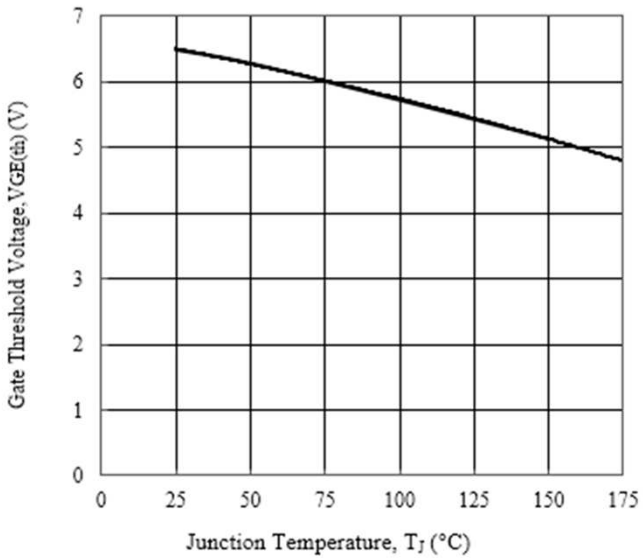
Power Dissipation vs. Case Temperature



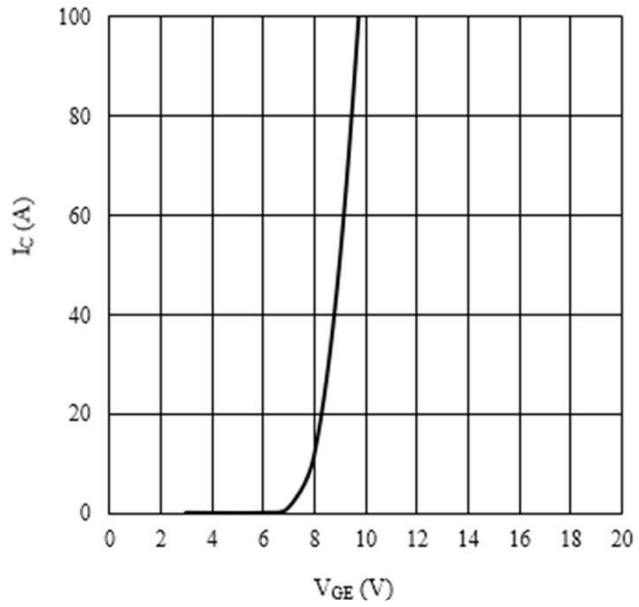
Output Characteristics



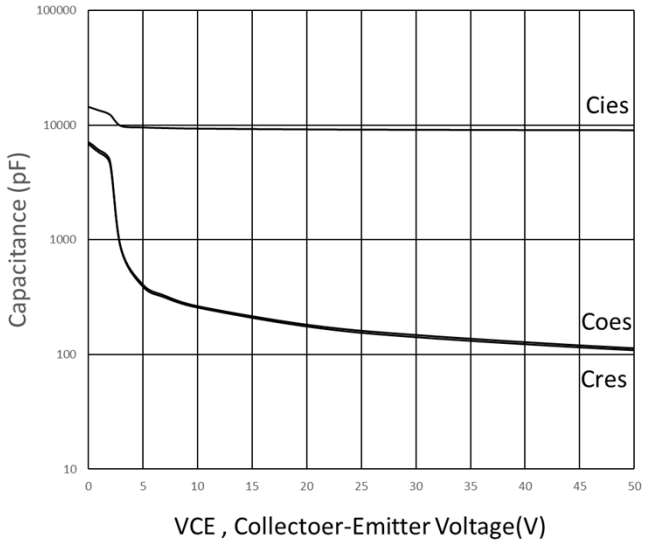
Gate Threshold Voltage (IC=40mA, VCE=5V)



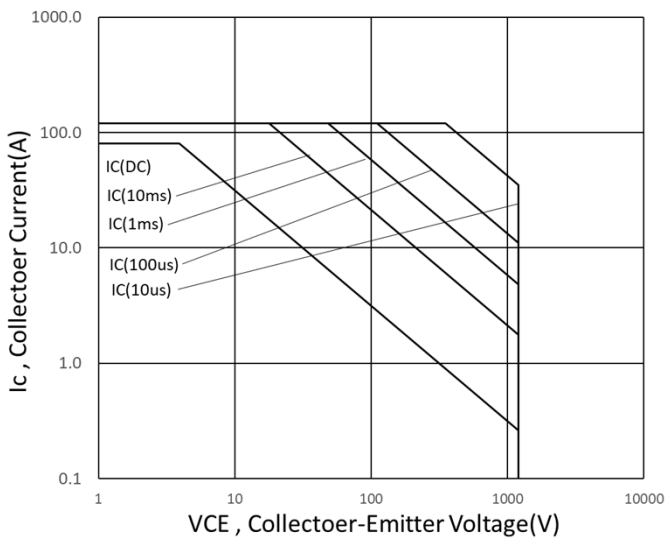
Transfer Characteristics (VCE=5V)



Capacitance Characteristics



Safe Operating Area



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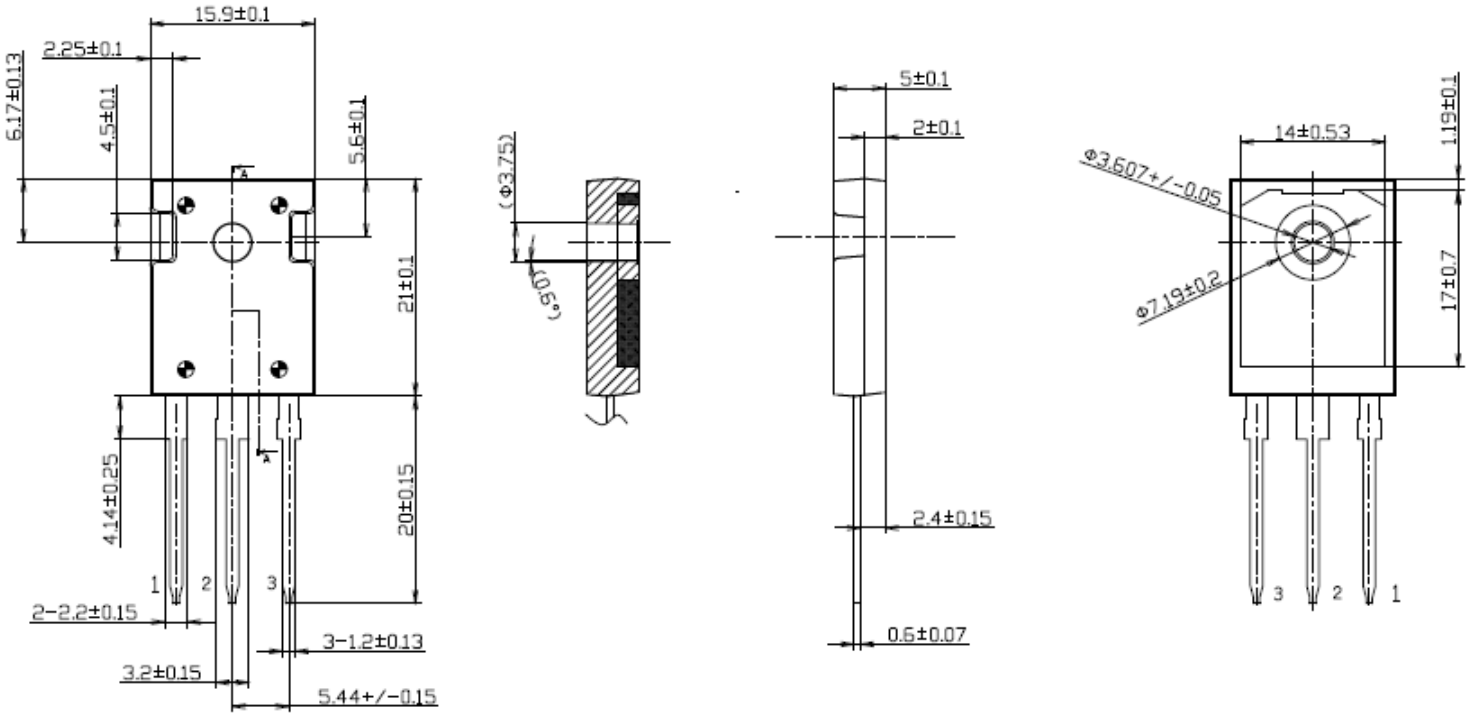
Outline drawing [Dimensions are in MILLIMETERS]



CONNECTION
①:Gate terminal
②:Collector terminal
③:Emitter terminal

Cautions
Please ensure insulation between the heat sink and the product before use.
The collector potential on the backside of the products is not intended to be used as a conduction path.

Warning

1.The information contained herein is subject to change without notice.
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3.Although Japan Power Device Co., Ltd.(hereinafter JPD) is enhancing product quality and reliability, semiconductors can break down and malfunction due to various factors. When using JPD products in your equipment, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and fail-safe procedures.
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The product described in this Data sheet is not designed to be radiation tolerant.
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