

**Features**

- High Power Gain
- Low Noise Figure
- High Cut-off Frequency
- RF Wideband Amplifiers and Oscillators
- Halogen Free. "Green" Device (Note 1)
- 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)

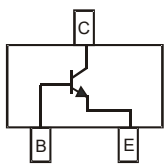
**Maximum Ratings @ 25°C Unless Otherwise Specified**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

| Parameter                 | Symbol    | Rating | Unit |
|---------------------------|-----------|--------|------|
| Collector-Base Voltage    | $V_{CBO}$ | 25     | V    |
| Collector-Emitter Voltage | $V_{CEO}$ | 18     | V    |
| Emitter-Base Voltage      | $V_{EBO}$ | 3      | V    |
| Collector Current         | $I_C$     | 100    | mA   |
| Power Dissipation         | $P_D$     | 200    | mW   |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

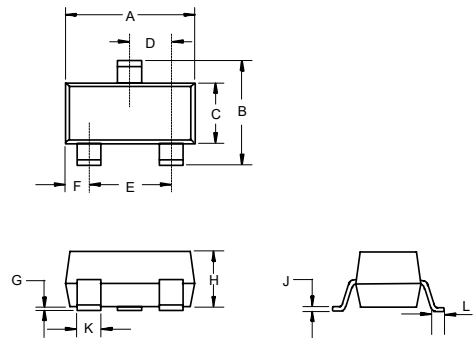
**Internal Structure**



Marking: R257

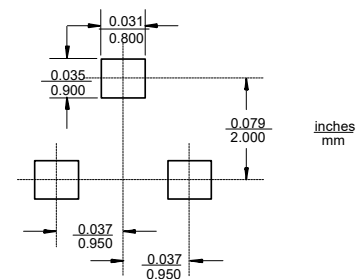
**NPN  
RF Transistor**

**SOT-23**



| DIM | DIMENSIONS |       |      |      | NOTE |
|-----|------------|-------|------|------|------|
|     | INCHES     |       | MM   |      |      |
|     | MIN        | MAX   | MIN  | MAX  |      |
| A   | 0.110      | 0.120 | 2.80 | 3.04 |      |
| B   | 0.083      | 0.104 | 2.10 | 2.64 |      |
| C   | 0.047      | 0.055 | 1.20 | 1.40 |      |
| D   | 0.034      | 0.041 | 0.85 | 1.05 |      |
| E   | 0.067      | 0.083 | 1.70 | 2.10 |      |
| F   | 0.018      | 0.024 | 0.45 | 0.60 |      |
| G   | 0.0004     | 0.006 | 0.01 | 0.15 |      |
| H   | 0.035      | 0.043 | 0.90 | 1.10 |      |
| J   | 0.003      | 0.007 | 0.08 | 0.18 |      |
| K   | 0.014      | 0.020 | 0.35 | 0.51 |      |
| L   | 0.007      | 0.020 | 0.20 | 0.50 |      |

**Suggested Solder Pad Layout**



**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

| Parameter                     | Symbol    | Min | Typ | Max | Units         | Conditions  |
|-------------------------------|-----------|-----|-----|-----|---------------|---|
| Collector-Base Cutoff Current | $I_{CBO}$ |     |     | 1   | $\mu\text{A}$ | $V_{CB}=20\text{V}, I_E=0$                          |
| Emitter-Base Cutoff Current   | $I_{EBO}$ |     |     | 1   | $\mu\text{A}$ | $V_{EB}=3\text{V}, I_C=0$                           |
| DC Current Gain*              | $h_{FE}$  | 130 |     | 300 |               | $V_{CE}=10\text{V}, I_C=20\text{mA}$                |
| Transition Frequency          | $f_T$     |     | 6   |     | GHz           | $V_{CE}=10\text{V}, I_C=20\text{mA}$                |
| Power Gain                    | $G_p$     |     | 10  |     | dB            | $V_{CE}=10\text{V}, I_C=20\text{mA}, f=1\text{GHz}$ |

\*Pulse Width  $\leq 380\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## Curve Characteristics

Fig. 1 - Power Derating Curve

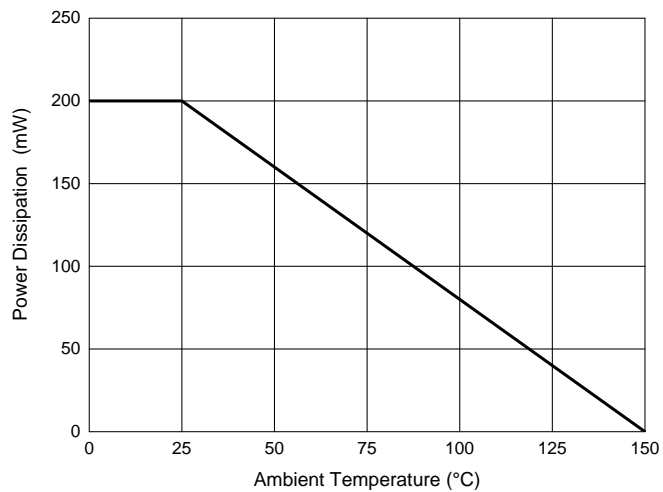


Fig. 2 -  $C_{re}-V_{CBO}$

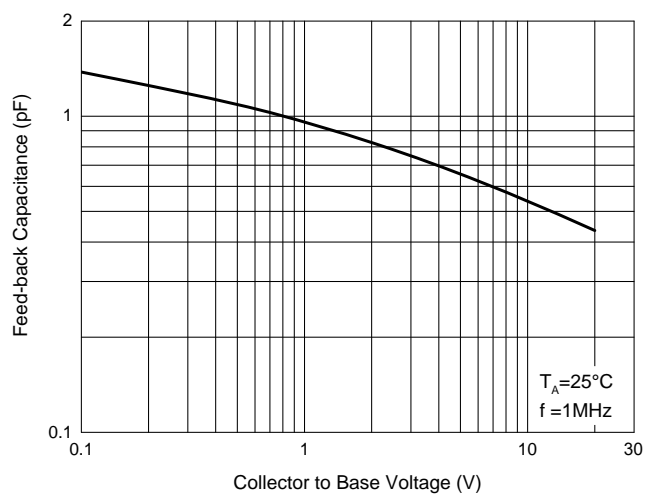


Fig. 3 - DC Current Gain Characteristics

