



NPN GENERAL PURPOSE TRANSISTORS

VOLTAGE 30/45/65 Volts **CURRENT** 225 mWatts

SOT-23 Unit: inch (mm)

FEATURES

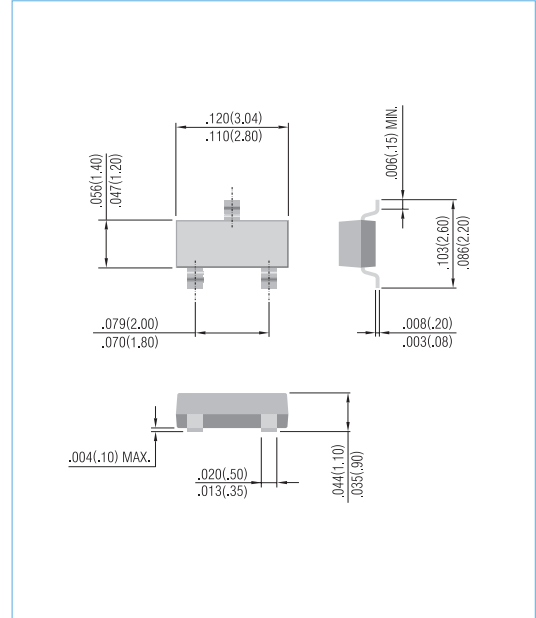
- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
- In compliance with EU RoHS 2002/95/EC directives

MECHANICAL DATA

Case: SOT-23, Plastic

Terminals: Solderable per MIL-STD-750, Method 2026

Approx. Weight: 0.008 gram



| Device Marking: | | | | |
|-----------------|-------------|-------------|-------------|-------------|
| BC 846A=46A | BC 847A=47A | BC 848A=48A | | |
| BC 846B=46B | BC 847B=47B | BC 848B=48B | BC 849B=49B | BC 850B=50B |
| | BC 847C=47C | BC 848C=48C | BC 849C=49C | BC 850C=50C |

ABSOLUTE RATINGS

| PARAMETER | Symbol | Value | Units |
|--------------------------------|------------------|-------------|-------|
| Collector - Emitter Voltage | V _{CEO} | BC846 | 65 |
| | | BC847,BC850 | 45 |
| | | BC848,BC849 | 30 |
| Collector - Base Voltage | V _{CBO} | BC846 | 80 |
| | | BC847,BC850 | 50 |
| | | BC848,BC849 | 30 |
| Emitter - Base Voltage | V _{EBO} | BC846 | 6.0 |
| | | BC847,BC850 | 6.0 |
| | | BC848,BC849 | 5.0 |
| Collector Current - Continuous | I _c | 100 | mA |

THERMAL CHARACTERISTICS

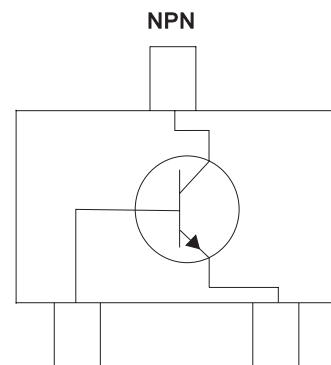
| PARAMETER | Symbol | Value | Units |
|---|------------------|------------|-------|
| Max Power Dissipation (Note 1) | P _{TOT} | 225 | mW |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 556 | °C/W |
| Junction Temperature | T _J | -55 to 150 | °C |
| Storage Temperature | T _{STG} | -55 to 150 | °C |

Note 1: Transistor mounted on FR-5 board 1.0 x 0.75 x 0.062 in.



ELECTRICAL CHARACTERISTICS

| PARAMETER | Symbol | Test Condition | MIN. | TYP. | MAX. | Units |
|---|---------------|--|-------------------|-------------------|-------------------|----------|
| Collector - Emitter Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C | $V_{(BR)CEO}$ | $I_C=1.0mA, I_B=0$ | 65 45 30 | - | - | V |
| Collector - Base Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$ | 80 50 30 | - | - | V |
| Emitter - Base Breakdown Voltage BC846A/B BC847A/B/C,BC850B/C BC848A/B/C,BC849B/C | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$ | 6.0 6.0 5.0 | - | - | V |
| Emitter-Base Cutoff Current | I_{EBO} | $V_{EB}=5$ | - | - | 100 | nA |
| Collector-Base Cutoff Current | I_{CBO} | $V_{CB}=30V, I_E=0$ $V_{CB}=30V, I_E=0, T_J=150^{\circ}C$ | - | - | 15 5.0 | nA uA |
| DC Current Gain BC846-BC848 Suffix "A" BC846-BC850 Suffix "B" BC847-BC850 Suffix "C" | h_{FE} | $I_C=10\mu A, V_{CE}=5V$ | - | 90 150 270 | - | - |
| DC Current Gain BC846-BC848 Suffix "A" BC846-BC850 Suffix "B" BC847-BC850 Suffix "C" | h_{FE} | $I_C=2.0mA, V_{CE}=5V$ | 110 200 420 | 180 290 520 | 220 450 800 | - |
| Collector - Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5.0mA$ | - | - | 0.25 0.6 | V |
| Base - Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5.0mA$ | - | 0.7 0.9 | - | V |
| Base - Emitter Voltage | $V_{BE(SAT)}$ | $I_C=2mA, V_{CE}=5.0V$ $I_C=10mA, V_{CE}=5.0V$ | 0.58 - | 0.660 - | 0.70 0.77 | V |
| Collector - Base Capacitance | C_{CBO} | $V_{CB}=10V, I_E=0, f=1MH$ | - | - | 4.5 | pF |





ELECTRICAL CHARACTERISTICS CURVE (BC846A, BC847A, BC848A)

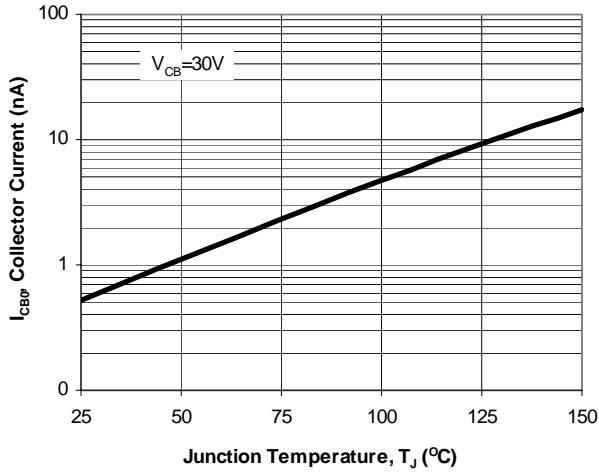


Fig. 1. Typical I_{CB0} vs. Junction Temperature

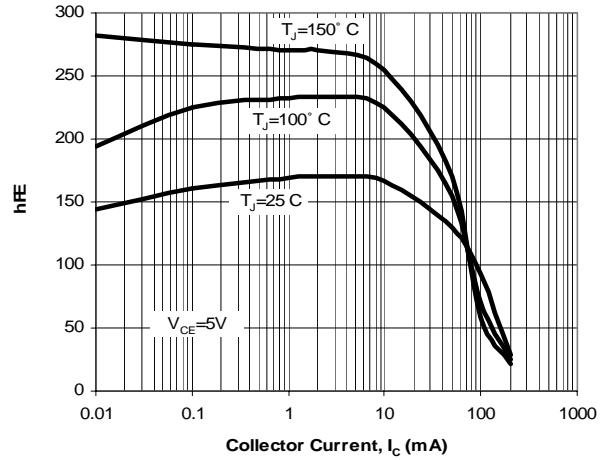


Fig. 2. Typical h_{FE} vs. Collector Current

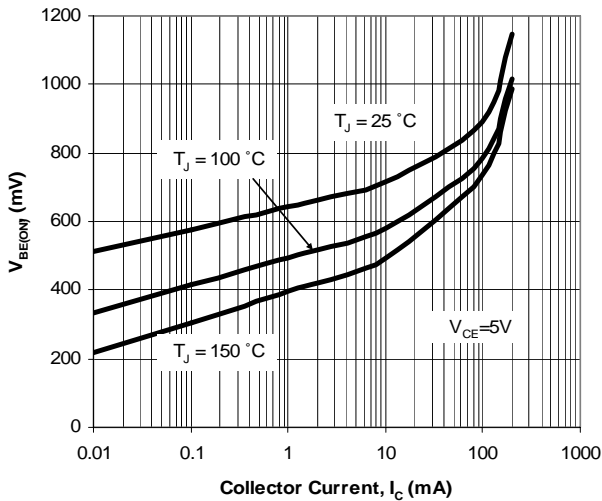


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

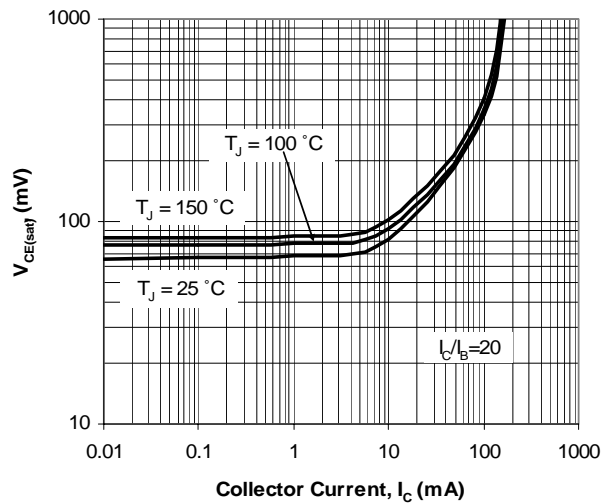


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

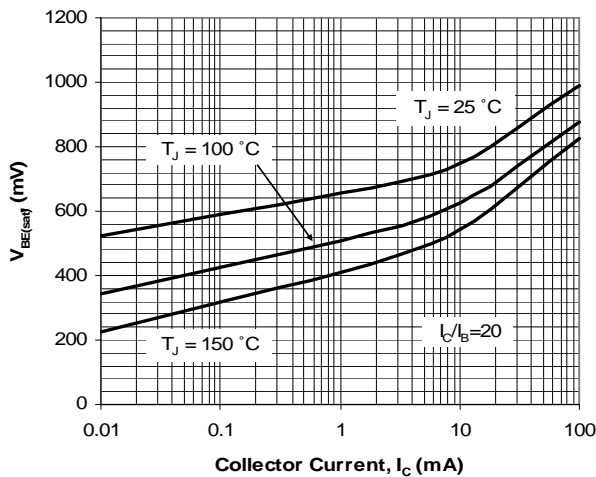


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

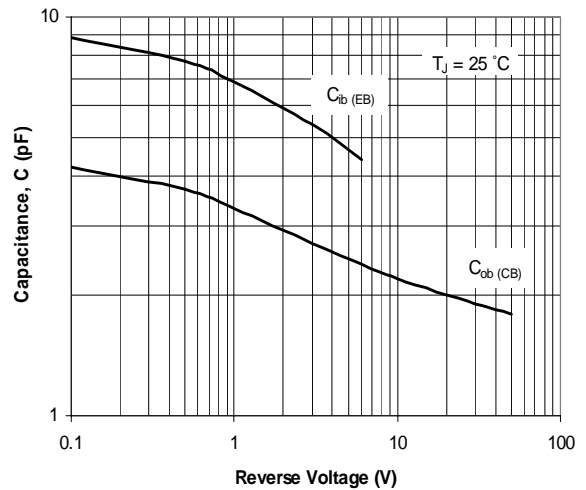


Fig. 6. Typical Capacitances vs. Reverse Voltage



ELECTRICAL CHARACTERISTICS CURVE (BC846B, BC847B, BC848B, BC849B, BC850B)

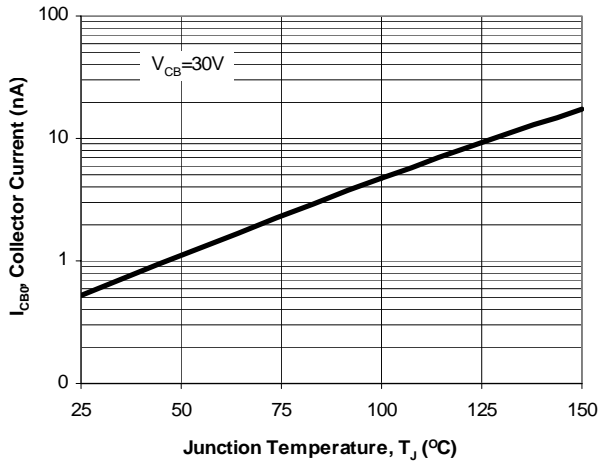


Fig. 1. Typical I_{CBO} vs. Junction Temperature

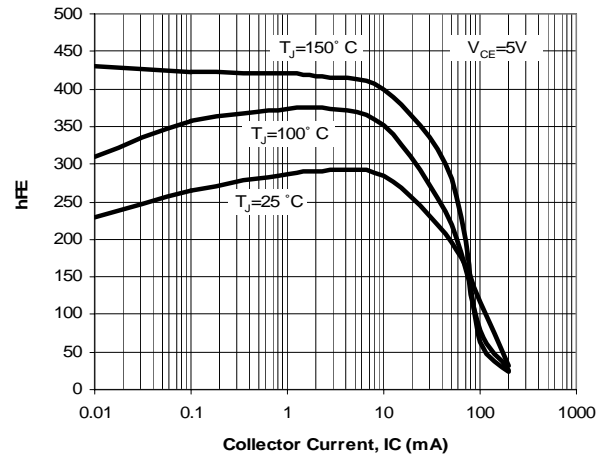


Fig. 2. Typical h_{FE} vs. Collector Current

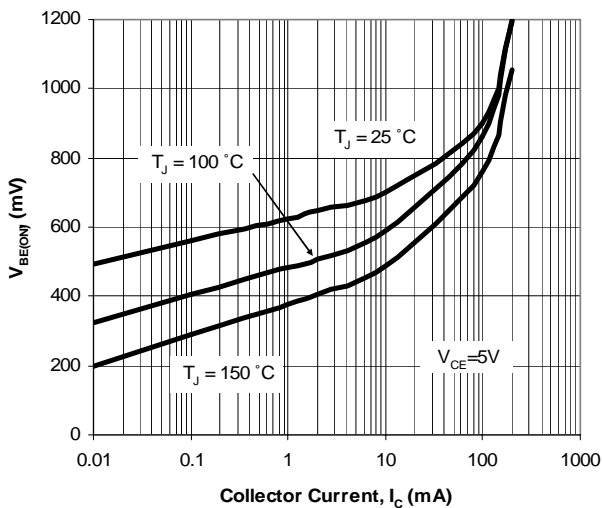


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

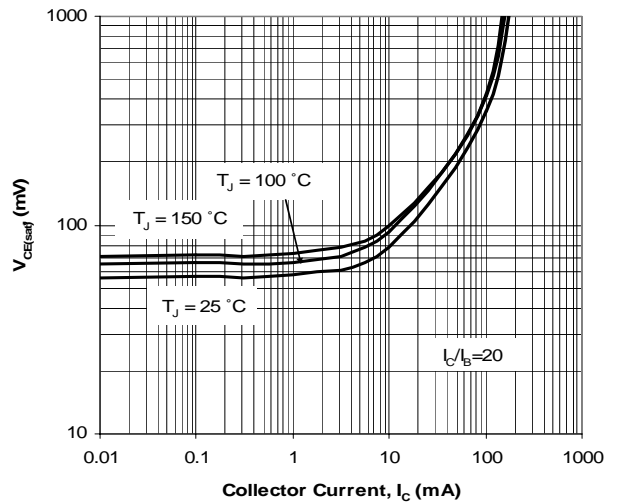


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

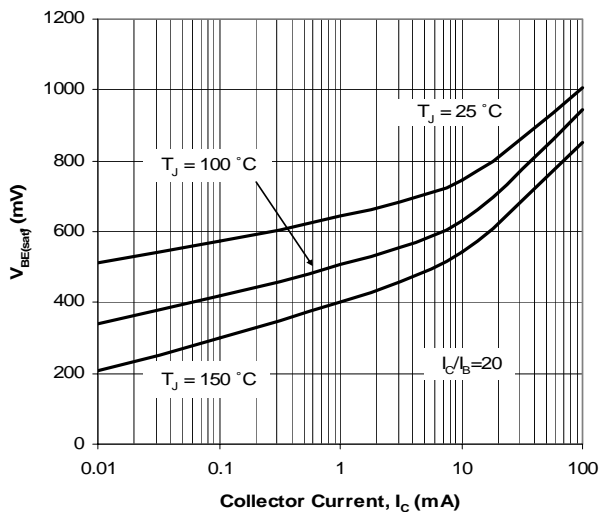


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

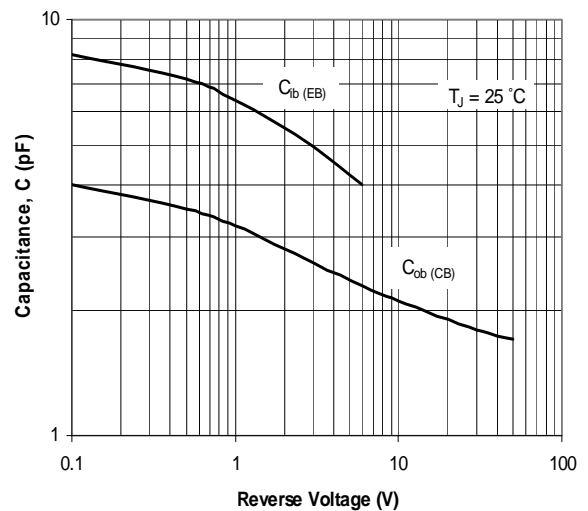


Fig. 6. Typical Capacitances vs. Reverse Voltage



ELECTRICAL CHARACTERISTICS CURVE (BC847C,BC848C,BC849C,BC850C)

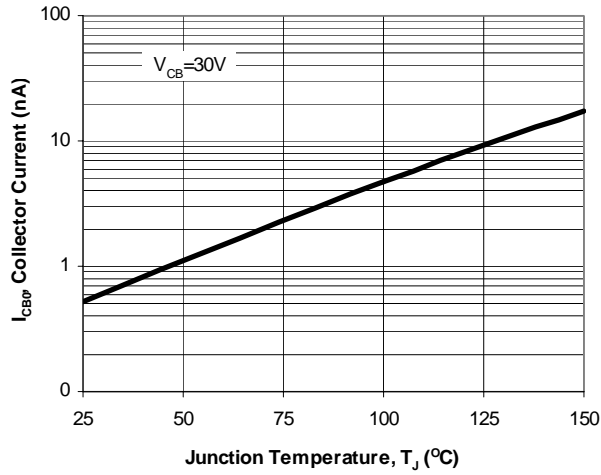


Fig. 1. Typical I_{CBO} vs. Junction Temperature

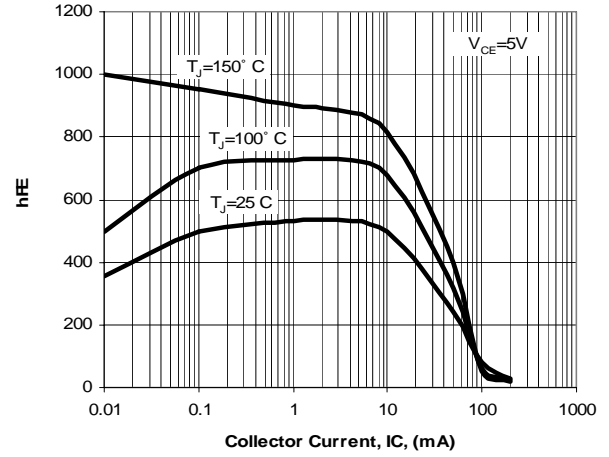


Fig. 2. Typical h_{FE} vs. Collector Current

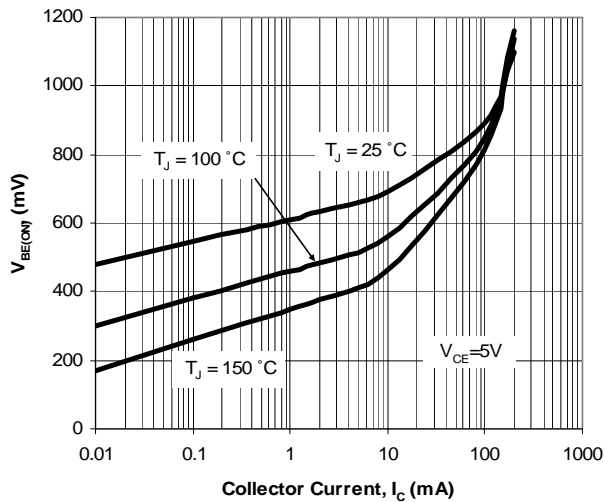


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

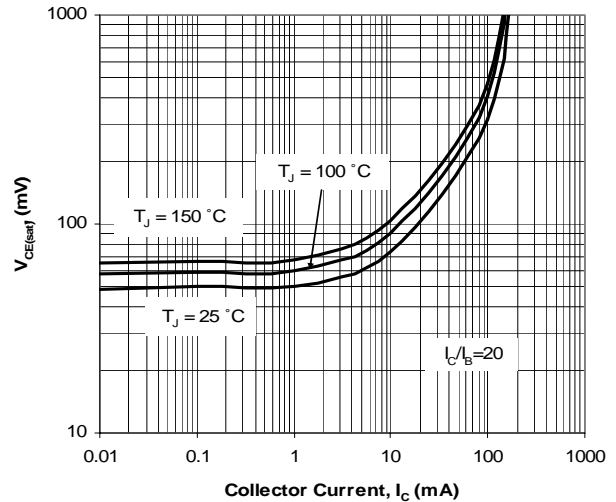


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

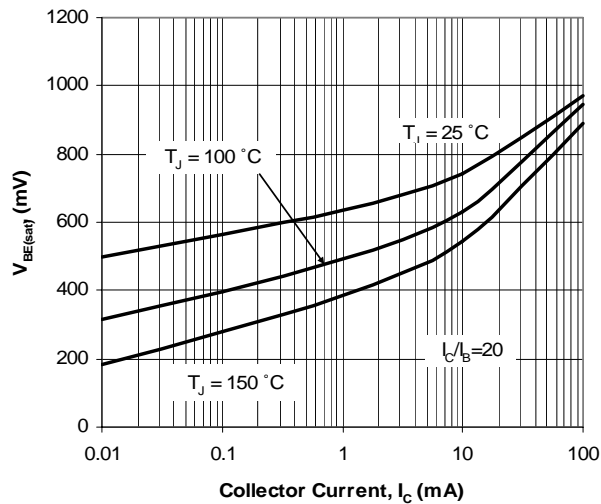


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

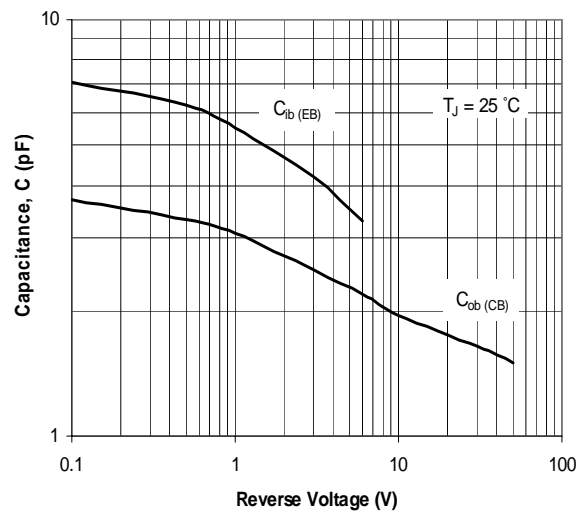
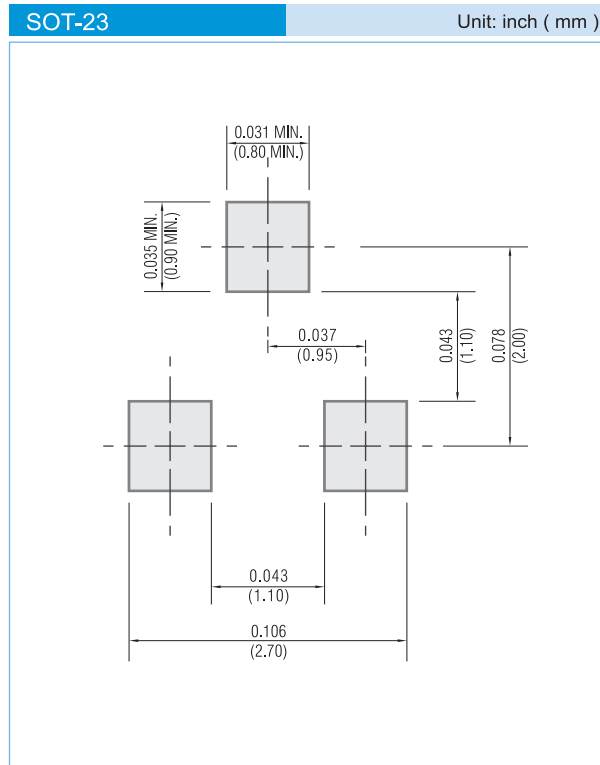


Fig. 6. Typical Capacitances vs. Reverse Voltage



MOUNTING PAD LAYOUT



ORDER INFORMATION

- Packing information
 - T/R - 12K per 13" plastic Reel
 - T/R - 3K per 7" plastic Reel

LEGAL STATEMENT

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