

General Purpose Transistors

NPN Silicon

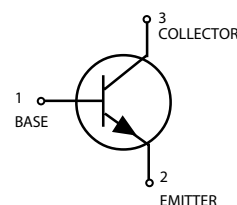
FEATURE

- Collector current capability $I_C = 500 \text{ mA}$.
- Collector-emitter voltage $V_{CEO}(\text{max}) = 45 \text{ V}$.
- General purpose switching and amplification.
- PNP complement: LBC807 Series.
- Pb-Free Package is available.

DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|---------------|-----------------|----------------|
| LBC817-16LT1 | 6A | 3000/Tape&Reel |
| LBC817-16LT1G | 6A (Pb-Free) | 3000/Tape&Reel |
| LBC817-25LT1 | 6B | 3000/Tape&Reel |
| LBC817-25LT1G | 6B (Pb-Free) | 3000/Tape&Reel |
| LBC817-40LT1 | 6C | 3000/Tape&Reel |
| LBC817-40LT1G | 6C (Pb-Free) | 3000/Tape&Reel |

LBC817-16LT1
LBC817-25LT1
LBC817-40LT1



MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector-Emitter Voltage | V_{CEO} | 45 | V |
| Collector-Base Voltage | V_{CBO} | 50 | V |
| Emitter-Base Voltage | V_{EBO} | 5.0 | V |
| Collector Current — Continuous | I_C | 500 | mAdc |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|-------------|----------------------|
| Total Device Dissipation FR-5 Board, (1) $T_A = 25^\circ\text{C}$ | P_D | 225 | mW |
| Derate above 25°C | | 1.8 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C/W}$ |
| Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$ | P_D | 300 | mW |
| Derate above 25°C | | 2.4 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C/W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

1. FR-5 = 1.0 x 0.75 x 0.062 in.

2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

LBC817 Series

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

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

OFF CHARACTERISTICS

| | | | | | |
|--|---------------|-----|---|-----|---------------|
| Collector–Emitter Breakdown Voltage ($I_C = -10\text{ mA}$) | $V_{(BR)CEO}$ | 45 | — | — | V |
| Collector–Emitter Breakdown Voltage ($V_{EB} = 0$, $I_C = -10\text{ }\mu\text{A}$) | $V_{(BR)CES}$ | 50 | — | — | V |
| Emitter–Base Breakdown Voltage ($I_E = -1.0\text{ }\mu\text{A}$) | $V_{(BR)EBO}$ | 5.0 | — | — | V |
| Collector Cutoff Current ($V_{CB} = 20\text{ V}$) | I_{CBO} | — | — | 100 | nA |
| ($V_{CB} = 20\text{ V}$, $T_A = 150^\circ\text{C}$) | | — | — | 5.0 | μA |

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

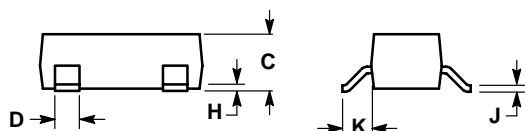
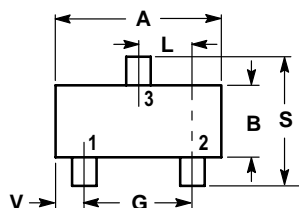
| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

ON CHARACTERISTICS

| | | | | | |
|--|---------------|-----|---|-----|---|
| DC Current Gain ($I_C = 100\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | LBC817–16 | 100 | — | 250 | |
| | LBC817–25 | 160 | — | 400 | |
| | LBC817–40 | 250 | — | 600 | |
| ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | | 40 | — | — | |
| Collector–Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$) | $V_{CE(sat)}$ | — | — | 0.7 | V |
| Base–Emitter On Voltage ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | $V_{BE(on)}$ | — | — | 1.2 | V |

SMALL–SIGNAL CHARACTERISTICS

| | | | | | |
|--|-----------|-----|----|---|-----|
| Current–Gain — Bandwidth Product ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}_{dc}$, $f = 100\text{ MHz}$) | f_T | 100 | — | — | MHz |
| Output Capacitance ($V_{CB} = 10\text{ V}$, $f = 1.0\text{ MHz}$) | C_{obo} | — | 10 | — | pF |

LBC817 Series
SOT-23

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| 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 |

