

The RF Line NPN Silicon High-Frequency Transistors

Designed primarily for use in high-gain, low-noise, small-signal UHF and microwave amplifiers constructed with thick and thin-film circuits using surface mount components.

- T1 suffix indicates tape and reel packaging of 3,000 units per reel.

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|--------------|---------------|------------|
| Collector-Emitter Voltage | V_{CEO} | 15 | Vdc |
| Collector-Base Voltage | V_{CBO} | 20 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 2.0 | Vdc |
| Collector Current — Continuous | I_C | 25 | mAdc |
| Maximum Junction Temperature | T_{Jmax} | 150 | °C |
| Power Dissipation, $T_{case} = 75^\circ\text{C}$ Derate linearly above $T_{case} = 75^\circ\text{C}$ @ | $P_{D(max)}$ | 0.273 3.64 | W mW/°C |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|-------------------------------------|-----------------|-------------|------|
| Storage Temperature | T_{stg} | -55 to +150 | °C |
| Thermal Resistance Junction to Case | $R_{\theta JC}$ | 275 | °C/W |

DEVICE MARKING

| |
|----------------|
| BFR92ALT1 = P2 |
|----------------|

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|---|---------------|-----|----|-----|
| Collector-Emitter Breakdown Voltage (1) ($I_C = 10\text{ mA}$) | $V_{(BR)CEO}$ | 15 | — | Vdc |
| Collector-Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$) | $V_{(BR)CBO}$ | 20 | — | Vdc |
| Emitter-Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$) | $V_{(BR)EBO}$ | 2.0 | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 10\text{ V}$) | I_{CBO} | — | 50 | nA |

ON CHARACTERISTICS

| | | | | |
|--|---------------|----|-----|-----|
| DC Current Gain ($I_C = 14\text{ mA}$, $V_{CE} = 10\text{ V}$) | h_{FE} | 40 | — | — |
| Collector-Emitter Saturation Voltage (1) ($I_C = 25\text{ mA}$, $I_B = 5.0\text{ mA}$) | $V_{CE(sat)}$ | — | 0.5 | Vdc |
| Base-Emitter Saturation Voltage (1) ($I_C = 25\text{ mA}$, $I_B = 5.0\text{ mA}$) | $V_{BE(sat)}$ | — | 1.2 | Vdc |

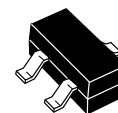
NOTE:

1. Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

(continued)

BFR92ALT1

RF TRANSISTORS
NPN SILICON



CASE 318-08, STYLE 6
SOT-23
LOW PROFILE

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

| Characteristic | Symbol | Typ | Unit |
|---|----------|-----|------|
| SMALL-SIGNAL CHARACTERISTICS | | | |
| Current-Gain — Bandwidth Product ($I_C = 14\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 500\text{ MHz}$) | f_T | 4.5 | GHz |
| Noise Figure ($V_{CE} = 1.5\text{ V}$, $I_C = 3.0\text{ mA}$, $R_S = 50\ \Omega$, $f = 500\text{ MHz}$) | NF | 3.0 | dB |
| Capacitance-Collector to Base ($V_{CB} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$) | C_{cb} | 0.7 | pF |

PACKAGE DIMENSIONS

NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: INCH.
- MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|--------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0140 | 0.0285 | 0.35 | 0.69 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.1039 | 2.10 | 2.64 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

**CASE 318-08
ISSUE AE**

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