# BC807-16Q/-25Q/-40Q

## SOT-23 PNP Bipolar Transistor
## SOT-23 PNP 双极型三极管

## 1. Description 描述

This Bipolar Junction Transistor (BJT) is suitable for use in automotive applications.
这种双极结晶体管（BJT）适用于汽车应用。

## 2. Features 特性

| Feature<br>特性 | Description<br>描述 |
|---|---|
| Collector-Emitter Breakdown Voltage<br>集电极-发射极击穿电压 | $BV_{CEO} > -45V$ |
| Continuous Collector Current<br>连续集电极电流 | $I_C = -0.5\text{A}$ |
| Peak Pulse Current<br>峰值脉冲电流 | $I_{CM} = -1A$ |
| Complementary NPN Types<br>互补 NPN 类型 | BC817-xxQ |
| Applications<br>应用 | For Switching and AF Amplifier 开关和 AF 放大器应用 |
| Environmental Compliance<br>环保合规 | Totally Lead-Free & Fully RoHS Compliant.<br>完全无铅和符合 RoHS 标准[1]<br>Halogen and Antimony Free, "Green" Device.<br>无卤素、无锑，“绿色”器件[2] |
| Automotive Compliance<br>汽车合规 | BC807-16Q/-25Q/-40Q suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified.<br>适用于需要特定变更控制的汽车应用，这些器件通过了 AEC-Q101 认证。 |

[1] No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
无铅，完全符合欧盟标准 2002/95/EC（RoHS），2011/65/EU （RoHS 2）和 2015/863/EU （RoHS 3）。

[2] Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
无卤素和无锑的“绿色”产品指溴含量<900ppm，氯含量<900ppm（溴+氯总含量<1500ppm）和锑化合物含量<1000ppm。


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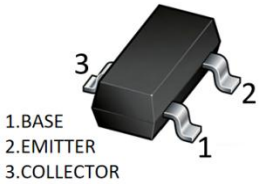
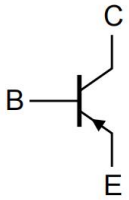
## 3. Mechanical Data 封装数据

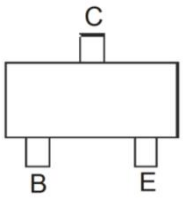
| Feature<br>特性 | Description<br>描述 |
|---|---|
| Package 封装 | SOT-23 |
| Moisture Sensitivity Level<br>湿敏感度等级 | J-STD-020 MSL1 |
| Material 材料 | Molded Plastic, “Green” Molding Compound; UL Flammability Classification Rating 94V-0.<br>模塑塑料封装，“绿色”成型复合材料；UL 可燃性等级 94V-0。 |
| Dimensions 尺寸 | $1.9mm$ pitch; $2.9mm \times 1.3mm \times 1.0mm$ body<br>相邻引脚中心距为 $1.9mm$，封装本体（不含引脚）尺寸为 $2.9mm \times 1.3mm \times 1.0mm$ |
| Terminals Compliance<br>引脚合规 | 3 terminals, Tin Plated Leads, Solderable per MILSTD-202, Method 208<br>3 个镀锡引脚，可焊性符合 MIL-STD-202 方法 208 的规定e3 |
| Weight 重量 | 0.008 grams (Approximate)<br>约 0.008 克 |
| Polarity 极性 | See Diagrams Below 极性见下图 |




SOT-23 Top View




Device Symbol




Top View Pin-Out

## 4. Ordering Information 订购信息

| Part Number | Compliance | Package | Reel Size (inches) | Tape Width (mm) | Quantity Per Reel |
|---|---|---|---|---|---|
| BC807-16Q | Automotive | SOT-23 | 7 | 8 | 3000 |
| BC807-25Q | Automotive | SOT-23 | 7 | 8 | 3000 |
| BC807-40Q | Automotive | SOT-23 | 7 | 8 | 3000 |

## 5. Marking Information 丝印信息

| Part Number | Marking Code |
|---|---|
| BC807-16Q | 5A |
| BC807-25Q | 5B |
| BC807-40Q | 5C |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## 6. Absolute Maximum Ratings($T_a$ =+ 25℃) 绝对最大额定值

| Characteristic<br>特性 | Symbol<br>符号 | Value<br>值 | Unit<br>单位 |
|---|---|---|---|
| Collector-Base Voltage 集电极-基极电压 | $V_{CBO}$ | -50 | $V$ |
| Collector-Emitter Voltage 集电极-发射极电压 | $V_{CEO}$ | -45 | $V$ |
| Emitter-Base Voltage 发射极-基极电压 | $V_{EBO}$ | -5 | $V$ |
| Collector Current 集电极电流 | $I_C$ | -0.5 | $A$ |
| Peak Pulse Collector Current(single pulse)<br>峰值脉冲集电极电流（单脉冲) | $I_{CM}$ | -1 | $A$ |
| Peak Pulse Base Current(single pulse)<br>峰值脉冲基极电流（单脉冲） | $I_{BM}$ | -200 | $mA$ |

## 7. Thermal Characteristics($T_a$ =+ 25℃) 热特性

| Characteristic<br>特性 | Symbol<br>符号 | Value<br>值 | Unit<br>单位 |
|---|---|---|---|
| Collector Power Dissipation 集电极耗散功率 | $P_c$ | 300 | $mW$ |
| Thermal Resistance From Junction To Ambient<br>结到环境的热阻 | $R_{\theta JA}$ | 417 | ℃/$W$ |
| Junction Temperature 结温 | $T_J$ | -55 ~ +150 | ℃ |
| Storage Temperature 储藏温度 | $T_{stg}$ | -55 ~ +150 | ℃ |

## 8. ESD Ratings ESD 评级

| Characteristic<br>特性 | JEDEC Class<br>JEDEC 等级 | Value<br>值 | Unit<br>单位 |
|---|---|---|---|
| Electrostatic Discharge-Human Body Model（ESD HBM）<br>人体放电模型 | 3B | 8000 | $V$ |
| Electrostatic Discharge-Machine Model（ESD MM）<br>带电器件模型 | C | 400 | $V$ |


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## 9. Electrical Characteristics($T_a$ =+ 25℃) 电特性

| Characteristic 特性 | | Symbol 符号 | Min. 最小值 | Typ. 典型值 | Max. 最大值 | Unit 单位 | Conditions 条件 |
|---|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage 集电极-基极击穿电压 | | $BV_{CBO}$ | -50 | - | - | $V$ | $I_C =- 100\mu A$ , $I_E = 0$ |
| Collector-Emitter Breakdown Voltage 集电极-发射极击穿电压[3] | | $BV_{CEO}$ | -45 | - | - | $V$ | $I_C =- 10mA$ , $I_B = 0$ |
| Emitter-Base Breakdown Voltage 发射极-基极击穿电压 | | $BV_{EBO}$ | -5 | - | - | $V$ | $I_E =- 100\mu A$ , $I_C = 0$ |
| Collector-Emitter Cut-Off Current 集电极-发射极漏电流 | | $I_{CES}$ | - | - | -100 | $nA$ | $V_{CE} =- 45V$ |
| Emitter-Base Cut-Off Current 发射极-基极漏电流 | | $I_{EBO}$ | - | - | -100 | $nA$ | $V_{EB} =- 5V$ |
| DC Current Gain 直流电流增益[3] | BC807-16Q<br>BC807-25Q<br>BC807-40Q | $h_{FE}$ | 100<br>160<br>250 | - | 250<br>400<br>600 | - | $V_{CE} =- 1V$,<br>$I_C =- 100mA$ |
| DC Current Gain 直流电流增益[3] | BC807-16Q<br>BC807-25Q<br>BC807-40Q | $h_{FE}$ | 60<br>100<br>170 | - | - | - | $V_{CE} =- 1V$,<br>$I_C =- 300mA$ |
| DC Current Gain 直流电流增益[3] | | $h_{FE}$ | 40 | - | - | - | $V_{CE} =- 1V$,<br>$I_C =- 500mA$ |
| Collector-Emitter Saturation Voltage 集电极-发射极饱和压降[3] | | $V_{CE(sat)}$ | - | - | -0.7 | $V$ | $I_C =- 500mA$,<br>$I_B =- 50mA$ |
| Base-Emitter Saturation Voltage 基极-发射极饱和电压[3] | | $V_{BE(sat)}$ | - | - | -1.2 | $V$ | $I_C =- 500mA$,<br>$I_B =- 50mA$ |
| Transition Frequency 特征频率 | | $f_T$ | 100 | - | - | $MHz$ | $V_{CE} =- 5V$,<br>$I_C =- 10mA$ |
| Out Capacitance 输出电容 | | $C_{ob}$ | - | 12 | - | $pF$ | $V_{CB} =- 10V$,$I_E = 0$,<br>$f = 1MHz$ |

[3] pulsed; $t_p \leq 300\mu s$; $\delta \leq 0.02$. 测量时脉冲宽度≤ 300 μ s，占空比≤ 0.02。


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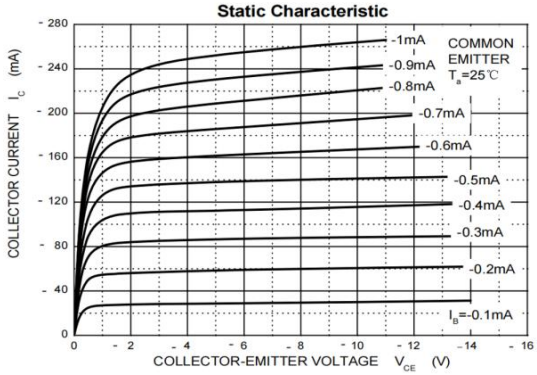
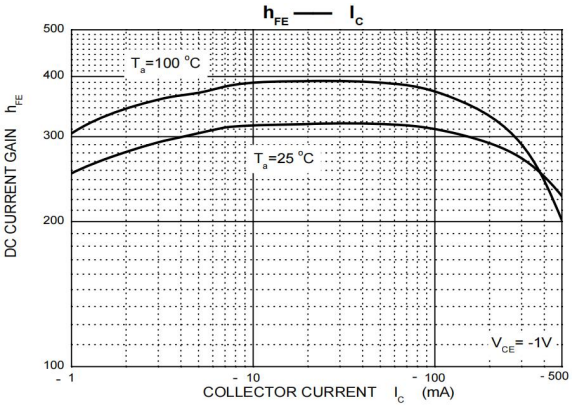
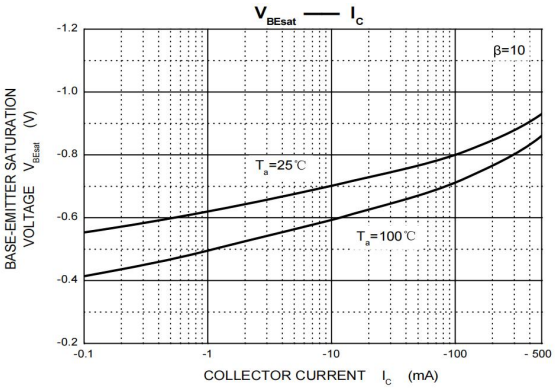
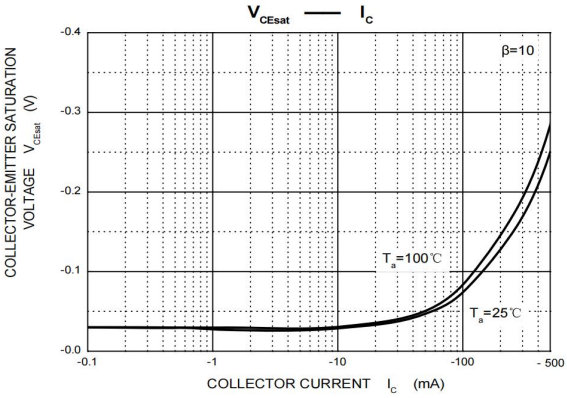
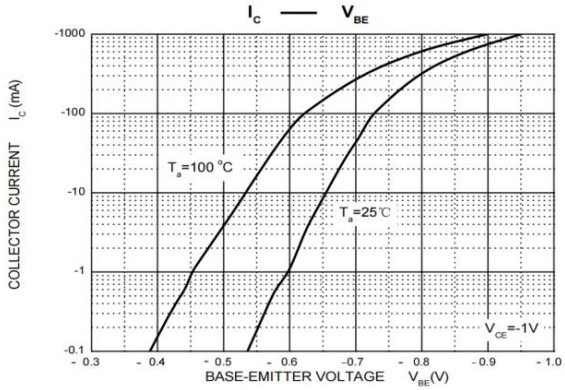
## 10. Typical Electrical Characteristics Curve 典型电特性曲线

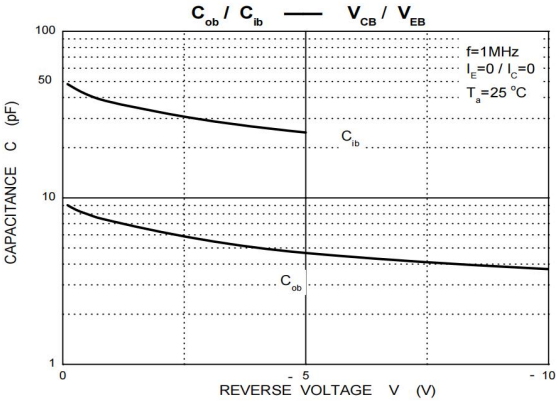


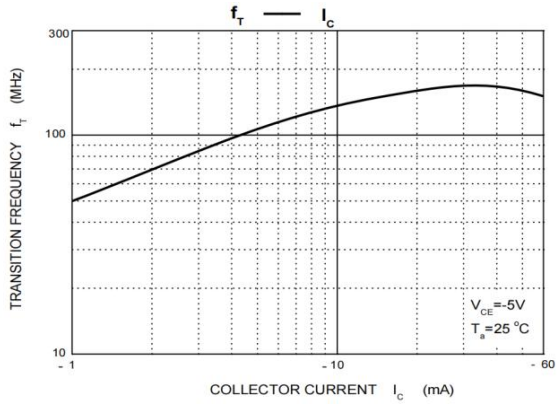



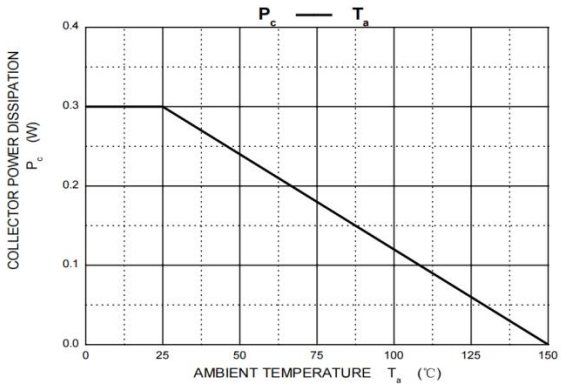





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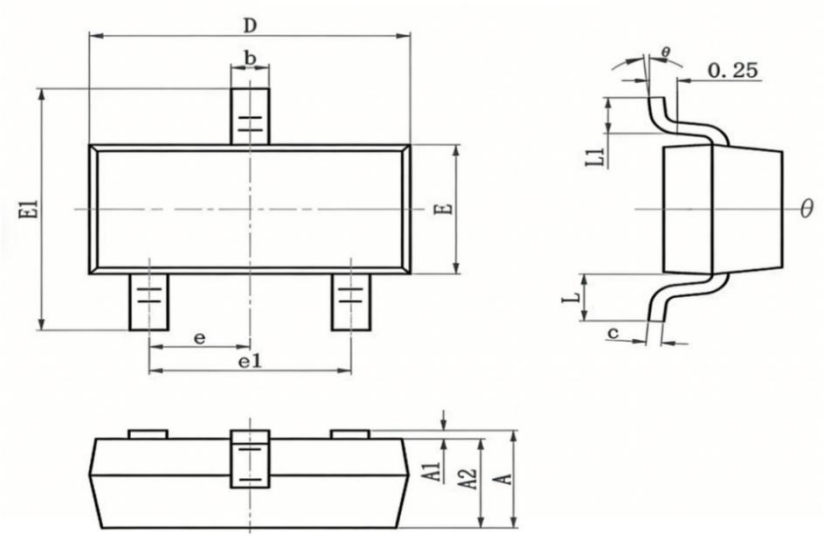
## 11. Package Outline Dimensions 封装外形尺寸

**SOT-23**




| Symbol 符号 | Millimeters 毫米 | |
|---|---|---|
| | Min.最小值 | Max.最大值 |
| **A** | 0.900 | 1.150 |
| **A1** | 0 | 0.100 |
| **A2** | 0.900 | 1.050 |
| **b** | 0.300 | 0.500 |
| **c** | 0.080 | 0.150 |
| **D** | 2.800 | 3.000 |
| **E** | 1.200 | 1.400 |
| **E1** | 2.250 | 2.550 |
| **e** | 0.900 | 1.000 |
| **e1** | 1.800 | 2.000 |
| **L** | 0.500 | 0.600 |
| **L1** | 0.300 | 0.500 |
| ***θ*** | $0^{\circ}$ | $8^{\circ}$ |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## 12. Suggested Pad Layout 推荐焊盘布局

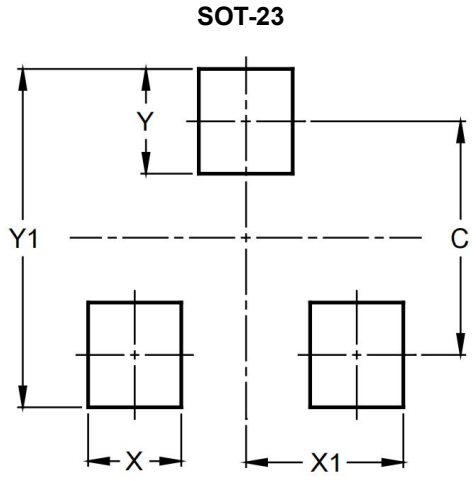


Fig. Soldering footprint for SOT-23

图 SOT-23 的引脚焊接

| Dimensions 尺寸 | Millimeters 毫米 |
|---|---|
| **C** | 2.0 |
| **X** | 0.8 |
| **X1** | 1.35 |
| **Y** | 0.9 |
| **Y1** | 2.9 |


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