



JT020N135WDD/ABDD

主要参数 MAIN CHARACTERISTICS

I_C	20 A
V_{CES}	1350 V
$V_{CE(sat)}_{typ}$ (@ $V_{GE}=15V$)	1.80V

用途

- 逆变器
- 电磁炉
- UPS 电源

APPLICATIONS

- General purpose inverters
- Induction heating(IH)
- UPS

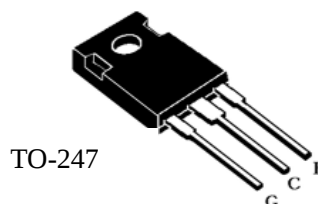
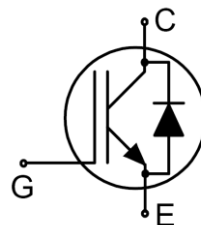
产品特性

- 低栅极电荷
- FS 技术
- 通态压降, $V_{CE(sat)}$, $typ = 1.80V$ @ $TC = 25^{\circ}C$
- RoHS 产品

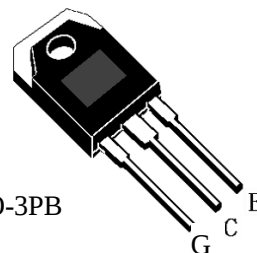
FEATURES

- Low gate charge
- FS Technology
- Saturation voltage: $V_{CE(sat)}$, $typ = 1.80V$ @ $TC = 25^{\circ}C$
- RoHS product

封装 Package



TO-247



TO-3PB

订货信息 ORDER MESSAGE

订货型号 Order codes	印记 Marking	封装 Package
有卤-条管 Halogen-Tube		
JT020N135WDD-GE-B	JT020N135WDD	TO-247
JT020N135ABDD-GD-B	JT020N135ABDD	TO-3PB



绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		JT020N135WDD/ABDD	
最高集电极—发射极直流电压 Collector-Emmitter Voltage	V_{CES}	1350	V
连续集电极极电流 Collector Current-continuous	I_C $T=25^{\circ}\text{C}$ $T=100^{\circ}\text{C}$	40	A
		20	A
最大脉冲集电极极电流（注 1） Collector Current – pulse (note 1)	I_{CM}	100	A
最高栅极发射极电压 Gate-Emmitter Voltage	V_{GES}	± 20	V
安全工作区 Turn-off safe area	-	60	A
耗散功率 Power Dissipation	P_D $T_c=25^{\circ}\text{C}$	312.5	W
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	$^{\circ}\text{C}$

*漏极电流由最高结温限制

*Collector current limited by maximum junction temperature





电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单 位 Units
关态特性 Off –Characteristics						
集电极—发射极击穿电压 Collector-Emmitter Voltage	BV_{CES}	$I_C=500\mu A, V_{GE}=0V$	1350	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{CES}/\Delta T_J$	$I_C=1mA$, referenced to $25^\circ C$	-	0.6	-	$V/^\circ C$
零栅压下集电极漏电流 Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=1350V, V_{GE}=0V,$ $T_C=25^\circ C$	-	-	0.2	mA
		$T_C=100^\circ C$			2	mA
		$T_C=150^\circ C$	-	-	2.5	mA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GESF}	$V_{CE}=0V, V_{GE}=20V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GESR}	$V_{CE}=0V, V_{GE}=-20V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate-Emmitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}, I_C=600\mu A$	4.5	-	6.5	V
饱和压降 Collector-Emmitter saturation Voltage	V_{CESAT}	$V_{GE}=15V, I_C=20$ $T_C=25^\circ C$	-	1.80	2.3	V
		$T_C=125^\circ C$	-	2.05	-	
		$T_C=150^\circ C$	-	2.15	-	
短路电流（注2） Short Collector current（Note 2）	$I_{C(SC)}$	$V_{GE}=15V, V_{CE}=600V, t_{sc} < 10\mu s, T_C=25^\circ C$		160		A
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{ies}	$V_{CE}=25V,$ $V_{GE}=0V,$ $f=1.0MHz$	-	3850	-	pF
输出电容 Output capacitance	C_{oes}		-	89	-	pF
反向传输电容 Reverse transfer capacitance	C_{res}		-	46	-	pF



**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics							
开启延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{CE}=600V, I_C=20A, R_G=10\Omega$ $T_C=25^\circ\text{C}$ Inductive Load	-	29.7	-	-	ns
上升时间 Turn-On rise time	t_r		-	65.8	-	-	ns
关断延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	215	-	-	ns
下降时间 Turn-Off Fall time	t_f		-	35	-	-	ns
开启损耗 Turn-on energy	E_{on}		-	2.5	-	-	mJ
关断损耗 Turn-off energy	E_{off}		-	1.0	-	-	mJ
总的开关损耗 Total switching energy	E_{total}		-	3.5	-	-	mJ
栅极电荷总量 Total Gate Charge	Q_g	$V_{CE}=600V, I_C=20A$ $V_{GE}=15V$ (note 3, 4)	-	119	-	-	nC
反并联二极管特性及最大额定值 Anti-Parallel Diode Characteristics and Maximum Ratings							
正向压降 Diode Forward Voltage	V_F	$V_{GE}=0V, I_F=20A$	-	1.7	2.5	-	V
反向恢复时间 Diode Reverse recovery time	t_{rr}	$V_{GE}=0V, V_R=800V, I_F=20A$	-	180	-	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}	$dI_F/dt=200A/\mu s$ (note 4)	-	1.6	-	-	μC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.4	$^\circ\text{C/W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	$^\circ\text{C/W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: 两次短路之间的间隔大于 1 秒时, 允许短路测试的次数最大为 1000 次
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$
- 4: 基本与工作温度无关

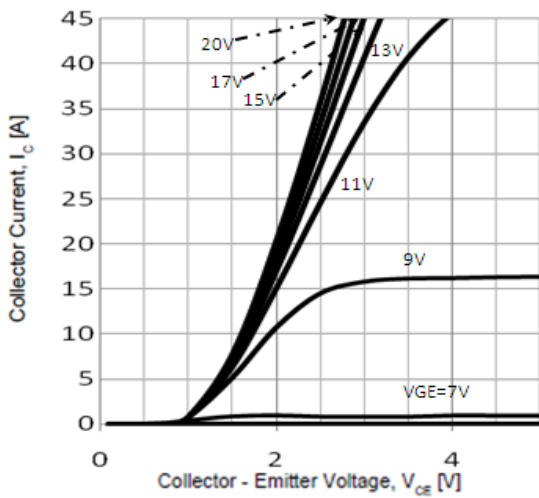
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: Allowed number of short circuits: <1000; time between short circuits: >1s.
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature

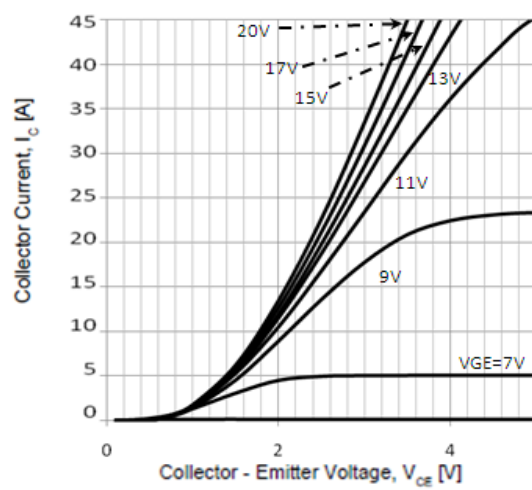


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

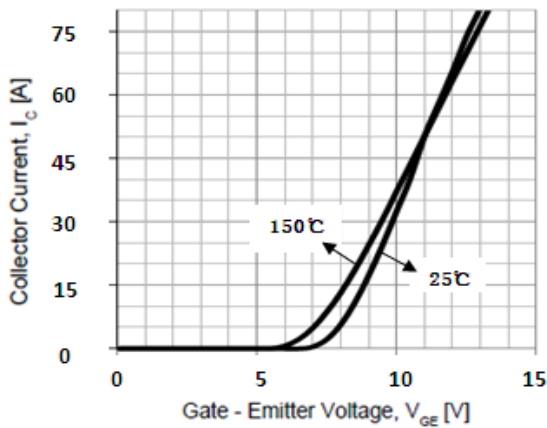
Typical Output Characteristics($T_j=25^{\circ}\text{C}$)



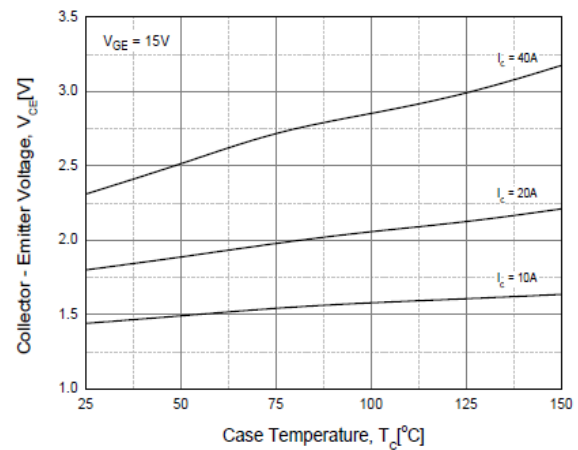
Typical Output Characteristics($T_j=150^{\circ}\text{C}$)



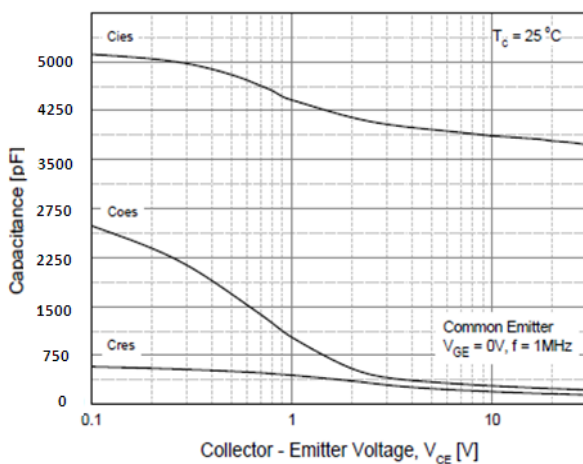
Typical Transfer Characteristics



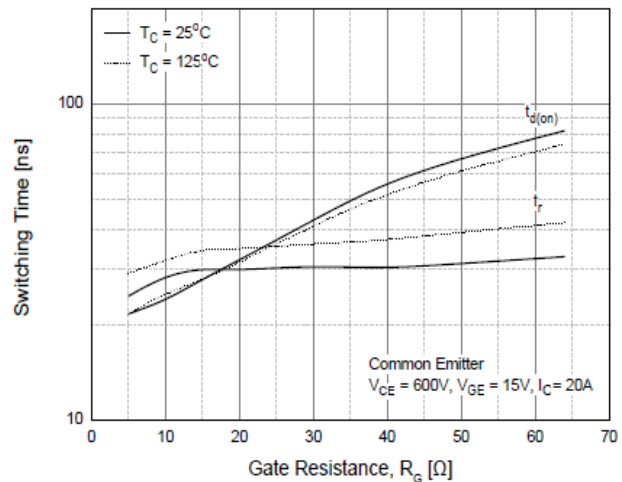
Saturation Voltage vs. Case Temperature at Variant Current Level



Capacitance Characteristics

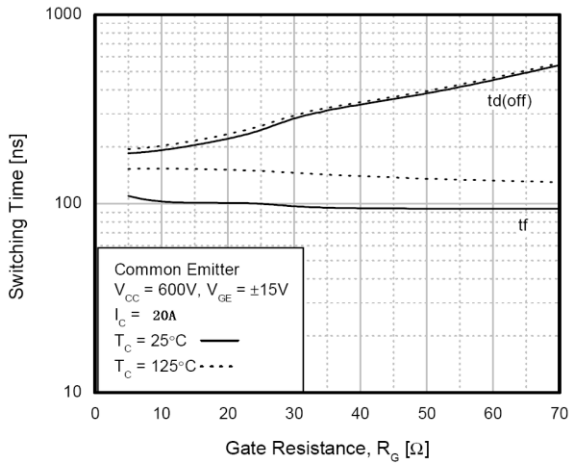


Turn-On Characteristics vs. Gate Resistance

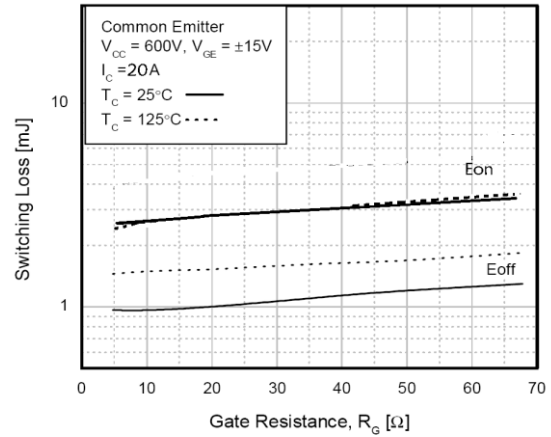




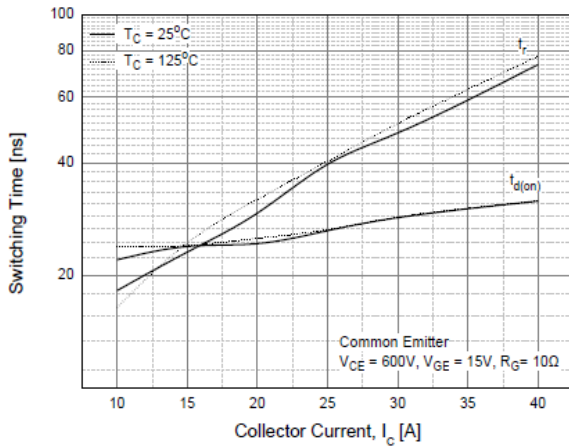
Turn-Off Characteristics vs. Gate Resistance



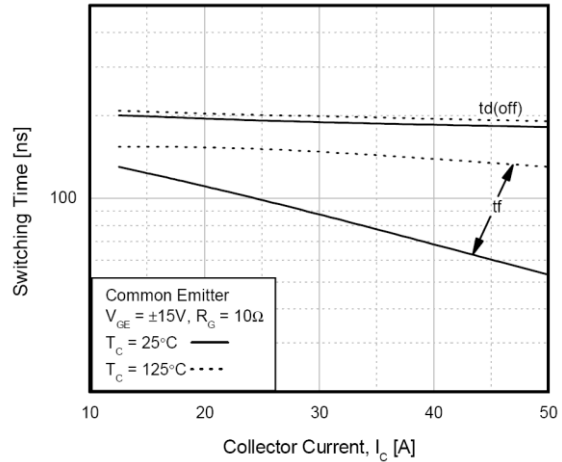
Switching Loss vs. Gate Resistance



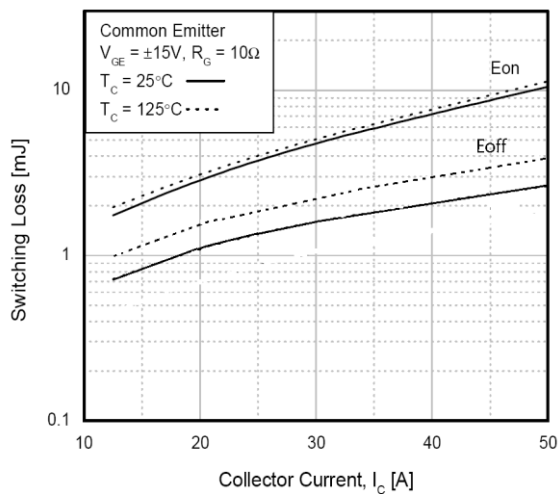
Turn-On Characteristics vs. Collector Current



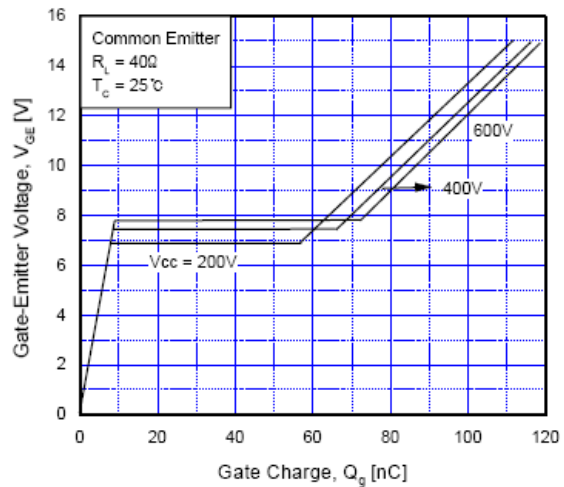
Turn-Off Characteristics vs. Collector Current



Switching Loss vs. Collector Current

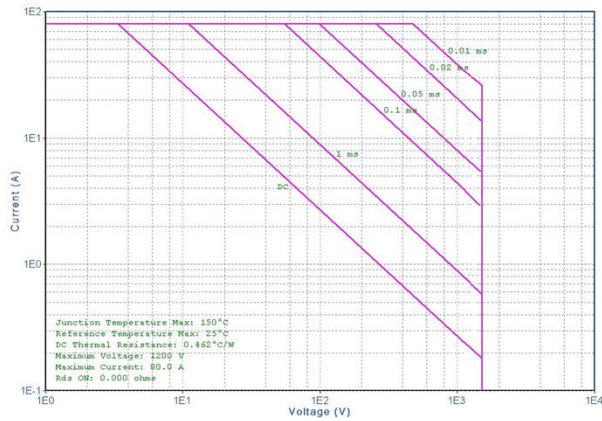


Gate Charge Characteristics

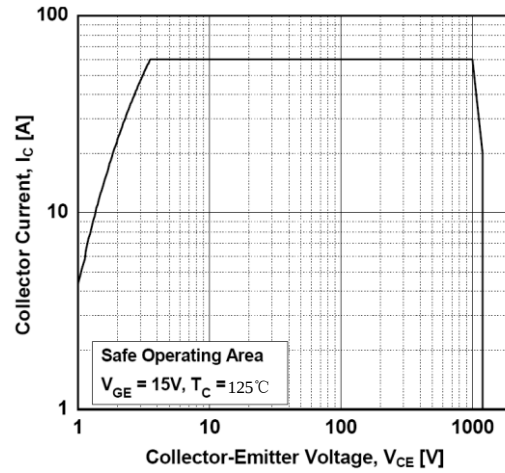




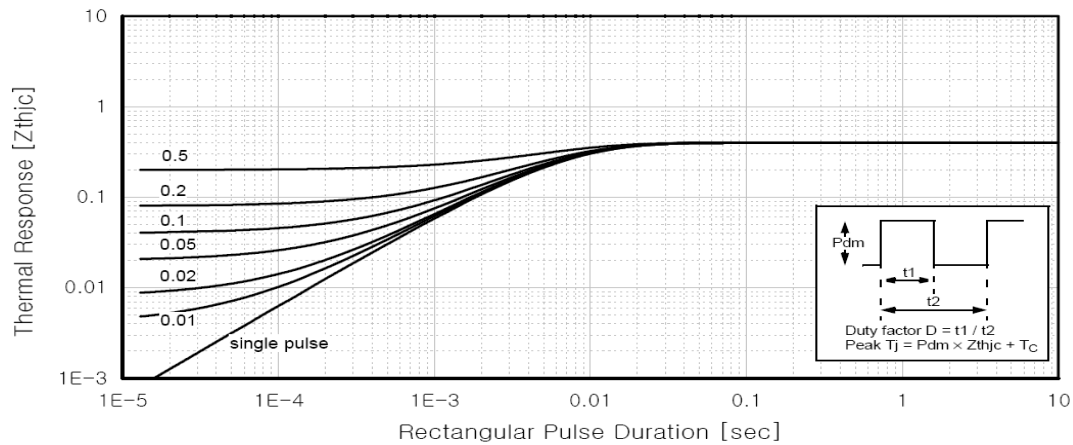
SOA Characteristics



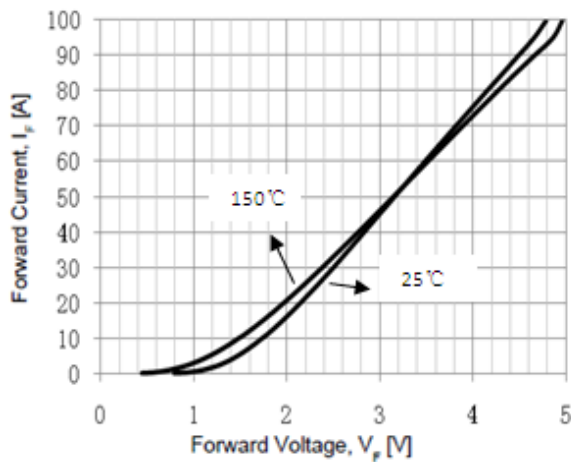
Turn-Off SOA



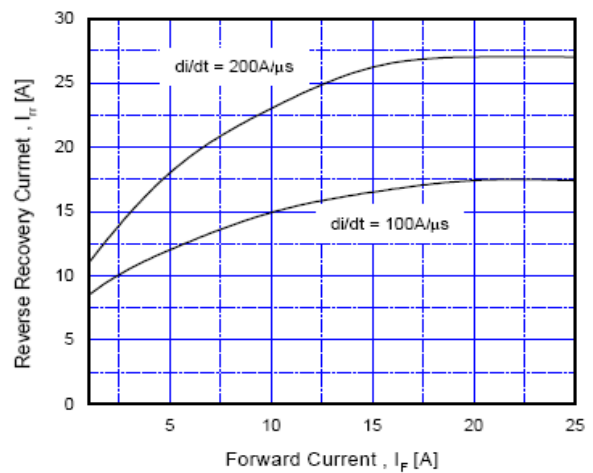
Transient Thermal Impedance



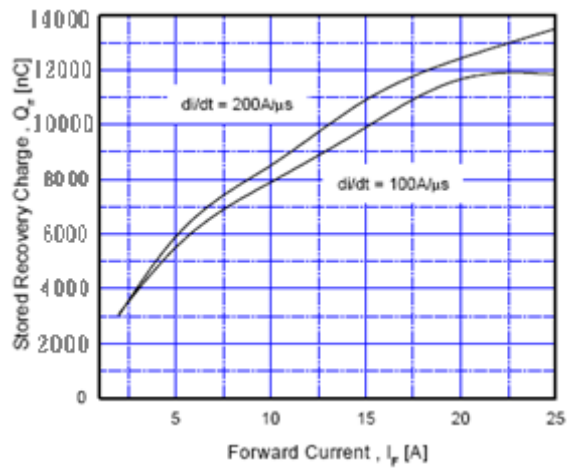
Forward Characteristics



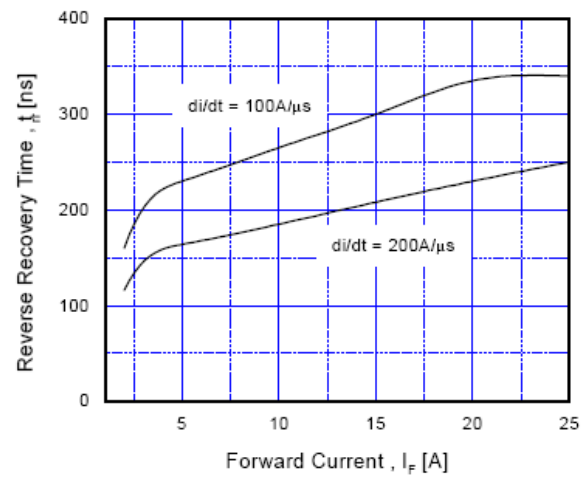
Reverse Recovery Current



Stored Charge



Reverse Recovery Time

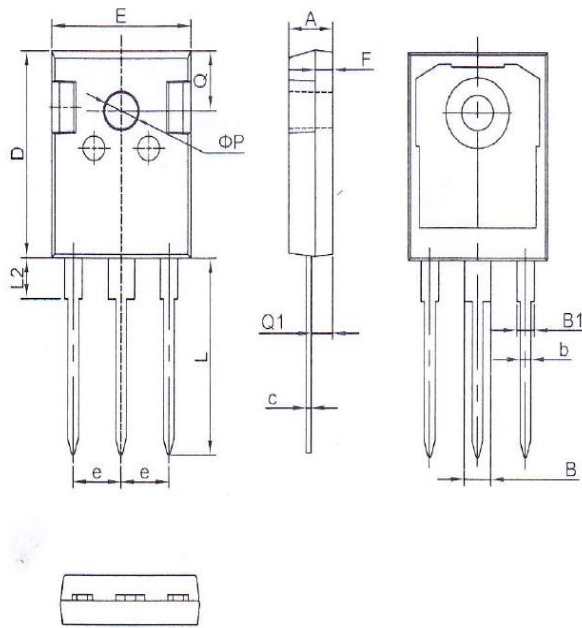




外形尺寸 PACKAGE MECHANICAL DATA

TO-247

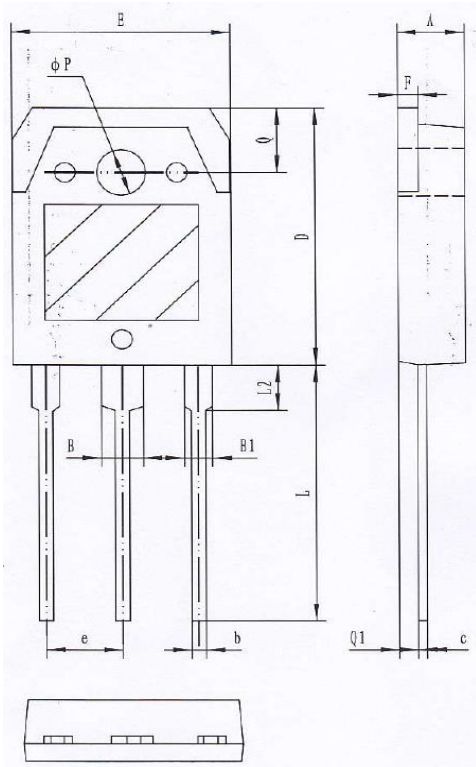
单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

TO-3PB

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45(TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50



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3. 在电路设计时请不要超过器件的绝对最大额定值，否则会影响整机的可靠性。
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