

NPN General Purpose Transistor

FEATURES

- Epitaxial planar die construction
- Surface mount device type
- Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- High temperature soldering guaranteed: 260°C/10s
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

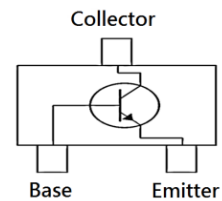
APPLICATIONS

- General-purpose switching and amplification

MECHANICAL DATA

- Case: SOT-323
- Terminal: Matte tin plated, lead free, solderable per MIL-STD-202, Method 208 guaranteed
- Weight: 5.00mg (approximately)

| KEY PARAMETERS | | |
|-------------------|---------|------|
| PARAMETER | VALUE | UNIT |
| I_C | 500 | mA |
| V_{CBO} | 50 | V |
| V_{CEO} | 45 | V |
| V_{EBO} | 5 | V |
| $T_{J\text{MAX}}$ | 150 | °C |
| Package | SOT-323 | |


SOT-323


| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|---|-----------|-------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Power dissipation | P_D | 200 | mW |
| Collector current, dc | I_C | 500 | mA |
| 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 | nA | |
| Emitter Cut-off Current | $V_{EB} = 5\text{V}$ | I_{EBO} | - | 100 | nA | |
| DC Current Gain | BC817-16W | $V_{CE} = 1\text{V}, I_C = 100\text{mA}$ | h_{FE} | 100 | 250 | - |
| | BC817-25W | | | 160 | 400 | - |
| | BC817-40W | | | 250 | 600 | - |
| | BC817-16W BC817-25W BC817-40W | $V_{CE} = 1\text{V}, I_C = 500\text{mA}$ | 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 | 100 | - | MHz | |

ORDERING AND MARKING INFORMATION

| ORDERING CODE ⁽¹⁾ | MARKING | PACKAGE | PACKING |
|------------------------------|---------|---------|--------------|
| BC817-16W RF | 6CR | SOT-323 | 3K / 7" Reel |
| BC817-25W RF | 6CS | SOT-323 | 3K / 7" Reel |
| BC817-40W RF | 6CT | SOT-323 | 3K / 7" Reel |
| BC817-16W RFG | 6CR | SOT-323 | 3K / 7" Reel |
| BC817-25W RFG | 6CS | SOT-323 | 3K / 7" Reel |
| BC817-40W RFG | 6CT | 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

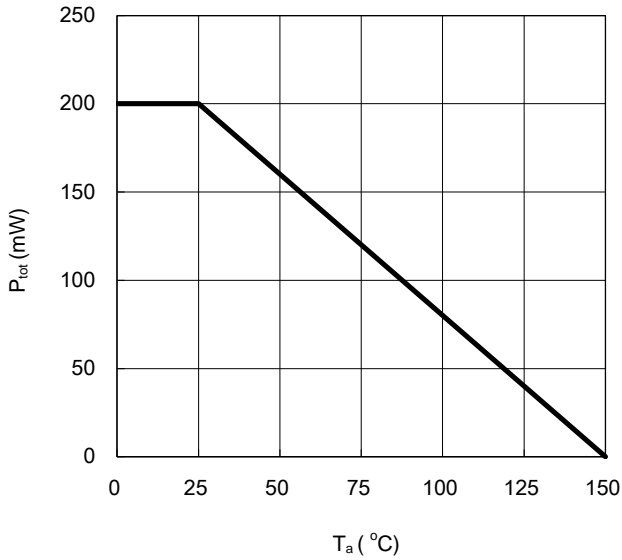


Fig.2 Permissible Pulse Load

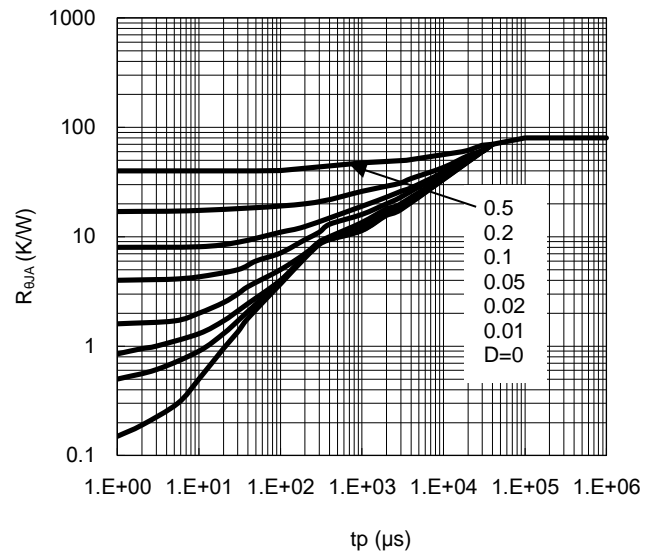


Fig.3 Permissible Pulse Load

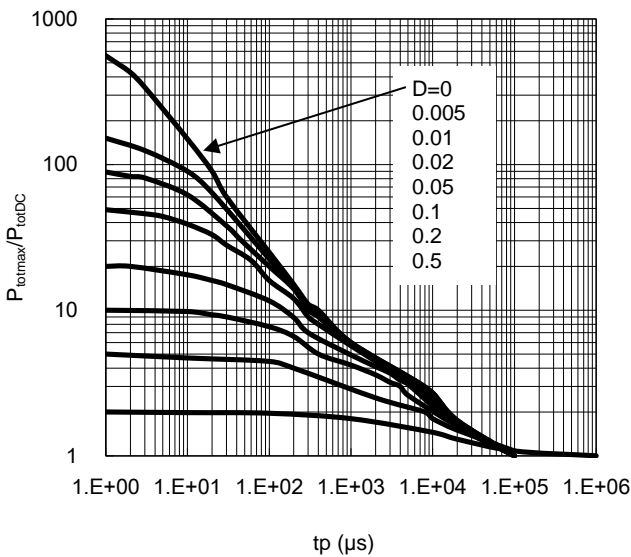
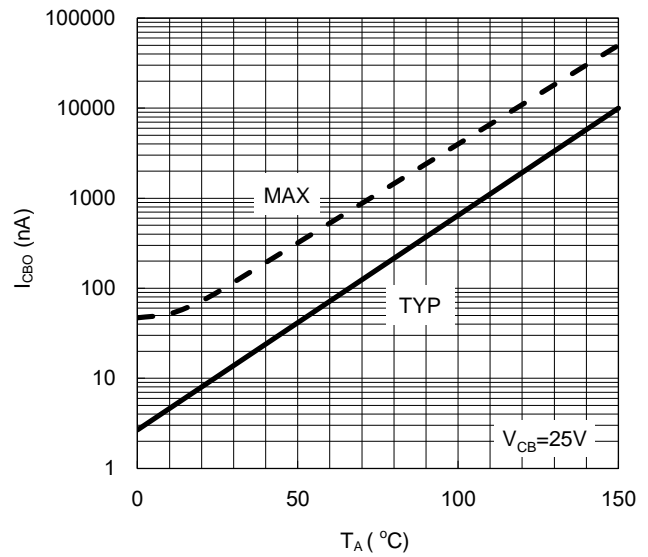


Fig.4 Collector Cutoff Current



CHARACTERISTICS CURVES

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

Fig.5 DC Current Gain

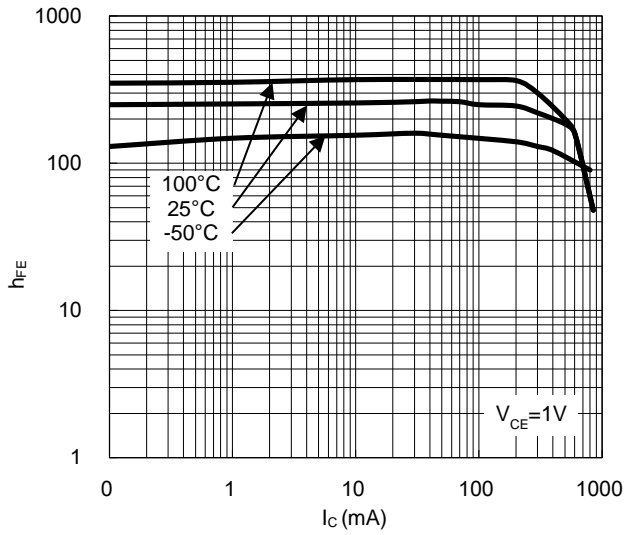


Fig.6 Transition Frequency

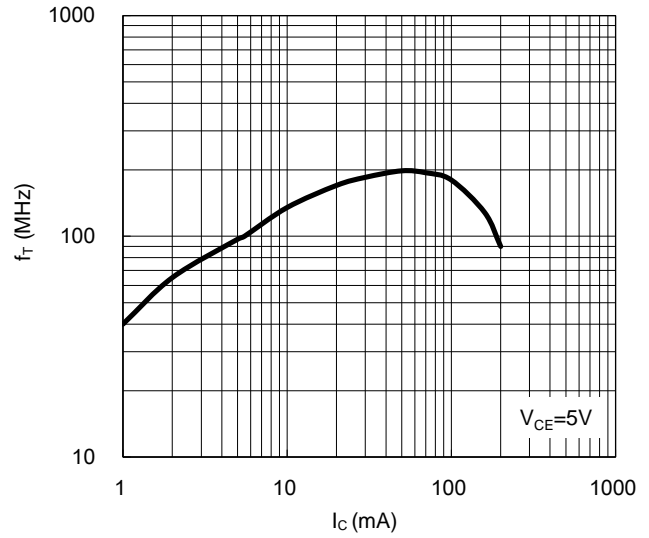


Fig.7 Base-Emitter Saturation Voltage

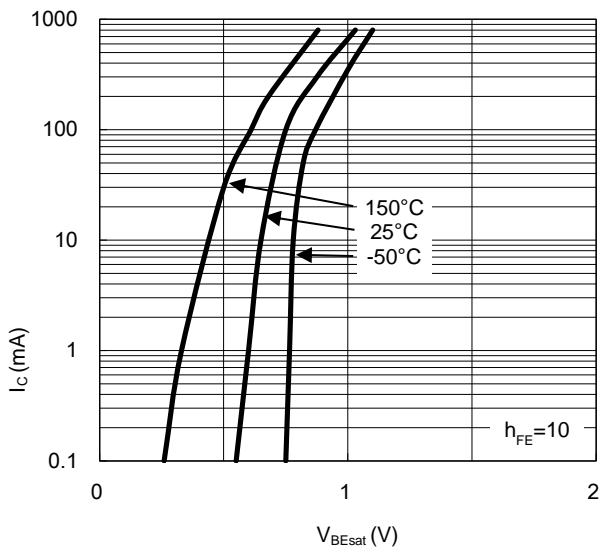
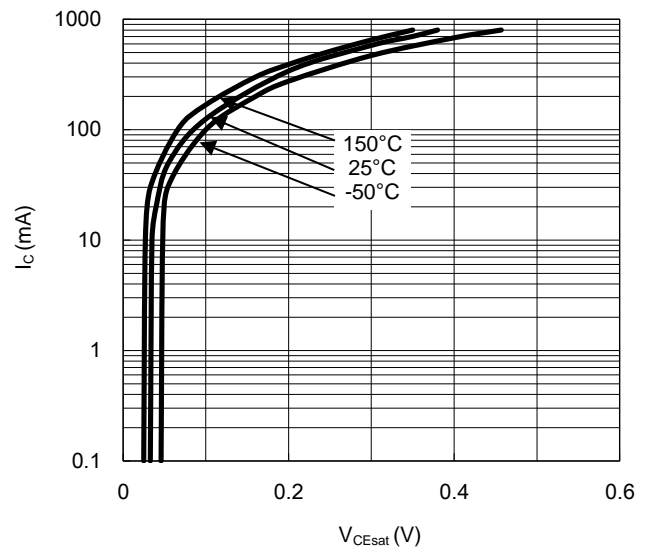
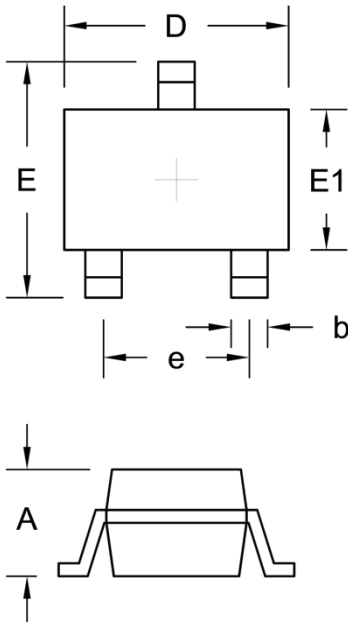


Fig.8 Collector-Emitter Saturation Voltage



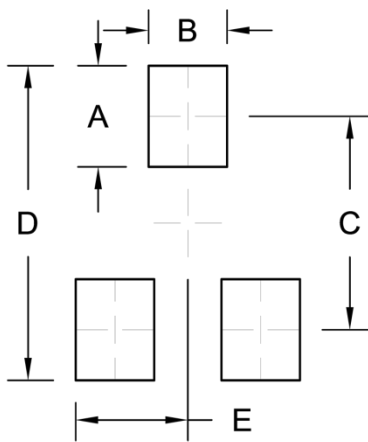
PACKAGE OUTLINE DIMENSIONS

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 |