



DATA SHEET

SEMICONDUCTOR

BC817-40W

General Purpose Transistors

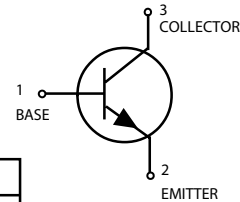
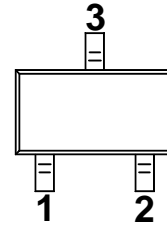


- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish

SOT-323

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 | mA _{dc} |



THERMAL CHARACTERISTICS

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

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 ($V_{EB} = 0, I_C = -10\ \mu\text{A}$) | $V_{(BR)CES}$ | 50 | — | — | V |
| Emitter-Base Breakdown Voltage ($I_E = -1.0\ \mu\text{A}$) | $V_{(BR)EBO}$ | 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 |

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.

ELECTRICAL CHARACTERISTICS

BC817-40W

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

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

ON CHARACTERISTICS

| | | | | | |
|--|---------------|-----|---|-----|---|
| DC Current Gain ($I_C = 100\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | h_{FE} | 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 |

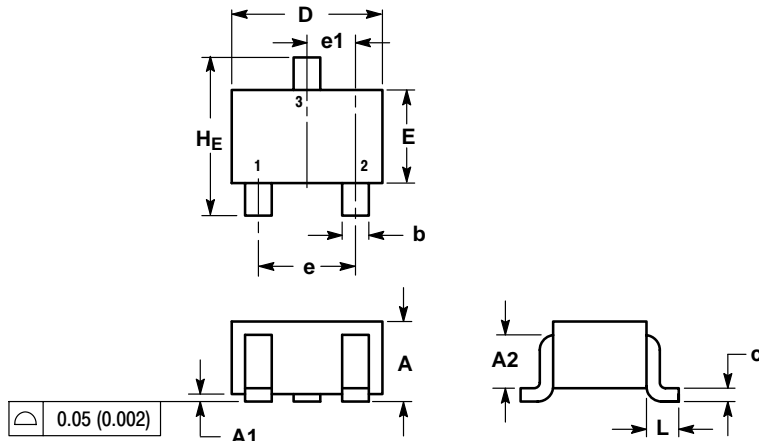
ORDERING INFORMATION

| Device | Marking | Shipping |
|-----------|---------|-----------------|
| BC817-40W | YM | 3000/Tape&Reel |
| BC817-40W | YM | 10000/Tape&Reel |

PACKAGE OUTLINE & DIMENSIONS

BC817-40W

SC-70 (SOT-323)

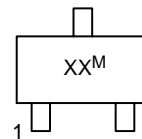


NOTES:

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

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.80 | 0.90 | 1.00 | 0.032 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A2 | 0.7 REF | | | 0.028 REF | | |
| b | 0.30 | 0.35 | 0.40 | 0.012 | 0.014 | 0.016 |
| c | 0.10 | 0.18 | 0.25 | 0.004 | 0.007 | 0.010 |
| D | 1.80 | 2.10 | 2.20 | 0.071 | 0.083 | 0.087 |
| E | 1.15 | 1.24 | 1.35 | 0.045 | 0.049 | 0.053 |
| e | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e1 | 0.65 BSC | | | 0.026 BSC | | |
| L | 0.425 REF | | | 0.017 REF | | |
| HE | 2.00 | 2.10 | 2.40 | 0.079 | 0.083 | 0.095 |

GENERIC MARKING DIAGRAM



- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

SOLDERING FOOTPRINT*

