

Features

- Halogen Free. "Green" Device^(Note1)
- AEC-Q101 Qualified
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings @ 25°C Unless Otherwise Specified

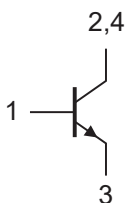
| Parameter | Symbol | Rating | Unit |
|---------------------------|------------------|--------|------|
| Collector-Base Voltage | V _{CBO} | 100 | V |
| Collector-Emitter Voltage | V _{CEO} | 80 | V |
| Emitter-Base Voltage | V _{EBO} | 5 | V |
| Collector Current | I _C | 1 | A |
| Power Dissipation | P _D | 1.5 | W |

Thermal characteristics

| Parameter | Symbol | Rating | Unit |
|---|-----------------------|----------|------|
| Junction Temperature Range | T _J | -55~+150 | °C |
| Storage Temperature Range | T _{STG} | -55~+150 | °C |
| Thermal Resistance from Junction to Ambient ^(Note2) | R _{th(J-A)} | 83.3 | °C/W |
| Thermal Resistance from Junction to Solder Point ^(Note2) | R _{th(J-SP)} | 16 | °C/W |
| Thermal Resistance from Junction to Case ^(Note3) | R _{th(J-C)} | 58.7 | °C/W |
| Thermal Resistance from Junction to Solder Point ^(Note3) | R _{th(J-SP)} | 27.4 | °C/W |

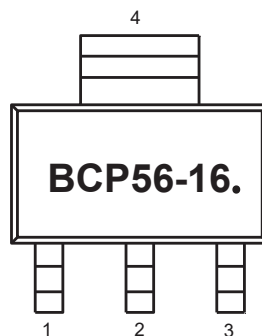
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 2. Device mounted on FR-4 PCB 1.575 x 1.575 x 0.0625 inch; mounting pad for collector = 0.93 sq in
 3. Device mounted on FR-4 PCB 1.0 x 1.0 x 0.0625 inch; and standard footprint.

Internal Structure



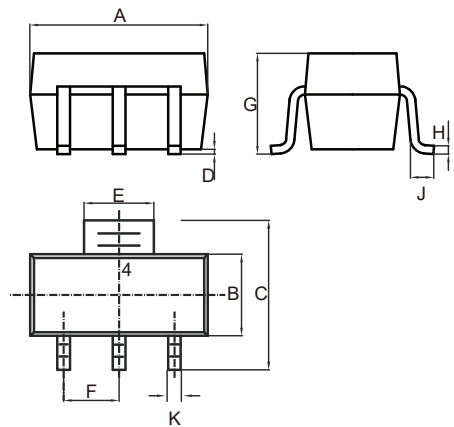
- 1.Base
- 2,4.Collector
- 3.Emitter

Marking Code



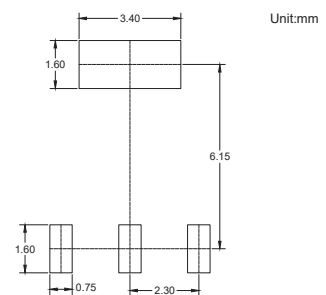
**NPN
Plastic-Encapsulate
Transistors**

SOT-223



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.248 | 0.264 | 6.30 | 6.70 | |
| B | 0.130 | 0.146 | 3.30 | 3.70 | |
| C | 0.264 | 0.287 | 6.70 | 7.30 | |
| D | 0.001 | 0.004 | 0.02 | 0.10 | |
| E | 0.114 | 0.122 | 2.90 | 3.10 | |
| F | 0.091 | | 2.30 | | TYP. |
| G | --- | 0.071 | --- | 1.80 | |
| H | 0.009 | 0.014 | 0.23 | 0.35 | |
| J | 0.030 | --- | 0.75 | --- | |
| K | 0.026 | 0.033 | 0.66 | 0.84 | |

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Min | Typ | Max | Units | Conditions |
|--------------------------------------|---------------|-----|-----|-----|-------|----------------------------------|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 100 | | | V | $I_C=100\mu A, I_E=0$ |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 80 | | | V | $I_C=10mA, I_B=0$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | | | V | $I_E=10\mu A, I_C=0$ |
| Collector-Base Cutoff Current | I_{CBO} | | | 100 | nA | $V_{CB}=30V, I_E=0$ |
| DC Current Gain | h_{FE1} | 25 | | | | $V_{CE}=2V, I_C=5mA$ |
| | h_{FE2} | 100 | | 250 | | $V_{CE}=2V, I_C=150mA$ |
| | h_{FE3} | 25 | | | | $V_{CE}=2V, I_C=500mA$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | | 0.5 | V | $I_C=500mA, I_B=50mA$ |
| Base-Emitter Voltage | V_{BE} | | | 1 | V | $V_{CE}=2V, I_C=500mA$ |
| Transition Frequency | f_T | 100 | | | MHz | $V_{CE}=10V, I_C=50mA, f=100MHz$ |

Curve Characteristics

Fig. 1 - Static Characteristics

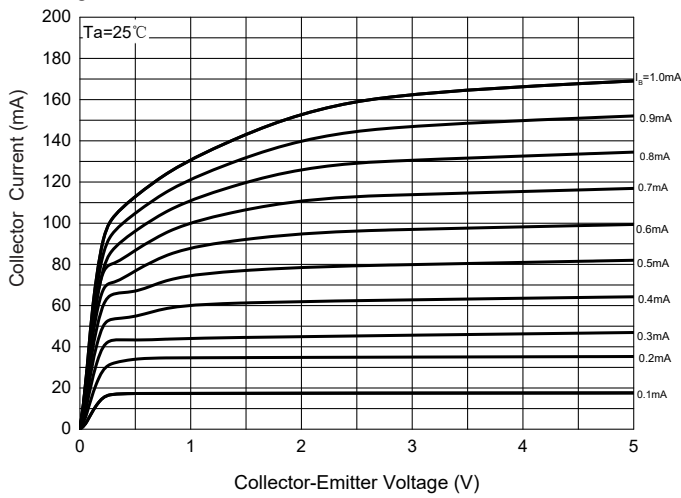


Fig. 2 - DC Current Gain Characteristics

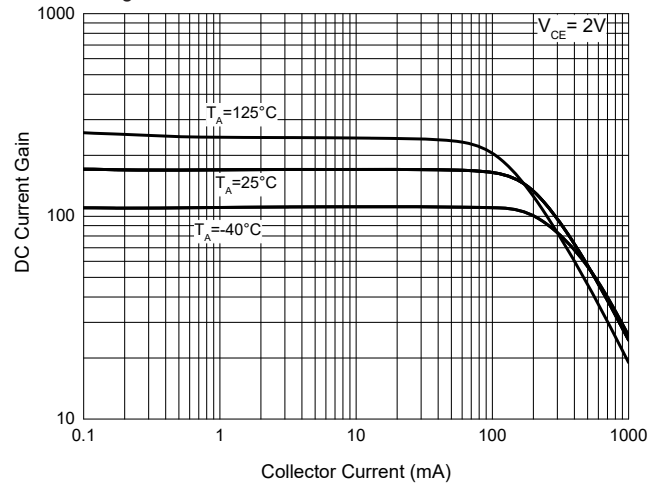


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

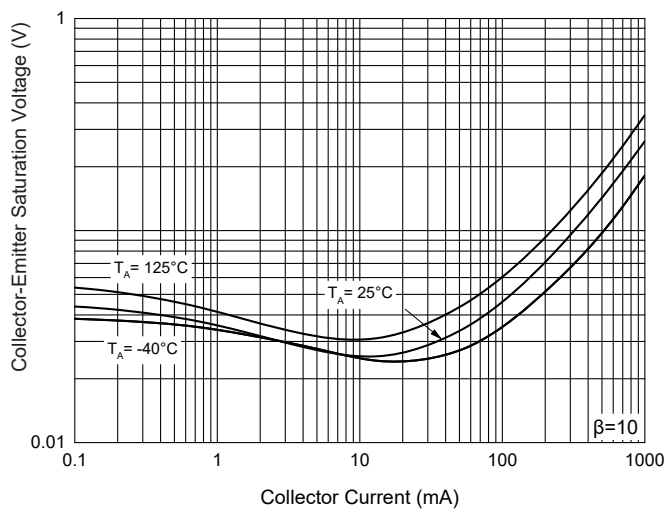


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

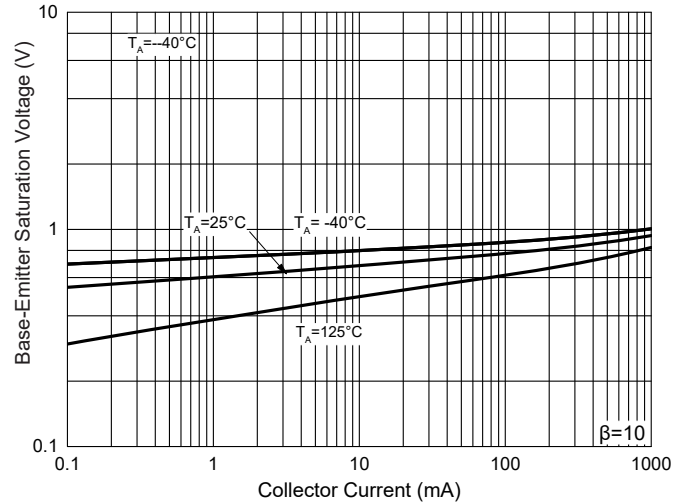


Fig. 5 - Base-Emitter Voltage Characteristics

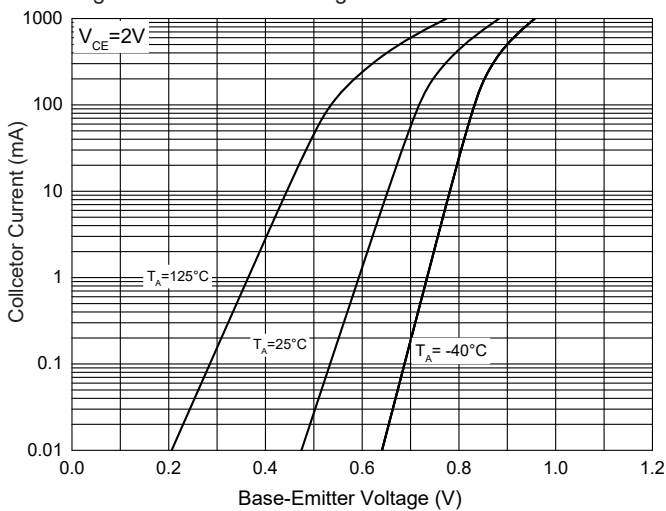
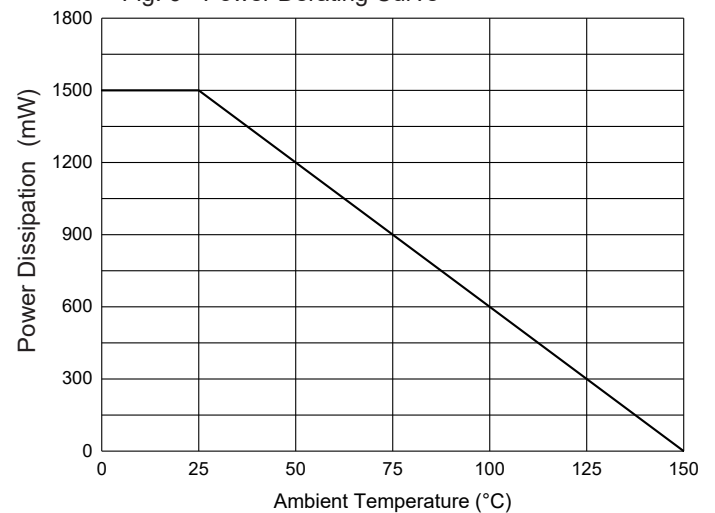


Fig. 6 - Power Derating Curve



Ordering Information

| Device | Packing |
|----------------|-------------------------|
| Part Number-TP | Tape&Reel; 2.5Kpcs/Reel |

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