

PNP General Purpose Transistor

FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

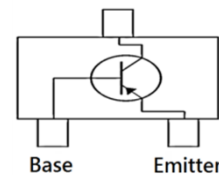
MECHANICAL DATA

- Case: SOT-323
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 5.00mg (approximately)

| KEY PARAMETERS | | |
|----------------|---------|------|
| PARAMETER | VALUE | UNIT |
| I_C | -0.5 | A |
| V_{CBO} | -50 | V |
| V_{CEO} | -45 | V |
| V_{EBO} | -5 | V |
| T_J | 150 | °C |
| Package | SOT-323 | |


SOT-323

Collector



Base

Emitter

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | VALUE | UNIT |
|----------------------|-----------|-------------|------|
| Collector current | I_C | -0.5 | A |
| Power dissipation | P_D | 200 | mW |
| Junction temperature | T_J | -55 to +150 | °C |
| Storage temperature | T_{STG} | -55 to +150 | °C |

THERMAL PERFORMANCE

| PARAMETER | SYMBOL | TYP | UNIT |
|--|-----------------|-----|------|
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 625 | °C/W |

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | CONDITIONS | SYMBOL | MIN | MAX | UNIT | |
|--------------------------------------|---|--|----------|------|---------------|---|
| Collector-base breakdown voltage | $I_C = 10\mu\text{A}$ | $V_{(BR)CBO}$ | -50 | - | V | |
| Collector-emitter breakdown voltage | $I_C = 10\text{mA}$ | $V_{(BR)CEO}$ | -45 | - | V | |
| Emitter-base breakdown voltage | $I_E = 10\mu\text{A}$ | $V_{(BR)EBO}$ | -5 | - | V | |
| Collector cut-off current | $V_{CB} = 20\text{V}$ | I_{CBO} | - | -100 | μA | |
| Emitter cut-off current | $V_{EB} = 5\text{V}$ | I_{EBO} | - | -100 | μA | |
| DC current gain | BC807-16W | $V_{CE} = 1\text{V}, I_C = 100\text{mA}$ | h_{FE} | 100 | 250 | - |
| | BC807-25W | | | 160 | 400 | - |
| | BC807-40W | | | 250 | 600 | - |
| | BC807-16W BC807-25W BC807-40W | $V_{CE} = 1\text{V}, I_C = 500\text{mA}$ | 40 | - | - | |
| Collector-emitter saturation voltage | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | $V_{CE(sat)}$ | - | -0.7 | V | |
| Transition frequency | $V_{CE} = 5\text{V}, I_C = 10\text{mA},$ $f = 100\text{MHz}$ | f_T | 80 | - | MHz | |

ORDERING AND MARKING INFORMATION

| ORDERING CODE ⁽¹⁾ | MARKING | PACKAGE | PACKING |
|------------------------------|---------|---------|--------------|
| BC807-16W RF | 5CR | SOT-323 | 3K / 7" Reel |
| BC807-25W RF | 5CS | SOT-323 | 3K / 7" Reel |
| BC807-40W RF | 5CT | SOT-323 | 3K / 7" Reel |
| BC807-16W RFG | 5CR | SOT-323 | 3K / 7" Reel |
| BC807-25W RFG | 5CS | SOT-323 | 3K / 7" Reel |
| BC807-40W RFG | 5CT | SOT-323 | 3K / 7" Reel |
| BC807-16W-B0 RF | 5CR | SOT-323 | 3K / 7" Reel |
| BC807-25W-B0 RF | 5CS | SOT-323 | 3K / 7" Reel |
| BC807-40W-B0 RF | 5CT | SOT-323 | 3K / 7" Reel |
| BC807-16W-B0 RFG | 5CR | SOT-323 | 3K / 7" Reel |
| BC807-25W-B0 RFG | 5CS | SOT-323 | 3K / 7" Reel |
| BC807-40W-B0 RFG | 5CT | SOT-323 | 3K / 7" Reel |

Notes:

1. "G" means green compound (halogen free)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Total Power Dissipation $P_{tot} = f(T_s)$

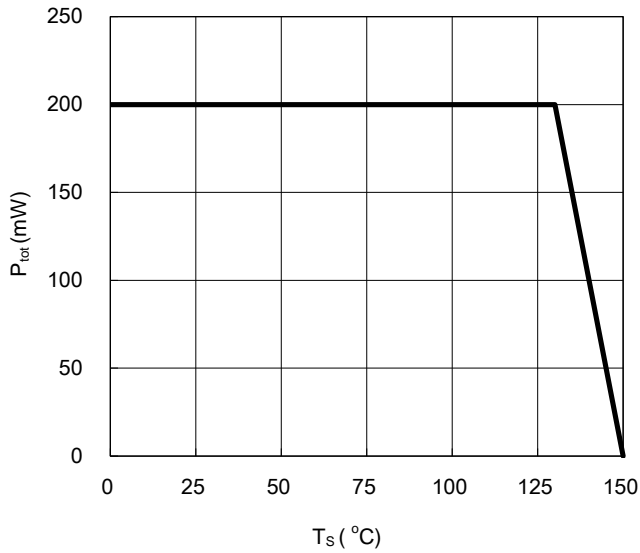


Fig.2 Permissible Pulse Load $R_{\theta JA} = f(tp)$

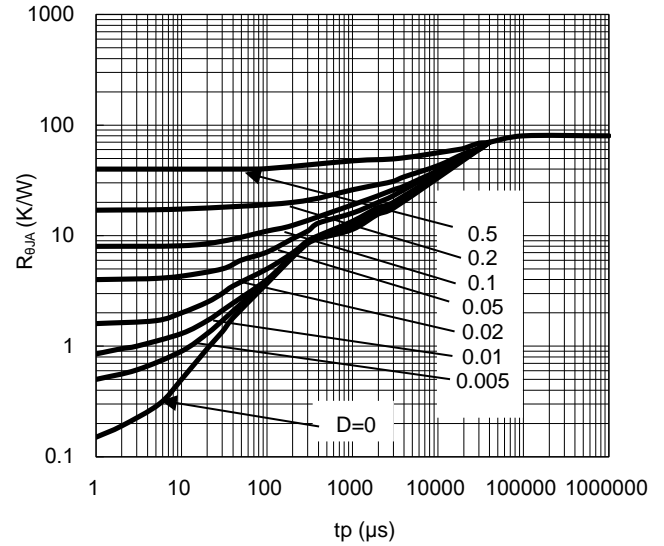


Fig.3 Permissible Pulse Load $P_{totmax} / P_{totDC} = f(tp)$

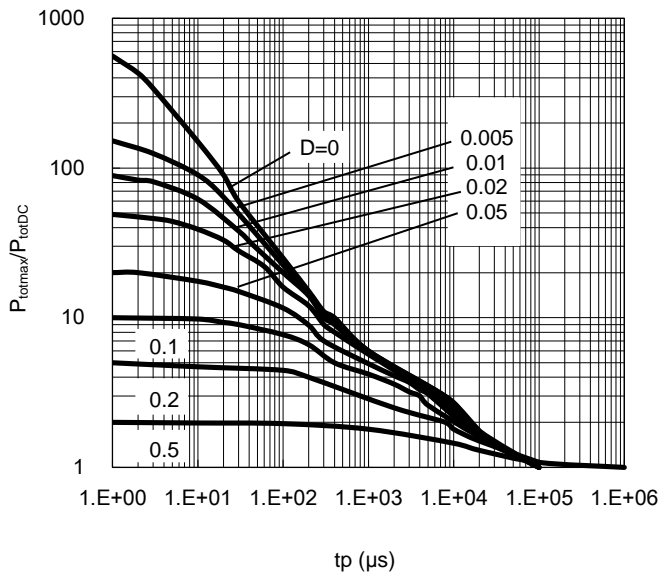
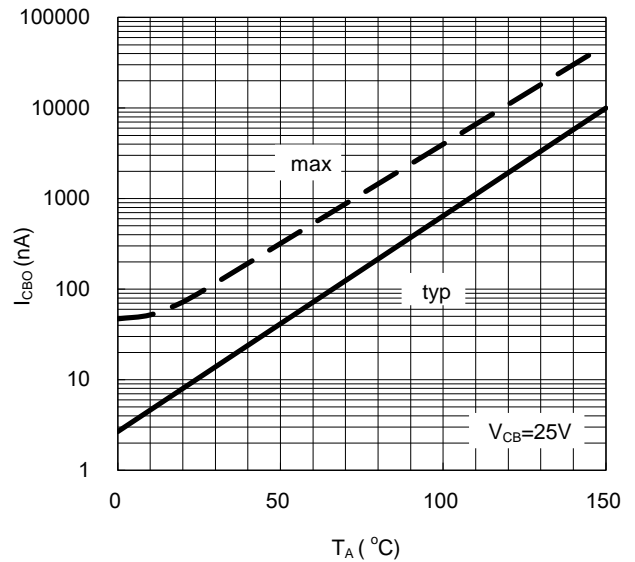


Fig.4 Collector Cutoff Current $I_{CBO} = f(T_A)$



CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.5 DC Current Gain $h_{FE} = f(I_C)$

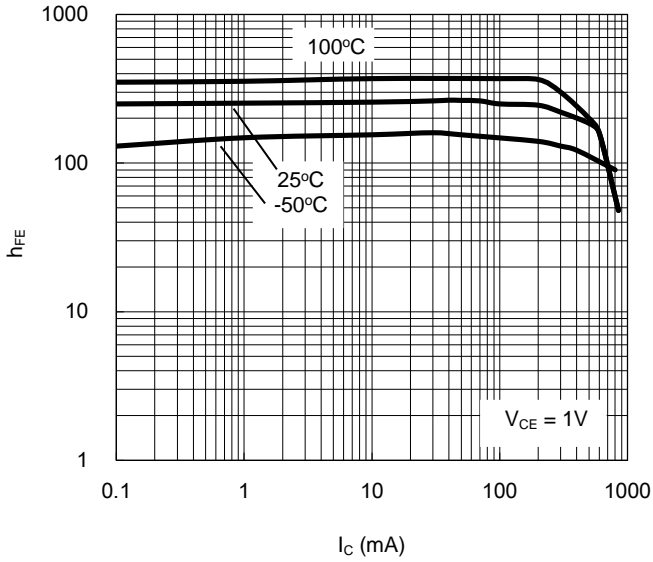


Fig.6 Transition Frequency $f_T = f(I_C)$

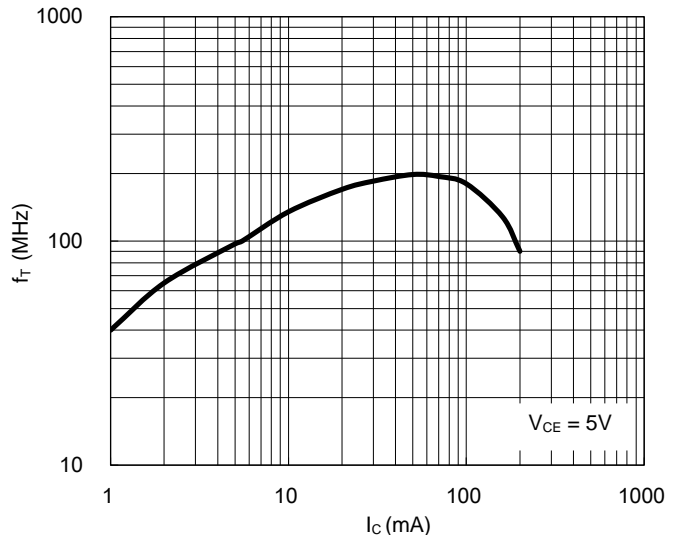


Fig.7 Base-Emitter Saturation Voltage

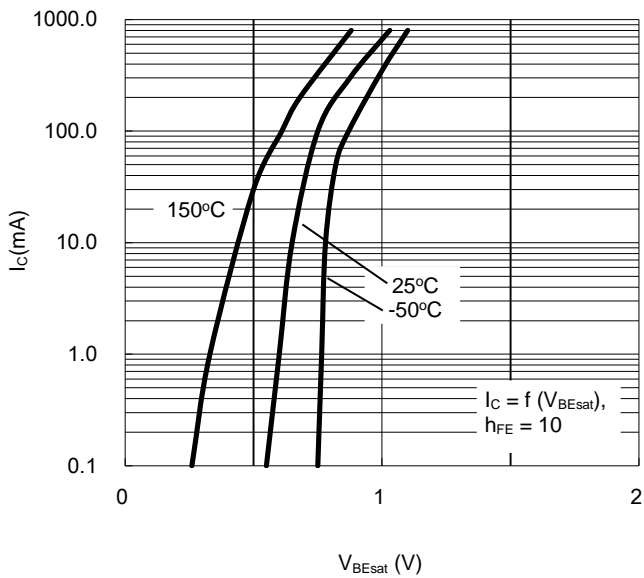
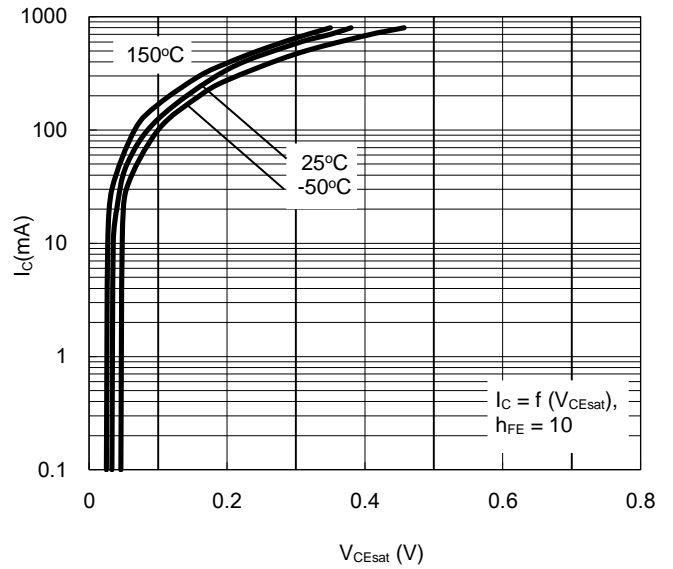
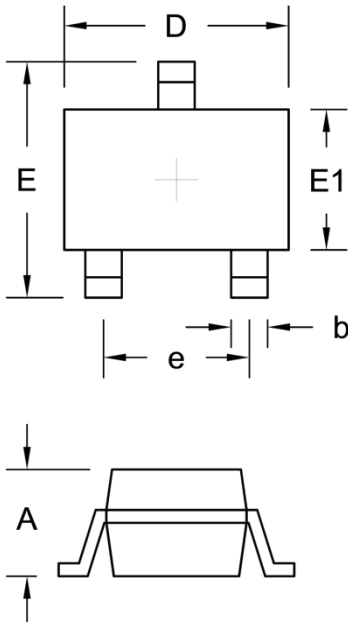


Fig.8 Collector-Emitter Saturation Voltage



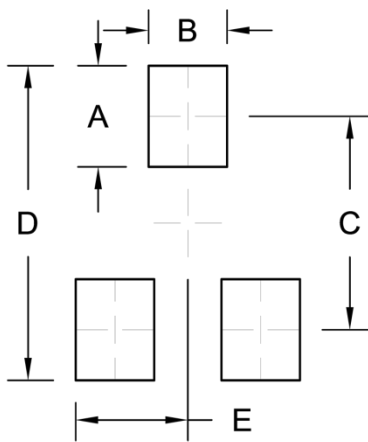
PACKAGE OUTLINE DIMENSIONS

SOT-323



| DIM. | Unit (mm) | | Unit (inch) | |
|------|------------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.80 | 1.10 | 0.031 | 0.043 |
| b | 0.25 | 0.40 | 0.010 | 0.016 |
| D | 1.80 | 2.20 | 0.071 | 0.087 |
| E | 1.80 | 2.40 | 0.071 | 0.094 |
| E1 | 1.15 | 1.35 | 0.045 | 0.053 |
| e | 1.30 (TYP) | | 0.051 (TYP) | |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 0.90 | 0.035 |
| B | 0.70 | 0.028 |
| C | 1.90 | 0.075 |
| D | 2.80 | 0.110 |
| E | 1.00 | 0.039 |

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