

描述 / Descriptions

TO-247 塑封封装绝缘栅双极晶体管。

Insulated-Gate Bipolar Transistor in a TO-247 Plastic Package.

特征 / Features

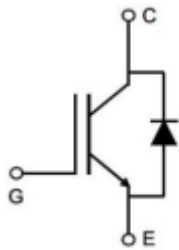
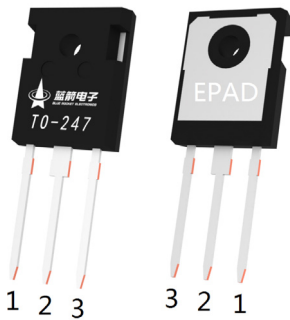
650V , 100A

$V_{CE(SAT)} = 1.60V(\text{typ.}) @ V_{GE} = 15V, I_C = 100A$

用途 / Applications

太阳能转换器、不间断电源、焊接转换器、中高范围开关频率转换器。

Solar Converters, Uninterrupted Power Supply, Welding Converters, Mid to High Range Switching Frequency Converters.

内部等效电路 / Equivalent Circuit**引脚排列 / Pinning**

PIN1 : G

PIN 2、EPAD : C

PIN 3 : E

印章代码 / Marking

见印章说明。

See Marking Instructions.


极限参数 / Absolute Maximum Ratings($T_a=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector-Emitter Voltage	V_{CES}	650	V
Gate-Emitter Voltage	V_{GES}	± 30	V
Continuous Collector Current	I_C	$T_C=25^{\circ}\text{C}$ 200	A
		$T_C=100^{\circ}\text{C}$ 100	A
Pulsed Collector Current , Limited by T_{Jmax}	I_{CM}	400	A
Continuous Diode Forward Current	I_F	$T_C=25^{\circ}\text{C}$ 150	A
		$T_C=100^{\circ}\text{C}$ 75	A
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$ 536	W
Operating Junction Temperature Range	T_J	-40 to +175	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +175	$^{\circ}\text{C}$
Maximum Temperature for Soldering	T_L	260	$^{\circ}\text{C}$
Maximum Junction-to-Ambient	$R_{\theta JA}$	40	$^{\circ}\text{C/W}$
Maximum IGBT Junction-to-Case	$R_{\theta JC}$	0.26	$^{\circ}\text{C/W}$
Maximum Diode Junction-to-Case	$R_{\theta JC}$	1.26	$^{\circ}\text{C/W}$

电性能参数 / Electrical Characteristics($T_c=25^{\circ}\text{C}$)

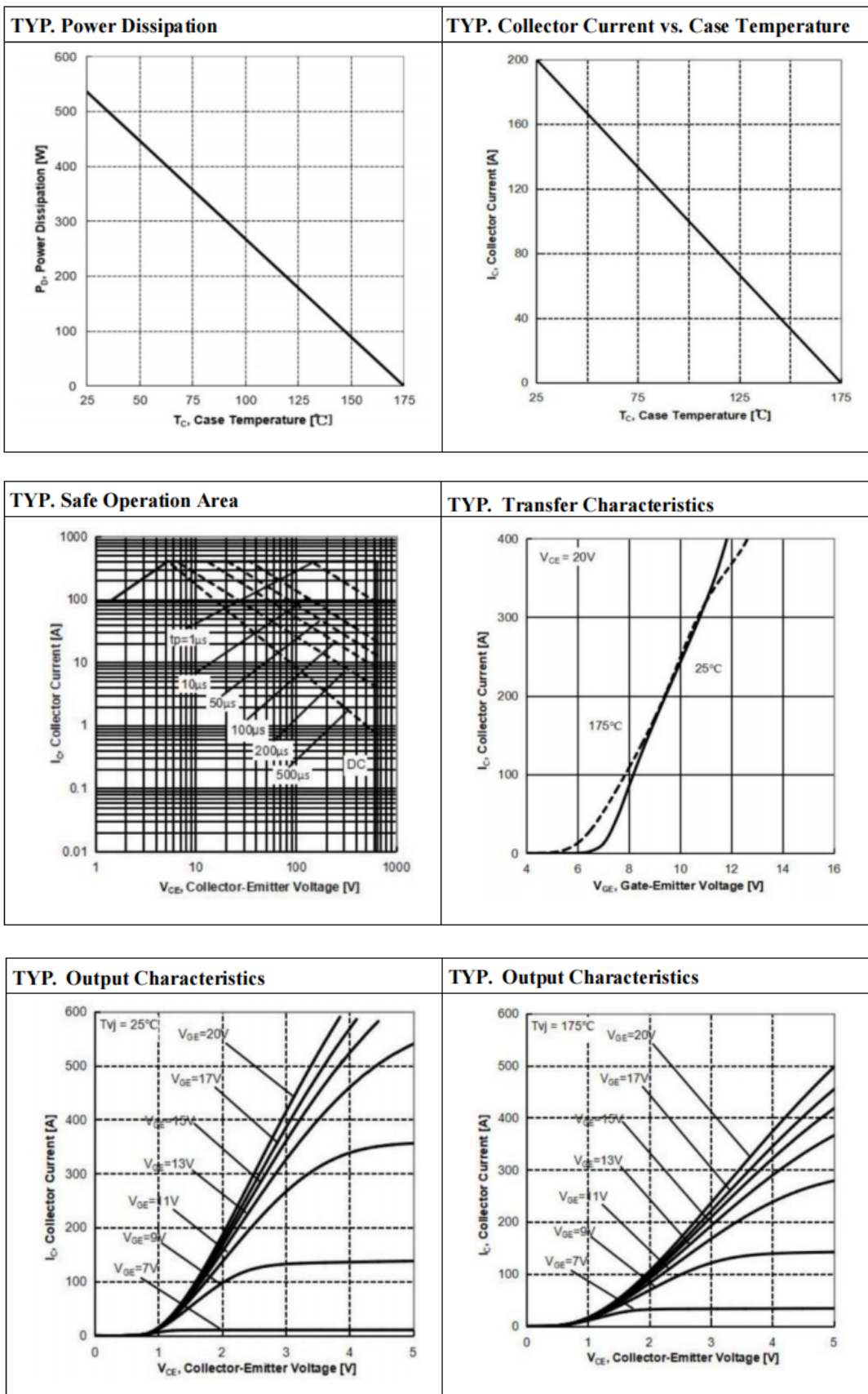
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C=1.0\text{mA}$, $V_{GE}=0\text{V}$	650			V
Zero Gate Voltage Collector current	I_{CES}	$V_{CE}=650\text{V}$, $V_{GE}=0\text{V}$			10	μA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0\text{V}$, $V_{GE}=\pm 20\text{V}$			± 200	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$, $I_C=1.0\text{mA}$	4.3	5.3	6.3	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15\text{V}$, $I_C=100\text{A}$	$T_J=25^{\circ}\text{C}$	1.60	1.95	V
			$T_J=125^{\circ}\text{C}$	1.87		
			$T_J=175^{\circ}\text{C}$	2.04		
Total Gate Charge	Q_g	$V_{GE}=15\text{V}$, $V_{CC}=520\text{V}$ $I_C=100\text{A}$		405		nC
Gate to Emitter Charge	Q_{ge}			72		
Gate to Collector Charge	Q_{gc}			189		



电性能参数 / Electrical Characteristics(Ta=25°C)

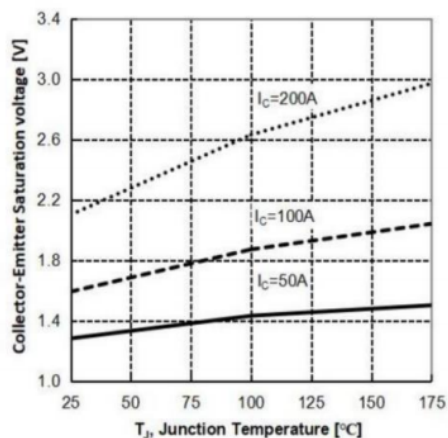
参数 Parameter	符号 Symbol	测试条件 Test Conditions		最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GE}=15V$, $V_{CC}=400V$ $I_C=100A$, $R_G=5\Omega$ Inductive Load	$T_J=25^\circ C$		40		ns
			$T_J=175^\circ C$		50		ns
Turn-On Rise Time	t_r		$T_J=25^\circ C$		174		ns
			$T_J=175^\circ C$		183		ns
Turn-Off Delay Time	$t_{d(off)}$		$T_J=25^\circ C$		230		ns
			$T_J=175^\circ C$		403		ns
Turn-Off Fall Time	t_f		$T_J=25^\circ C$		136		ns
			$T_J=175^\circ C$		177		ns
Turn-On Energy	E_{on}		$T_J=25^\circ C$		4.89		mJ
			$T_J=175^\circ C$		5.06		mJ
Turn-Off Energy	E_{off}		$T_J=25^\circ C$		3.71		mJ
			$T_J=175^\circ C$		5.01		mJ
Total Switching Energy	E_{ts}		$T_J=25^\circ C$		8.6		mJ
			$T_J=175^\circ C$		10.07		mJ
Input Capacitance	C_{ies}	$V_{GE}=0V$, $V_{CE}=25V$ $f=1MHz$			7220		pF
Output Capacitance	C_{oes}				369		pF
Reverse Transfer Capacitance	C_{res}				198		pF
Short Circuit Safe Operation Area	SCSOA	$V_{GE}=15V$, $V_{CC} \leq 400V$, $T_{J,start} \leq 25^\circ C$		5			μs
Diode Forward Voltage	V_F	$I_F=40A$	$T_J=25^\circ C$		1.35		V
Diode Reverse Recovery Time	T_{rr}	$V_R=400V$, $I_F=75A$ $dI_F/dt=200 A/\mu s$ $T_C=25^\circ C$	$T_J=25^\circ C$		136		ns
			$T_J=175^\circ C$		183		
Diode Reverse Recovery Charge	Q_{rr}		$T_J=25^\circ C$		430		μC
			$T_J=175^\circ C$		670		
Diode Peak Reverse Recovery Current	I_{rm}		$T_J=25^\circ C$		6.3		A
			$T_J=175^\circ C$		8.5		

电参数曲线图 / Electrical Characteristic Curve

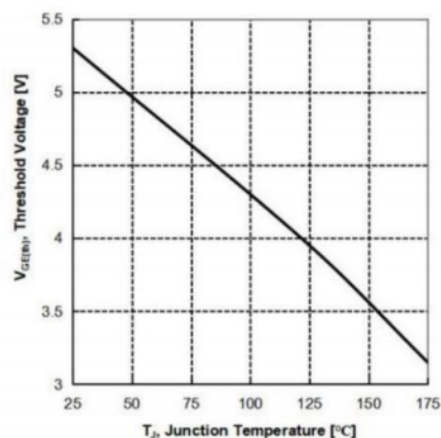
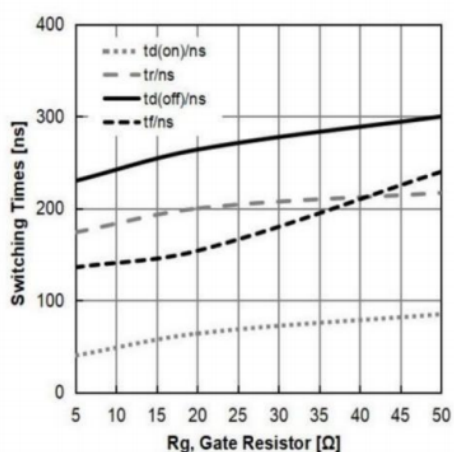
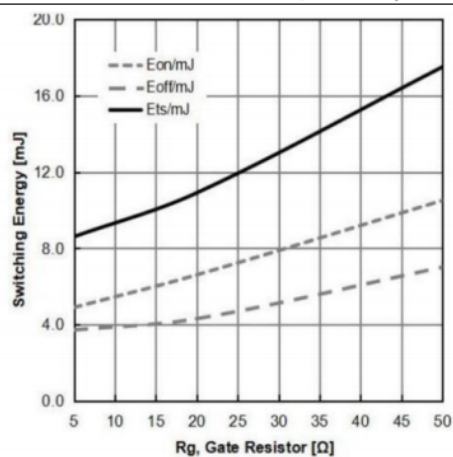
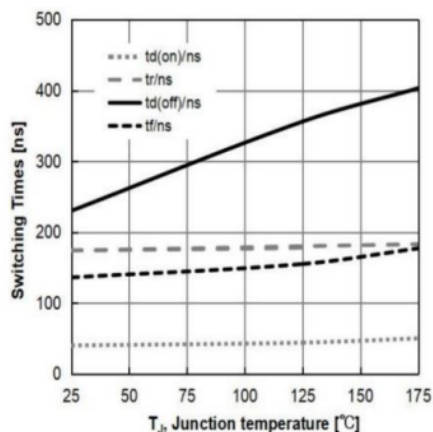
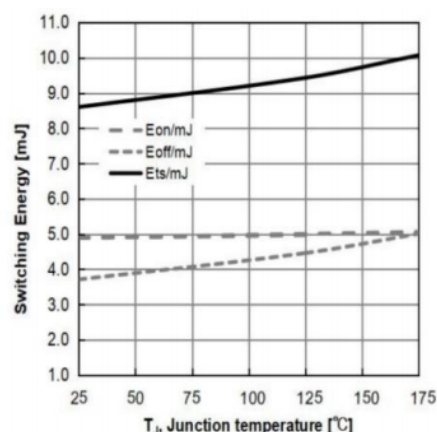


电参数曲线图 / Electrical Characteristic Curve

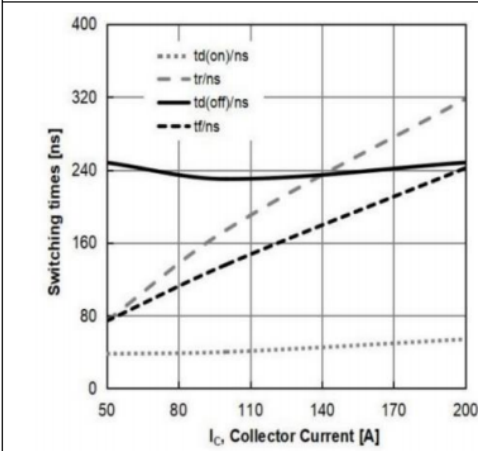
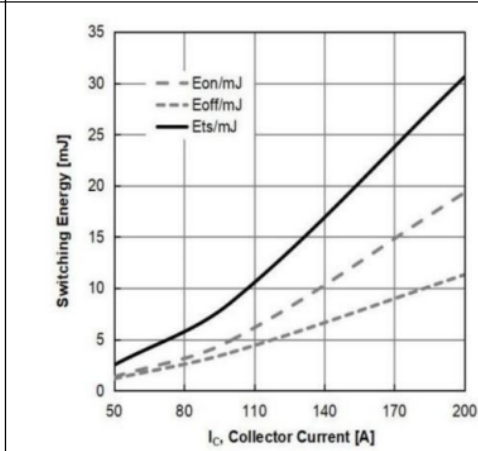
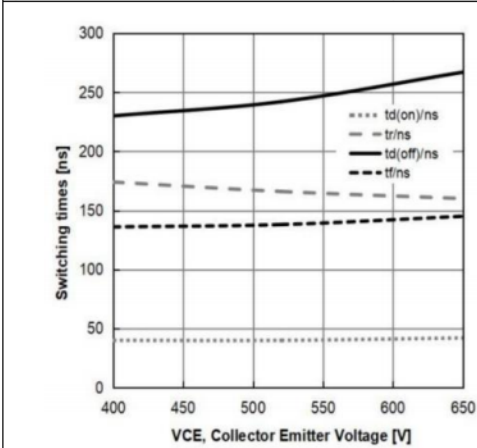
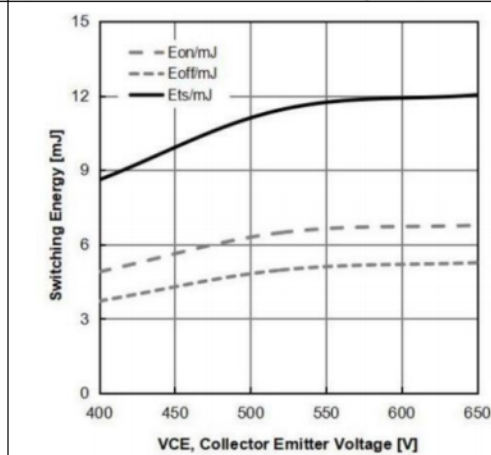
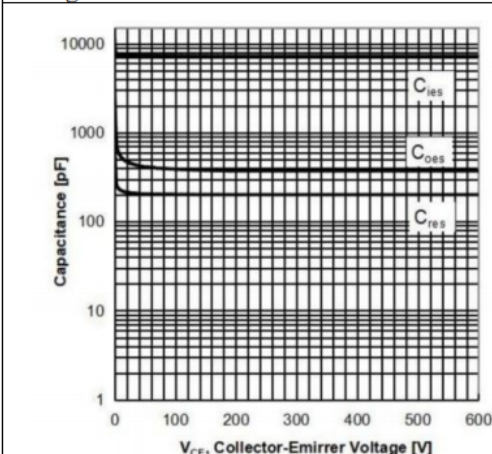
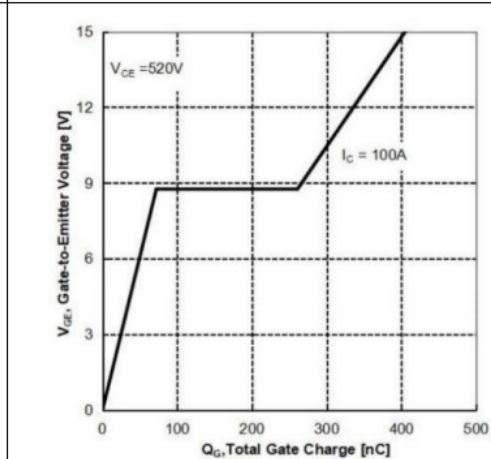
TYP. Typical Collector-Emitter Saturation Voltage vs. Junction Temperature



TYP. Gate-Emitter Threshold Voltage vs. Junction Temperature

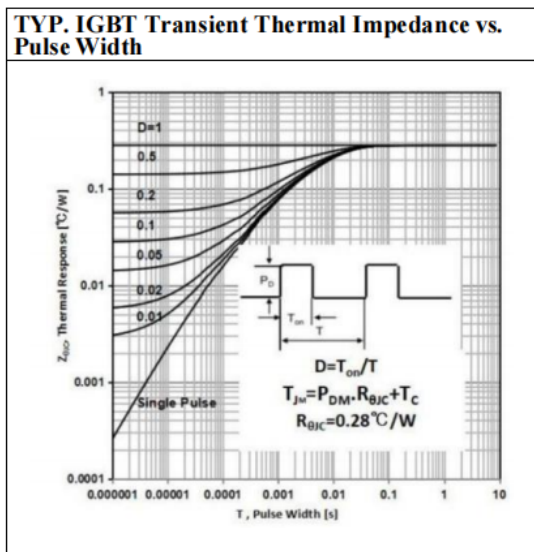
TYP. Switching Times vs. Gate Resistor ($T_J=25^{\circ}C$, $V_{CE}=400V$, $V_{GE}=15V$, $I_C=100A$)TYP. Switching Energy vs. Gate Resistor ($T_J=25^{\circ}C$, $V_{CE}=400V$, $V_{GE}=15V$, $I_C=100A$)TYP. Switching Times vs. Junction Temperature ($V_{CE}=400V$, $V_{GE}=15V$, $I_C=100A$, $R_g=5\Omega$)TYP. Switching Energy vs. Junction Temperature ($V_{CE}=400V$, $V_{GE}=15V$, $I_C=100A$, $R_g=5\Omega$)

电参数曲线图 / Electrical Characteristic Curve

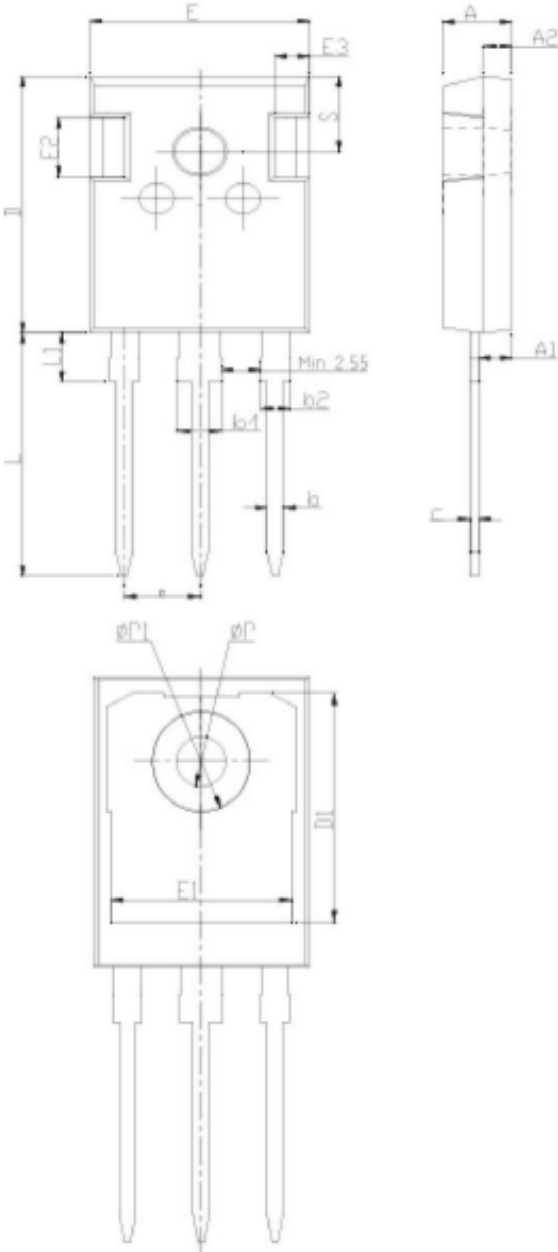
TYP. Switching Times vs. Collector current
 ($R_g=5\Omega$, $V_{CE}=400V$, $V_{GE}=15V$, $T_J=25^\circ C$)

TYP. Switching Energy vs. Collector current
 ($R_g=5\Omega$, $V_{CE}=400V$, $V_{GE}=15V$, $T_J=25^\circ C$)

TYP. Switching Times vs. VCE
 ($T_J=25^\circ C$, $I_C=100A$, $V_{GE}=15V$, $R_g=5\Omega$)

TYP. Switching Energy vs. VCE
 ($T_J=25^\circ C$, $I_C=100A$, $V_{GE}=15V$, $R_g=5\Omega$)

TYP. Capacitance vs. Collector-Emitter Voltage

TYP. Gate Charge




电参数曲线图 / Electrical Characteristic Curve



外形尺寸图 / Package Dimensions



COMMON DIMENSIONS			
SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.44BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ΦP	3.40	3.60	3.80
$\Phi P1$	-	-	7.30
S	6.15BSC		

印章说明 / Marking Instructions



说明：

BR： 为公司代码

PGB100N65AHA： 为型号代码

****： 为生产批号代码，随生产批号变化

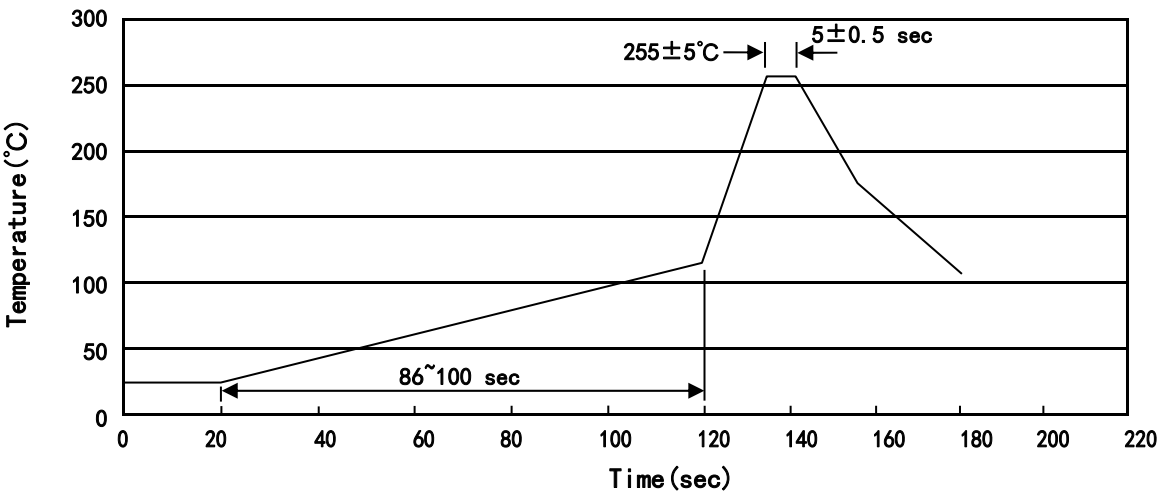
Note:

BR: Company Code

PGB100N65AHA: Product Type Code

****: Lot No. Code, code change with Lot No.

波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)



- 说明 :
- 1、预热温度 25 ~ 150°C , 时间 60 ~ 90sec;
 - 2、峰值温度 255±5°C , 时间持续为 5±0.5sec;
 - 3、焊接制程冷却速度为 2 ~ 10°C/sec.
- Note:
- 1.Preheating:25~150°C, Time:60~90sec.
 - 2.Peak Temp.:255±5°C, Duration:5±0.5sec.
 3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度 : 270±5°C 时间 : 10±1 sec. Temp.:270±5°C Time:10±1 sec

包装规格 / Packaging SPEC.

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-247	30	15	450	5	2250	520×44×6	580×158×55	595×300×178

使用说明 / Notices

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