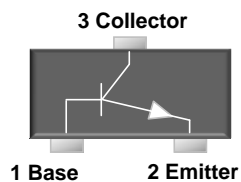
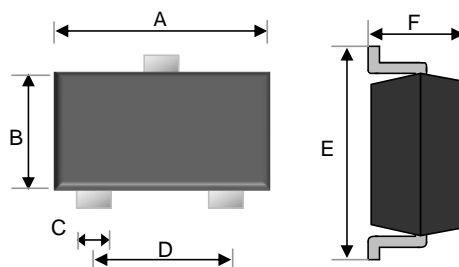


Small Signal Diode



SOT-323



Features

- ◇ Low reverse current high reliability
- ◇ Surface device type mounting
- ◇ Moisture sensitivity level 1
- ◇ Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- ◇ Pb free version and RoHS compliant
- ◇ Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code

Mechanical Data

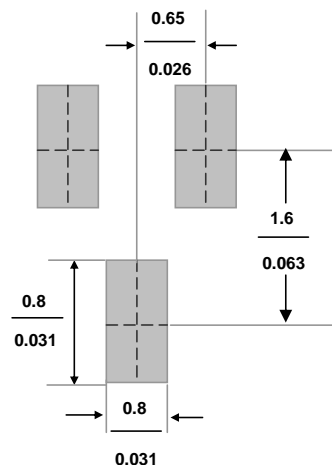
- ◇ Case : SOT-323 small outline plastic package
- ◇ Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- ◇ High temperature soldering guaranteed: 260°C/10s
- ◇ Weight : 0.005gram (approximately)

| Dimensions | Unit (mm) | | Unit (inch) | |
|------------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| A | 1.90 | 2.10 | 0.075 | 0.083 |
| B | 1.15 | 1.35 | 0.045 | 0.053 |
| C | 0.25 | 0.35 | 0.010 | 0.014 |
| D | 1.20 | 1.40 | 0.047 | 0.055 |
| E | 2.00 | 2.20 | 0.079 | 0.087 |
| F | 0.80 | 1.00 | 0.031 | 0.039 |

Ordering Information

| Package | Part No. | Packing |
|---------|----------------|--------------|
| SOT-323 | BC846AW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC846BW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC846CW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC847AW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC847BW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC847CW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC848AW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC848BW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC848CW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC849AW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC849BW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC849CW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC850AW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC850BW RF/RFG | 3K / 7" Reel |
| SOT-323 | BC850CW RF/RFG | 3K / 7" Reel |

Suggested PAD Layout



Small Signal Diode
Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Maximum Ratings

| Type Number | Symbol | Value | Units |
|--|----------------|----------------------------|-------|
| Power Dissipation | P_D | 200 | mW |
| Collector-Base Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{CBO} | 80 50 30 30 50 | V |
| Collector-Emitter Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{CEO} | 65 45 30 30 45 | V |
| Emitter-Base Voltage BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{EBO} | 6 6 5 5 5 | V |
| Collector Current | I_C | 0.1 | A |
| Peak Collector Current | I_{CM} | 0.2 | A |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | °C |

Electrical Characteristics

| Type Number | Symbol | Min | Max | Units |
|--|---------------|----------------------------|-----------------------|-------------|
| Collector-Base Breakdown Voltage at $I_C = 10 \mu A$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{CBO} | 80 50 30 30 50 | - - - - - | V |
| Collector-Emitter Breakdown Voltage at $I_C = 10 mA$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{CEO} | 65 45 30 30 45 | - - - - - | V |
| Emitter-Base Breakdown Voltage at $I_E = 1 \mu A$ BC846AW/BW/CW BC847AW/BW/CW BC848AW/BW/CW BC849AW/BW/CW BC850AW/BW/CW | V_{EBO} | 6 6 5 5 5 | - - - - - | V |
| Collector Cut-off Current at $V_{CB} = 30 V$ | I_{CBO} | - | 15 | nA |
| Emitter Cut-off Current at $V_{EB} = 5 V$ | I_{EBO} | - | 100 | nA |
| DC Current Gain at $V_{CE} = 5 V, I_C = 2 mA$ BC846AW~BC850AW BC846BW~BC850BW BC846CW~BC850CW | h_{FE} | 110 200 420 | 220 450 800 | - - - |
| Collector-Emitter saturation voltage at $I_C = 10 mA, I_B = 0.5 mA$ $I_C = 100 mA, I_B = 5 mA$ | $V_{CE(sat)}$ | - - | 0.25 0.6 | V |
| Transition frequency $V_{CE} = 5 V, I_C = 10 mA, f = 100 MHz$ | f_T | 100 | - | MHz |
| Base Emitter Voltage at $V_{CE} = 5 V, I_C = 2 mA$ $V_{CE} = 5 V, I_C = 10 mA$ | V_{BE} | 0.58 - | 0.7 0.77 | V |
| Collector Output Capacitance at $V_{CB} = 10 V, I_E = 0, f = 1 MHz$ | C_{ob} | - | 4.5 | pF |

Small Signal Diode

Rating and Characteristic Curves

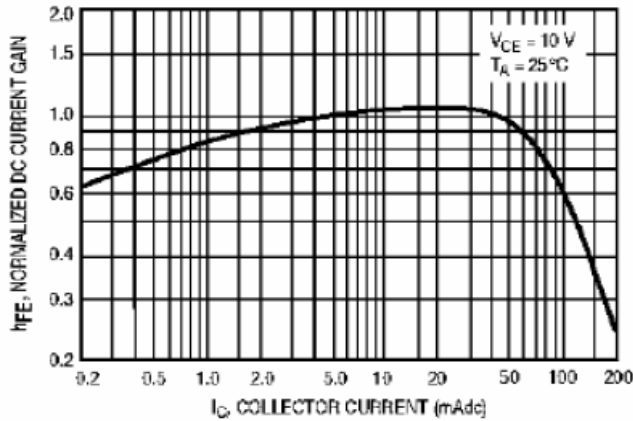


Figure 1. Normalized DC Current Gain

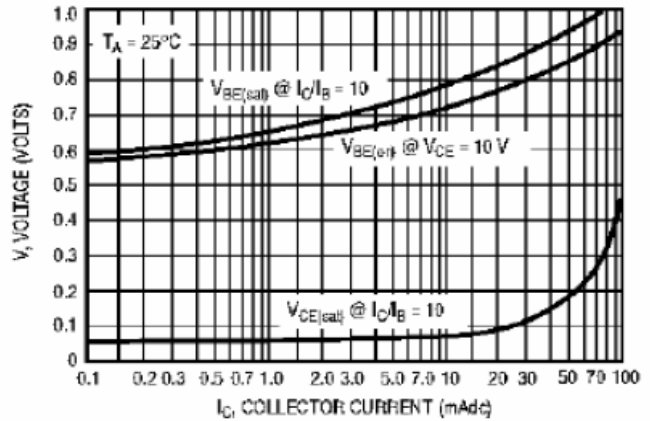


Figure 2. "Saturation" and "On" Voltages

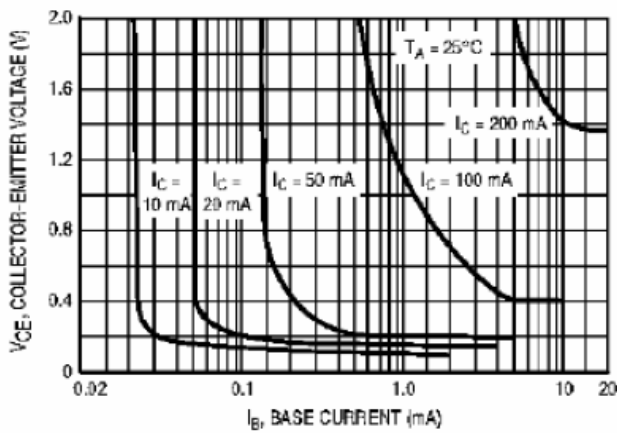


Figure 3. Collector Saturation Region

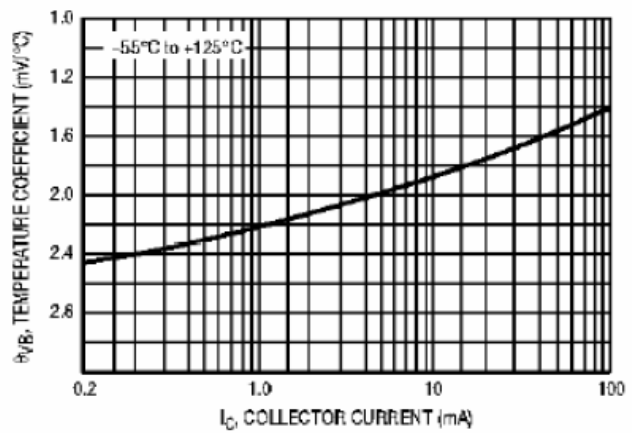


Figure 4. Base-Emitter Temperature Coefficient

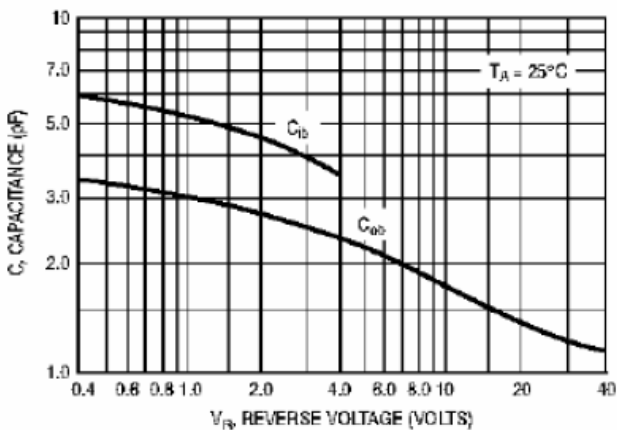


Figure 5. Capacitances

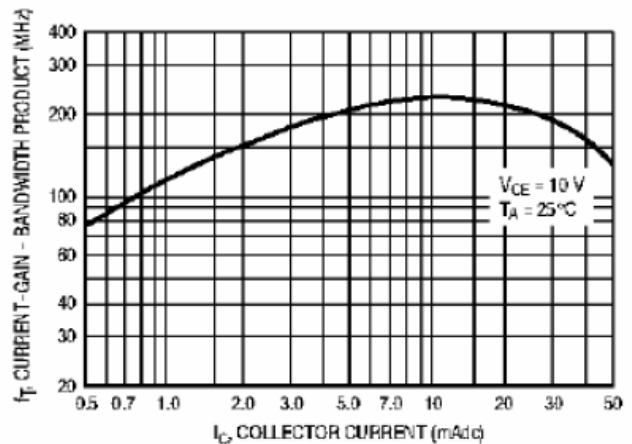


Figure 6. Current-Gain - Bandwidth Product

Small Signal Diode

Rating and Characteristic Curves

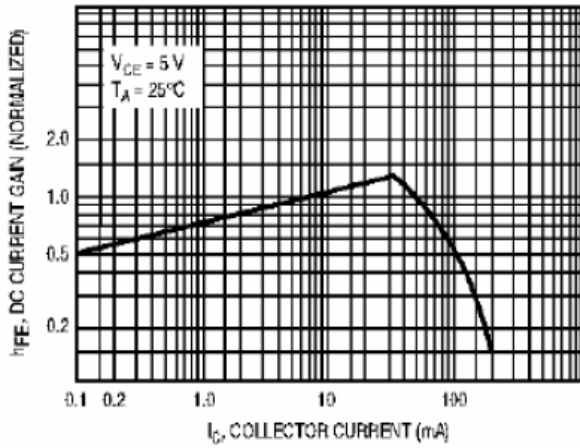


Figure 7. DC Current Gain

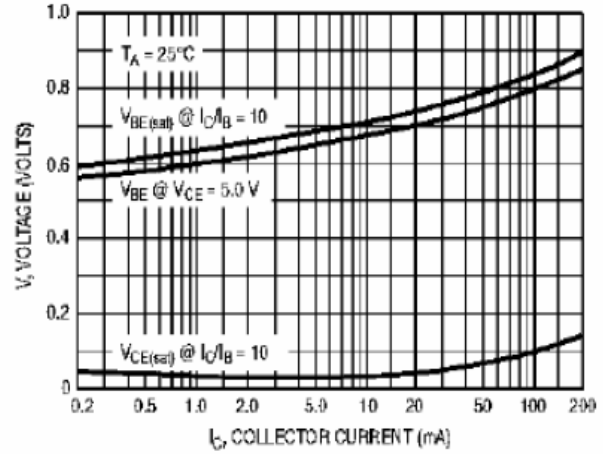


Figure 8. "On" Voltage

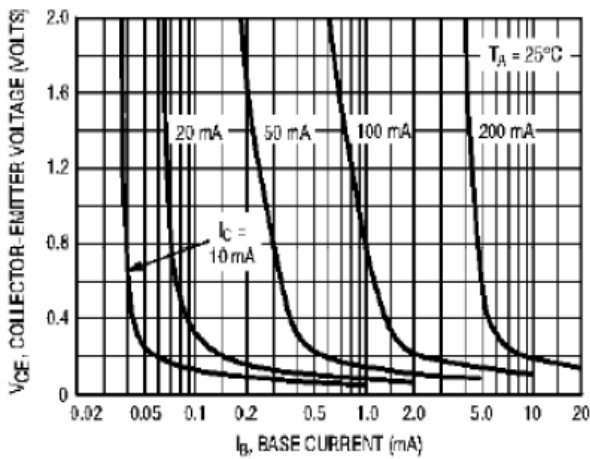


Figure 9. Collector Saturation Region

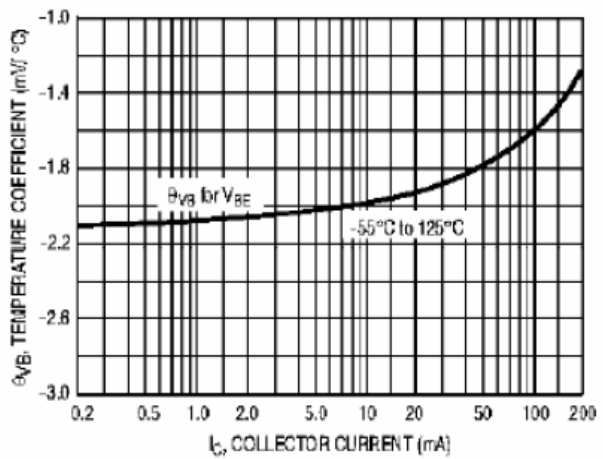


Figure 10. Base-Emitter Temperature Coefficient

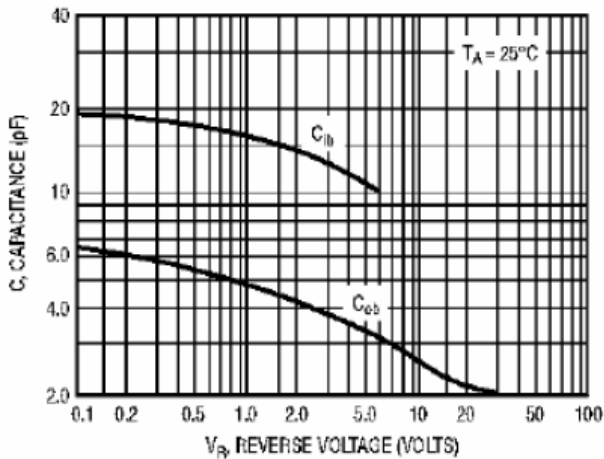


Figure 11. Capacitance

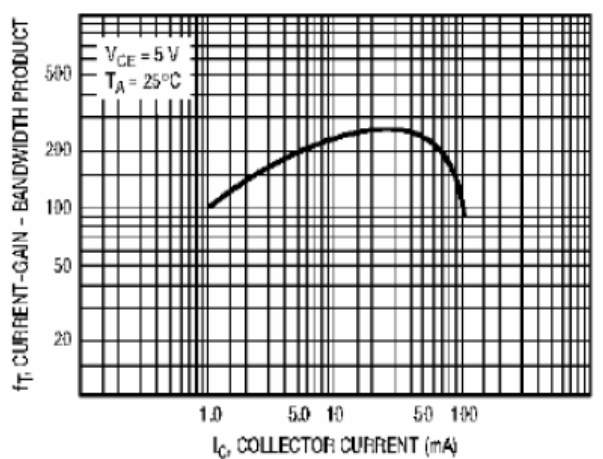
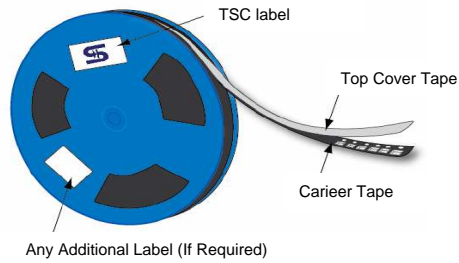


Figure 12. Current-Gain - Bandwidth Product

Small Signal Diode

Tape & Reel specification



| Item | Symbol | Dimension(mm) |
|------------------------|--------|---------------|
| Carrier width | A | 3.15 ±0.10 |
| Carrier length | B | 2.77 ±0.10 |
| Carrier depth | C | 1.22 ±0.10 |
| Sprocket hole | d | 1.50 ± 0.10 |
| Reel outside diameter | D | 178 ± 1 |
| Reel inner diameter | D1 | 55 Min |
| Feed hole width | D2 | 13.0 ± 0.20 |
| Sprocket hole position | E | 1.75 ±0.10 |
| Punch hole position | F | 3.50 ±0.05 |
| Sprocket hole pitch | P0 | 4.00 ±0.10 |
| Embossment center | P1 | 2.00 ±0.05 |
| Overall tape thickness | T | 0.229 ±0.013 |
| Tape width | W | 8.10 ±0.20 |
| Reel width | W1 | 12.30 ±0.20 |

