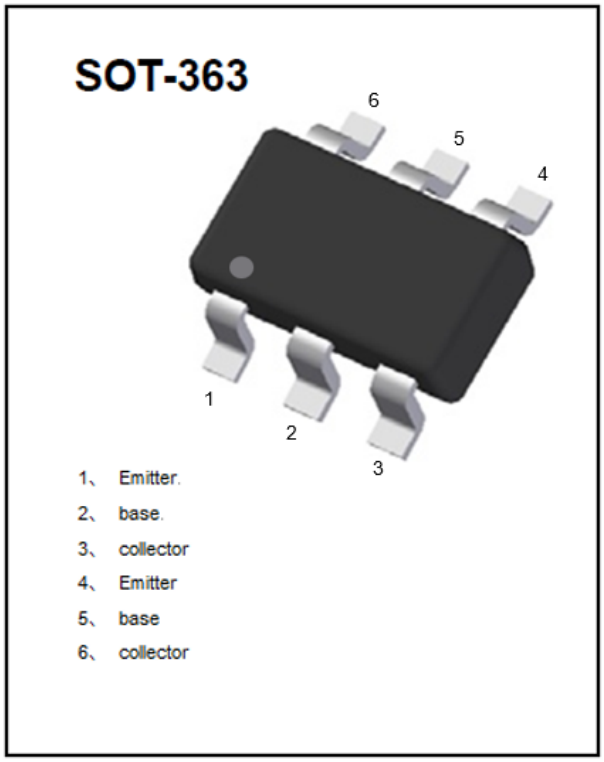
# Dual NPN+PNP Small Signal Transistor



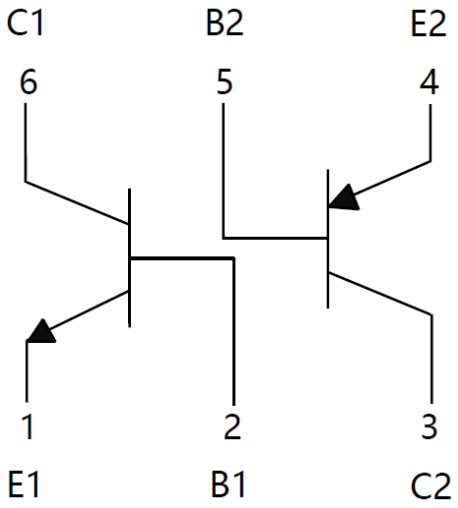

## Features

- Epoxy meets UL-94 V-0 flammability rating
- Surface mount package ideally Suited for Automatic Insertion
- NPN/PNP
- Moisture sensitivity level 1

## Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** PJ

## ■Equivalent circuit




## ■ Ordering Information (Example)

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| BC846BPN | F2 | Approximate 0.009g | 3000 | 30000 | 120000 | 7” reel |

## ■TR1 NPN Pin1、2、6 Maximum Ratings (Ta=25℃ Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Value |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | V | $I_C$=10μA,$I_E$=0 | 80 |
| Collector-Emitter Voltage | $V_{CEO}$ | V | $I_C$ =10mA,$I_B$=0 | 65 |
| Emitter-Base Voltage | $V_{EBO}$ | V | $I_E$=10μA,$I_C$=0 | 6 |
| Collector Current | $I_C$ | mA | | 100 |
| Power Dissipation | $P_D$ | mW | | 200 |
| Junction Temperature | $T_j$ | ℃ | | -55 to +150 |
| Storage Temperature | $T_{stg}$ | ℃ | | -55 to +150 |

## ■TR1 NPN Pin1、2、6 Electrical Characteristics (Ta=25℃ unless otherwise specified)

| Item | Symbol | Unit | Conditions | Min | TYP | Max |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $V_{CBO}$ | V | $I_C$=10μA,$I_E$=0 | 80 | | |
| Collector-emitter breakdown voltage | $V_{CEO}$ | V | $I_C$ =10mA,$I_B$=0 | 65 | | |
| Emitter-base breakdown voltage | $V_{EBO}$ | V | $I_E$=10μA,$I_C$=0 | 6 | | |
| Collector-Base cut-off current | $I_{CBO}$ | nA | $V_{CB}$=50V,$I_E$=0 | | | 15 |
| Emitter-Base Cut-off current | $I_{EBO}$ | nA | $V_{EB}$=5V,$I_C$=0 | | | 100 |
| DC current gain | $h_{FE}$ | | $V_{CE}$=5V,$I_C$=2mA | 200 | | 450 |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | V | $I_C$=10mA,$I_B$=0.5mA | | | 0.1 |
| | | | $I_C$=100mA,$I_B$=5mA | | | 0.3 |
| Baser-emitter saturation voltage | $V_{BE(sat)}$ | V | $I_C$=10mA,$I_B$=0.5mA | | | 0.85 |
| | | V | $I_C$=100mA,$I_B$=5mA | | | 1.1 |
| Base-emitter Voltage | $V_{BE}$ | V | $V_{CE}$=5V,$I_C$=2mA | | | 0.7 |
| | | | $V_{CE}$=5V,$I_C$=10mA | | | 0.77 |
| Transition frequency | $f_T$ | MHz | $V_{CE}$=5V,$I_C$=10mA,f=100MHz | 100 | | |

## ■TR2 PNP Pin3、4、5 Maximum Ratings (Ta=25℃ Unless otherwise specified)

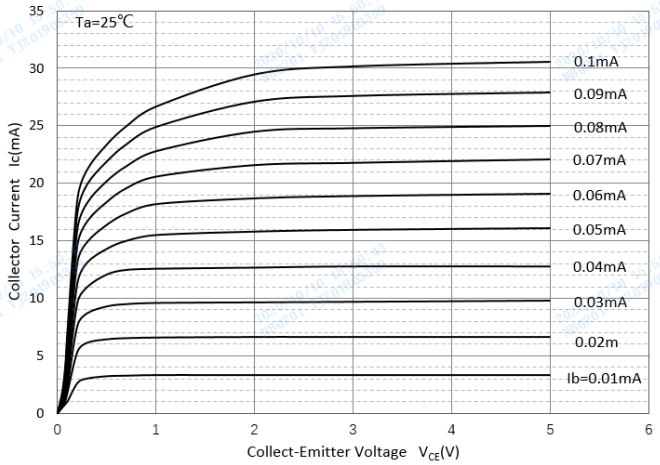
| Item | Symbol | Unit | Conditions | Value |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | V | $I_C$=-10μA,$I_E$=0 | -80 |
| Collector-Emitter Voltage | $V_{CEO}$ | V | $I_C$ =-10mA,$I_B$=0 | -65 |
| Emitter-Base Voltage | $V_{EBO}$ | V | $I_E$=-10μA,$I_C$=0 | -6 |
| Collector Current | $I_C$ | mA | | -100 |
| Junction Temperature | $T_j$ | ℃ | | -55 to +150 |
| Storage Temperature | $T_{stg}$ | ℃ | | -55 to +150 |

## ■TR2 PNP Pin3、4、5 Electrical Characteristics (Ta=25℃ unless otherwise specified)

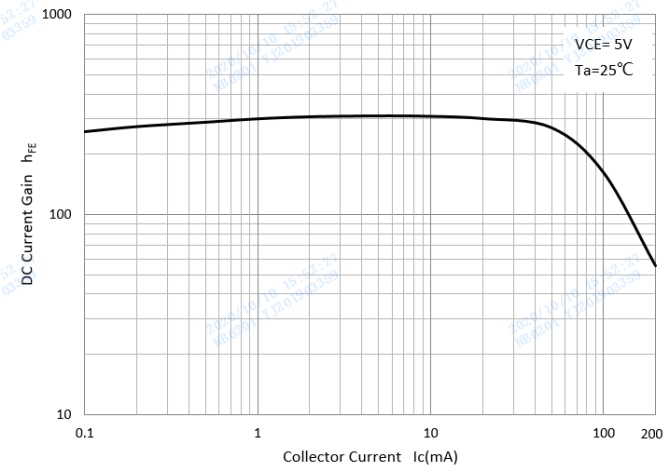
| Item | Symbol | Unit | Conditions | Min | TYP | Max |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $V_{CBO}$ | V | $I_C$=-10μA,$I_E$=0 | -80 | | |
| Collector-emitter breakdown voltage | $V_{CEO}$ | V | $I_C$ =-10mA,$I_B$=0 | -65 | | |
| Emitter-base breakdown voltage | $V_{EBO}$ | V | $I_E$=-10μA,$I_C$=0 | -6 | | |
| Collector-Base cut-off current | $I_{CBO}$ | nA | $V_{CB}$=-50V,$I_E$=0 | | | -15 |
| Emitter-Base Cut-off current | $I_{EBO}$ | nA | $V_{EB}$=-6V,$I_C$=0 | | | -100 |
| DC current gain | $h_{FE}$ | | $V_{CE}$=-5V,$I_C$=-2mA | 200 | | 450 |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | V | $I_C$=-10mA,$I_B$=-0.5mA | | | -0.3 |
| | | | $I_C$=-100mA,$I_B$=-5mA | | | -0.65 |
| Baser-emitter saturation voltage | $V_{BE(sat)}$ | V | $I_C$=-10mA,$I_B$=-0.5mA | | | -0.85 |
| | | | $I_C$=-100mA,$I_B$=-5mA | | | -1.1 |
| Base-emitter Voltage | $V_{BE}$ | V | $V_{CE}$=-5V,$I_C$=-2mA | | | -0.75 |
| | | | $V_{CE}$=-5V,$I_C$=-10mA | | | -0.82 |
| Transition frequency | $f_T$ | MHz | $V_{CE}$=-5V,$I_C$=-10mA,f=100MHz | 100 | | |

## ■ TR1 NPN Pin1、2、6 Characteristics (Typical)

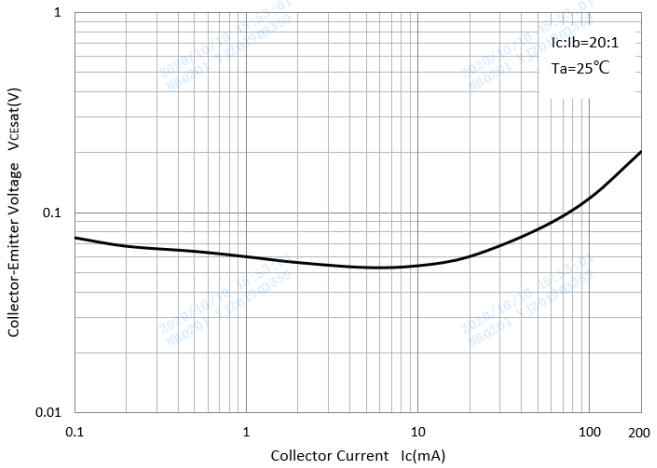
Static Characteristic



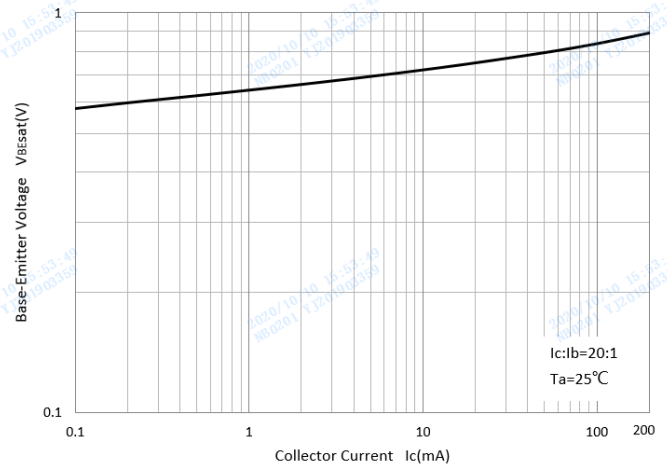

DC Current Gain



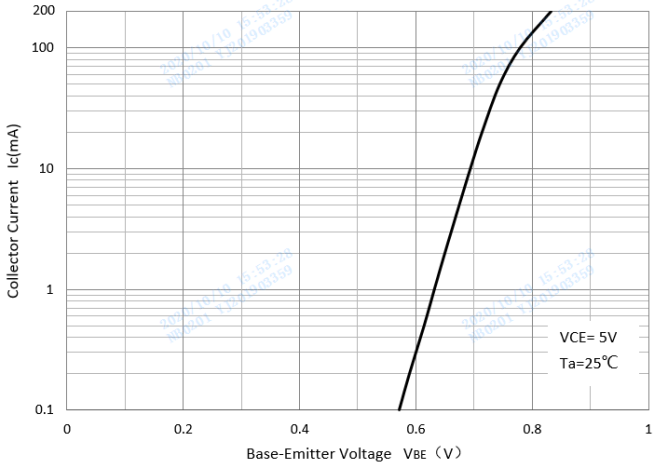

Collector-Emitter Saturation Voltage



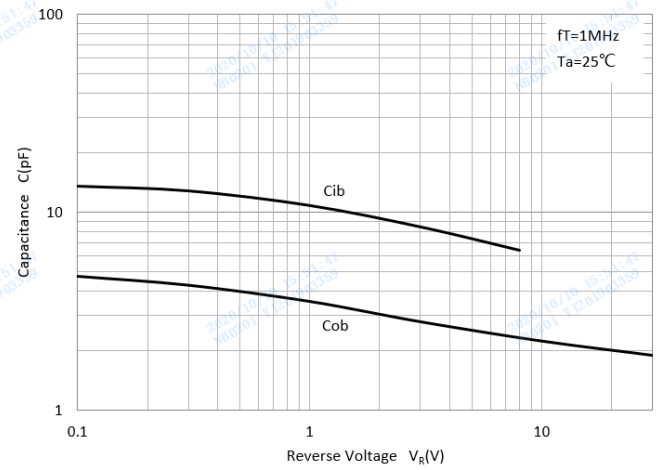

Base-Emitter Saturation Voltage




Base-Emitter On Voltage

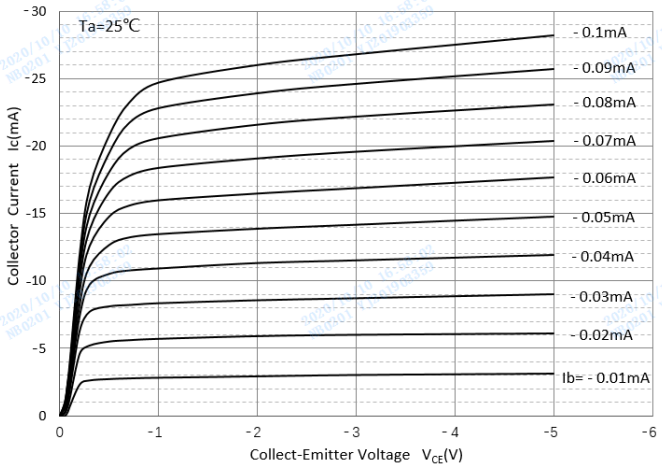



Cob/Cib-$V_{CB}/V_{EB}$

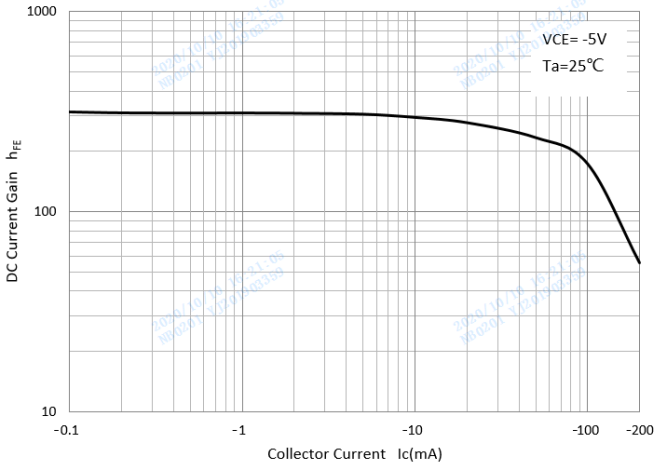


## ■ TR2 PNP Pin3、4、5 Characteristics (Typical)

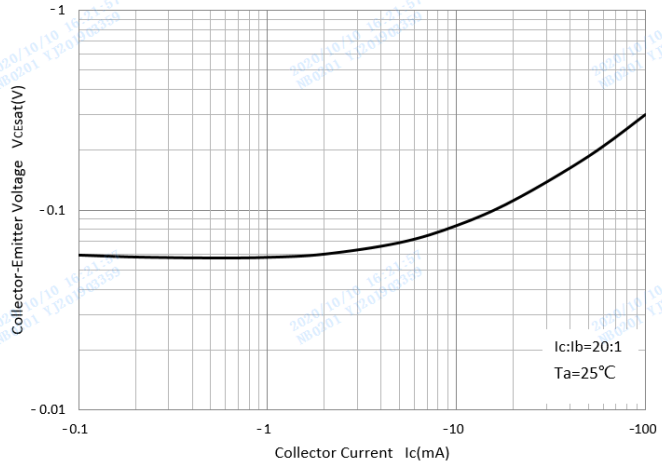
Static Characteristic



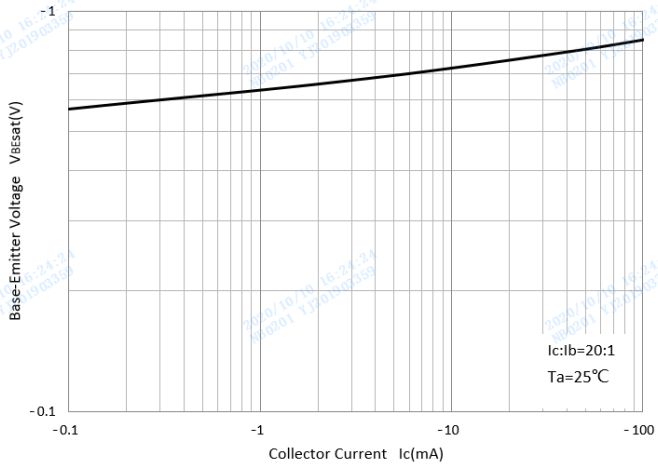

DC Current Gain



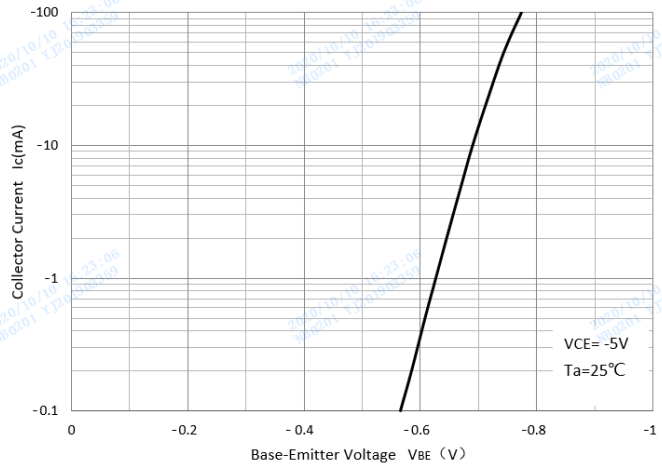

Collector-Emitter Saturation Voltage



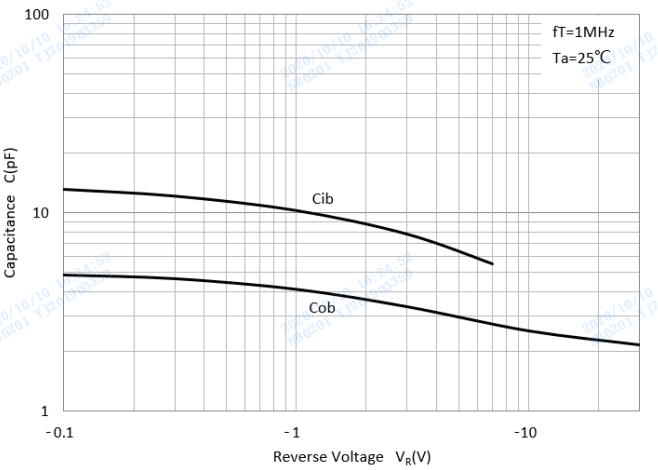

Base-Emitter Saturation Voltage



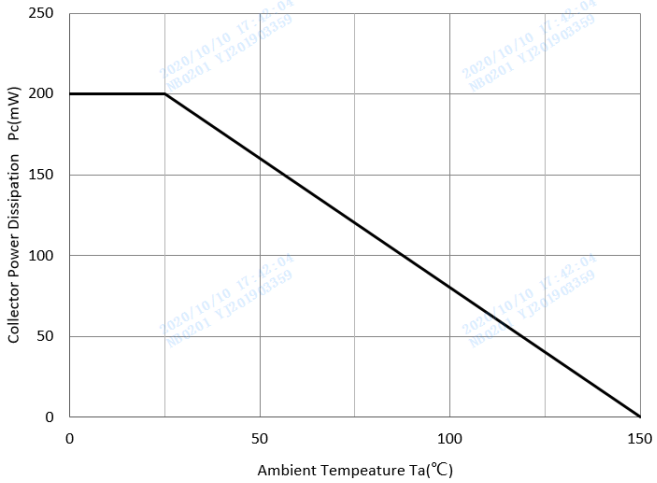

Base-Emitter On Voltage



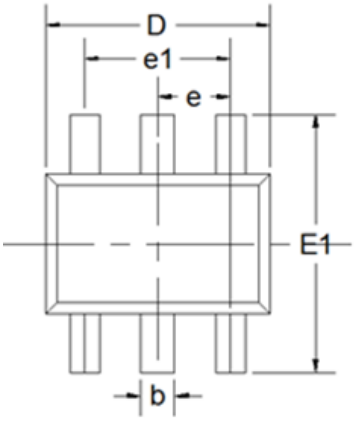

Cob/Cib-$V_{CB}/V_{EB}$



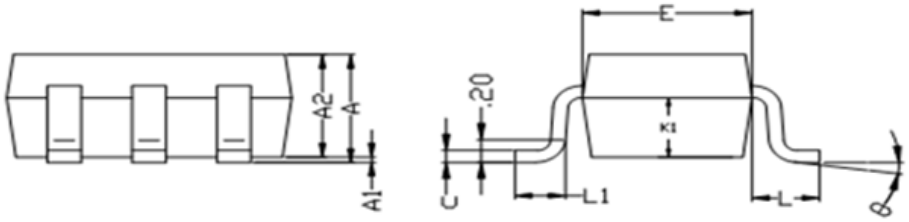
Collector Power Derating Curve



## ■SOT-363 Package Outline Dimensions

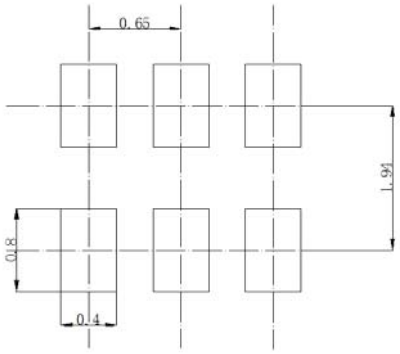



| DIM | DIMENSIONS | | | |
|---|---|---|---|---|
| | INCHES | | MM | |
| | MIN | MAX | MIN | MAX |
| A | 0.035 | 0.043 | 0.9 | 1.1 |
| A1 | 0 | 0.004 | 0 | 0.1 |
| A2 | 0.035 | 0.039 | 0.9 | 1 |
| b | 0.006 | 0.014 | 0.15 | 0.35 |
| c | 0.002 | 0.01 | 0.05 | 0.25 |
| D | 0.071 | 0.087 | 1.8 | 2.2 |
| E | 0.045 | 0.053 | 1.15 | 1.35 |
| E1 | 0.085 | 0.096 | 2.15 | 2.45 |
| e | 0.026Typ | | 0.65Typ | |
| e1 | 0.047 | 0.055 | 1.2 | 1.4 |
| L | 0.021Typ | | 0.525Typ | |
| L1 | 0.01 | 0.018 | 0.26 | 0.46 |
| θ | 0° | 8° | 0° | 8° |




Note:
1. All dimensions are in millimeters (mm) unless otherwise specified.
[所有尺寸均以毫米为单位，除非另有说明]
2. General tolerances: ±0.10mm unless otherwise specified.
[通用公差为±0.10mm，除非另有说明]
3. Dimensions and tolerances per ASME Y14.5M-2018.
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
4.All dimensions shown are exclusive of burrs and gate residues.
Burrs and gate vestiges shall not exceed 0.15 mm in maximum.
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
5.Dimension b does not include dambar protrusion of max 0.100 mm per side.
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
6.Dimensions D and E are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.
[D和E是塑封体的外部极限尺寸，不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺，但是包含了包封错位的最大尺寸]
7.Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.
[成型的管脚应为同一平面，共面性最大为0.1mm]

## ■SOT-363 Soldering Footprint




Unit：mm

## Notice

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