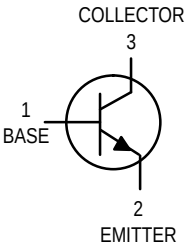
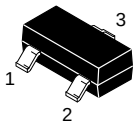
# UHF/VHF Amplifier

## NPN Silicon

**MMBTH17LT1**

**Motorola Preferred Device**




**CASE 318-08, STYLE 6**
**SOT-23 (TO-236AB)**

### MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector–Emitter Voltage | $V_{CEO}$ | 15 | Vdc |
| Collector–Base Voltage | $V_{CBO}$ | 20 | Vdc |
| Emitter–Base Voltage | $V_{EBO}$ | 3.0 | Vdc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 225<br>1.8 | mW<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | –55 to +150 | °C |

### THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Ambient (Printed Circuit Board Mounting) | $R_{\theta JA}$ | 417 | °C/W |

### ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise noted)

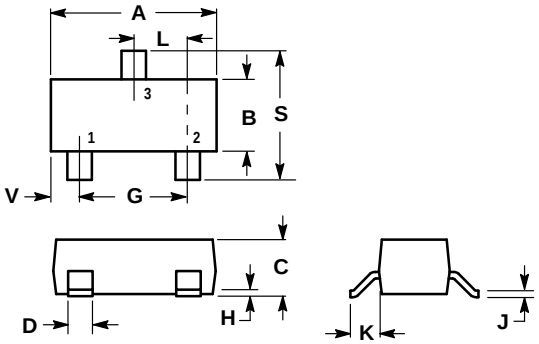
| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector–Emitter Breakdown Voltage ($I_C$ = 1.0 mAdc, $I_B$ = 0) | $V_{(BR)CEO}$ | 15 | — | — | Vdc |
| Collector–Base Breakdown Voltage ($I_C$ = 100 μAdc, $I_E$ = 0) | $V_{(BR)CBO}$ | 20 | — | — | Vdc |
| Emitter–Base Breakdown Voltage ($I_E$ = 10 μAdc, $I_C$ = 0) | $V_{(BR)EBO}$ | 3.0 | — | — | Vdc |
| Collector Cutoff Current ($V_{CB}$ = 15 Vdc, $I_E$ = 0) | $I_{CBO}$ | — | — | 100 | nAdc |

**Preferred** devices are Motorola recommended choices for future use and best overall value.

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted) (Continued)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| **ON CHARACTERISTICS** | | | | | |
| DC Current Gain ($I_C$ = 5.0 mAdc, $V_{CE}$ = 10 Vdc) | $h_{FE}$ | 25 | — | 250 | — |
| Collector–Emitter Saturation Voltage ($I_C$ = 10 mAdc, $I_B$ = 1.0 mAdc) | $V_{CE(sat)}$ | — | — | 0.5 | — |
| **SMALL–SIGNAL CHARACTERISTICS** | | | | | |
| Current–Gain — Bandwidth Product ($I_C$ = 5.0 mAdc, $V_{CE}$ = 10 Vdc, f = 100 MHz) | $f_T$ | 800 | — | — | MHz |
| Collector–Base Capacitance ($V_{CB}$ = 10 Vdc, f = 1.0 MHz) | $C_{cb}$ | 0.3 | — | 0.9 | pF |
| Small–Signal Current Gain ($I_C$ = 5.0 mAdc, $V_{CE}$ = 10 Vdc, f = 1.0 kHz) | $h_{fe}$ | 30 | — | — | — |
| Noise Figure ($I_C$ = 5.0 mAdc, $V_{CC}$ = 12 Vdc, $R_S$ = 50 ohms, f = 200 MHz) | NF | — | — | 6.0 | dB |
| **FUNCTIONAL TEST** | | | | | |
| Amplifier Power Gain ($I_C$ = 5.0 mAdc, $V_{CC}$ = 12 Vdc, $R_S$ = 50 ohms, f = 200 MHz) | $G_{pe}$ | — | 24 | — | dB |

## PACKAGE DIMENSIONS




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIUMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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 AF**
**SOT–23 (TO–236AB)**

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