



**NPN GENERAL PURPOSE TRANSISTORS**

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

**SOT-23** Unit: inch ( mm )

**FEATURES**

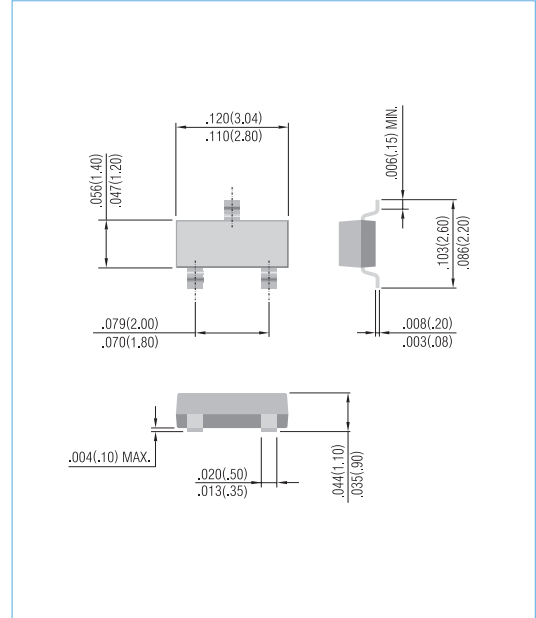
- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current IC = 100mA
- In compliance with EU RoHS 2002/95/EC directives

**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	BC846 BC847,BC850 BC848,BC849	V <sub>CEO</sub>	65 45 30 V
Collector - Base Voltage	BC846 BC847,BC850 BC848,BC849	V <sub>CBO</sub>	80 50 30 V
Emitter - Base Voltage	BC846 BC847,BC850 BC848,BC849	V <sub>EBO</sub>	6.0 6.0 5.0 V
Collector Current - Continuous	I <sub>c</sub>	100	mA

**THERMAL CHARACTERISTICS**

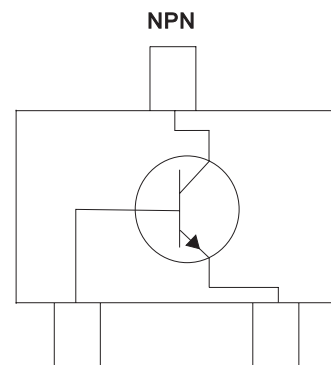
PARAMETER	Symbol	Value	Units
Max Power Dissipation (Note 1)	P <sub>TOT</sub>	225	mW
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	556	°C/W
Junction Temperature	T <sub>J</sub>	-55 to 150	°C
Storage Temperature	T <sub>STG</sub>	-55 to 150	°C

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)

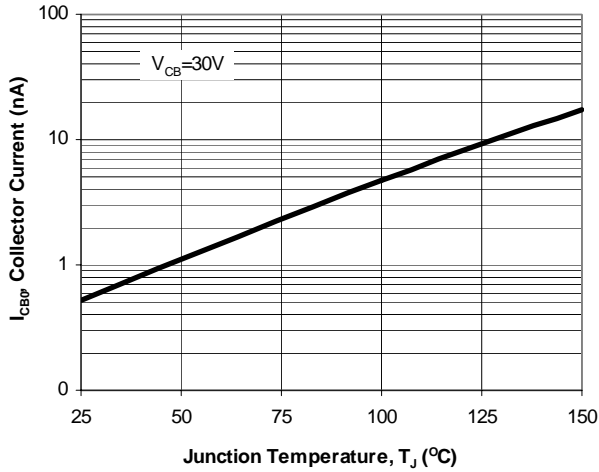


Fig. 1. Typical  $I_{CB0}$  vs. Junction Temperature

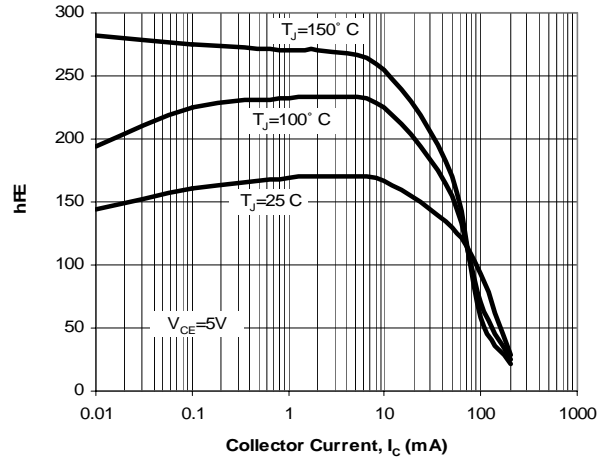


Fig. 2. Typical  $h_{FE}$  vs. Collector Current

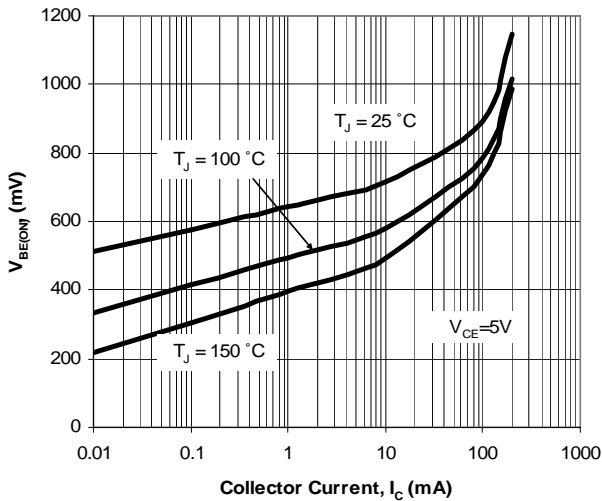


Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current

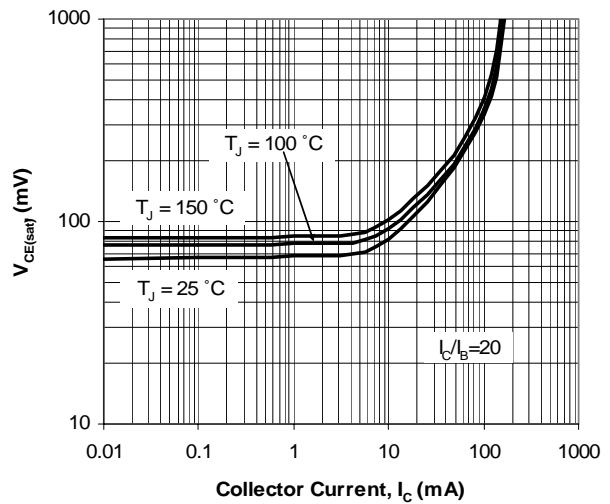


Fig. 4. Typical  $V_{CE(SAT)}$  vs. Collector Current

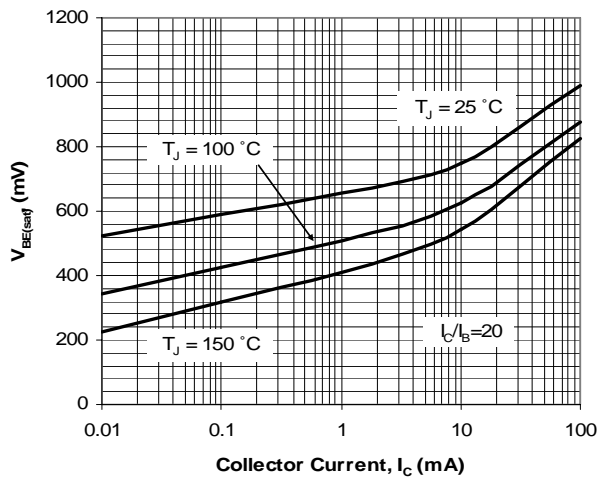


Fig. 5. Typical  $V_{BE(SAT)}$  vs. Collector Current

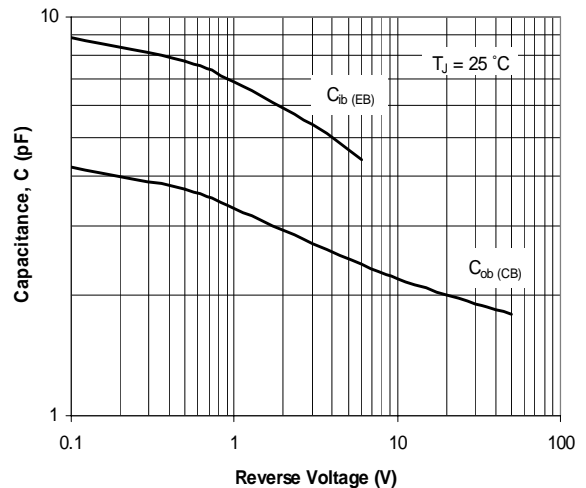


Fig. 6. Typical Capacitances vs. Reverse Voltage



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

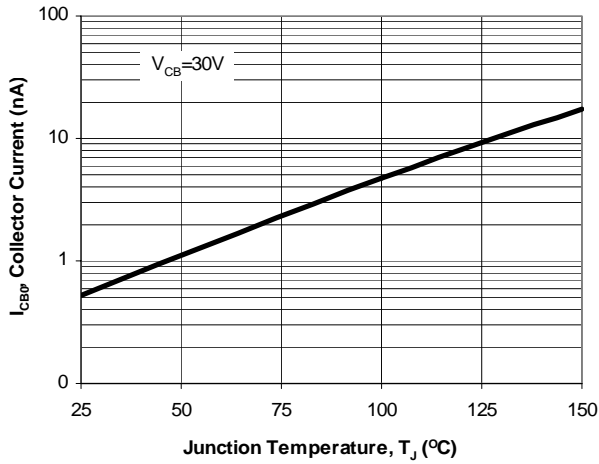


Fig. 1. Typical  $I_{CBO}$  vs. Junction Temperature

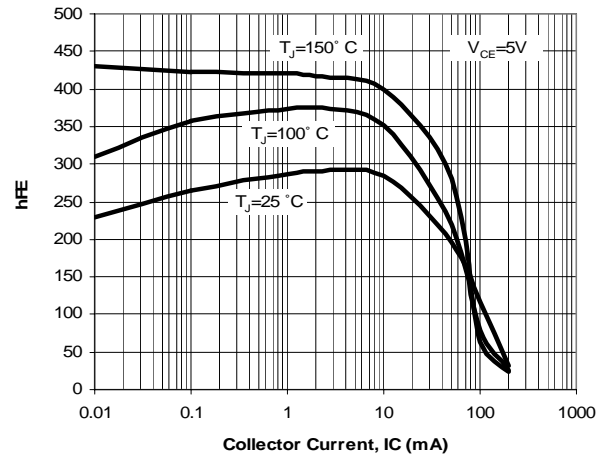


Fig. 2. Typical  $h_{FE}$  vs. Collector Current

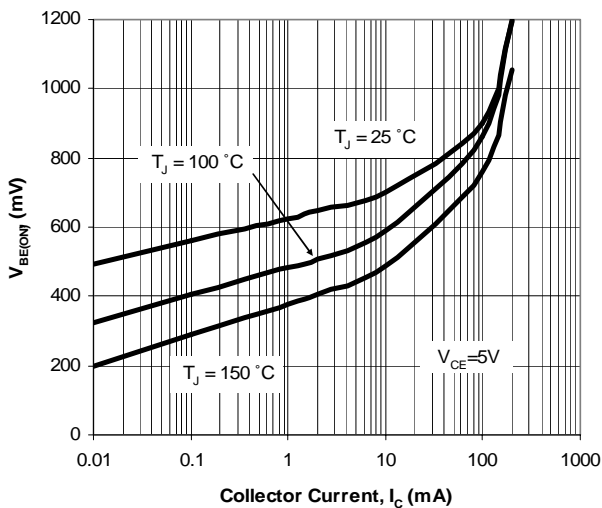


Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current

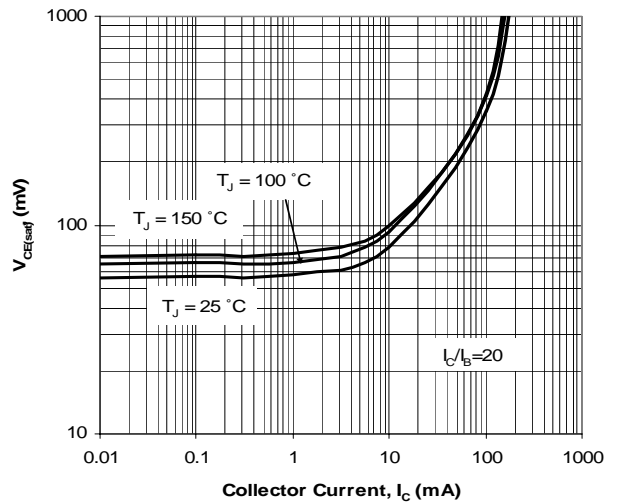


Fig. 4. Typical  $V_{CE(SAT)}$  vs. Collector Current

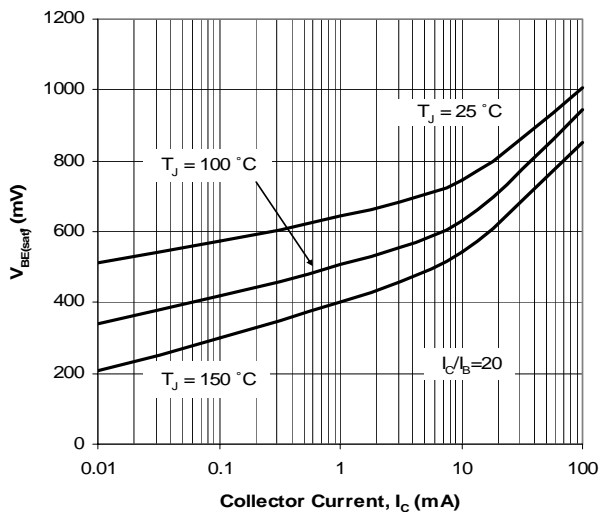


Fig. 5. Typical  $V_{BE(SAT)}$  vs. Collector Current

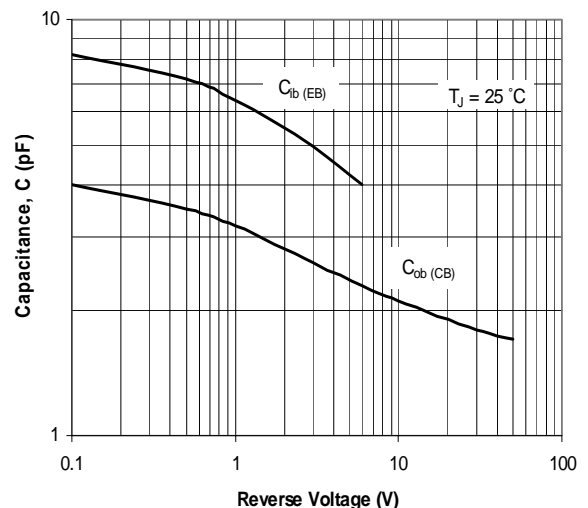


Fig. 6. Typical Capacitances vs. Reverse Voltage



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

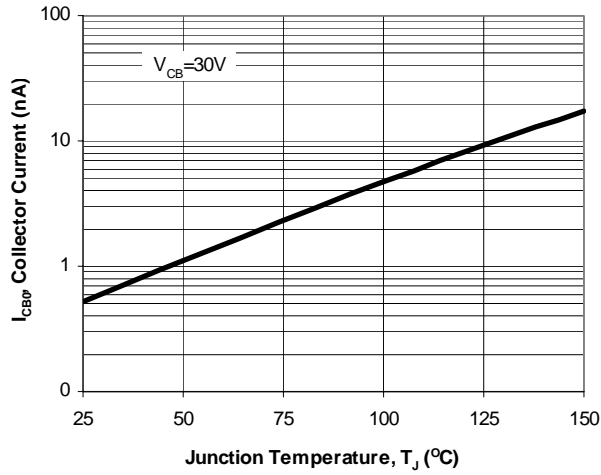


Fig. 1. Typical  $I_{CBO}$  vs. Junction Temperature

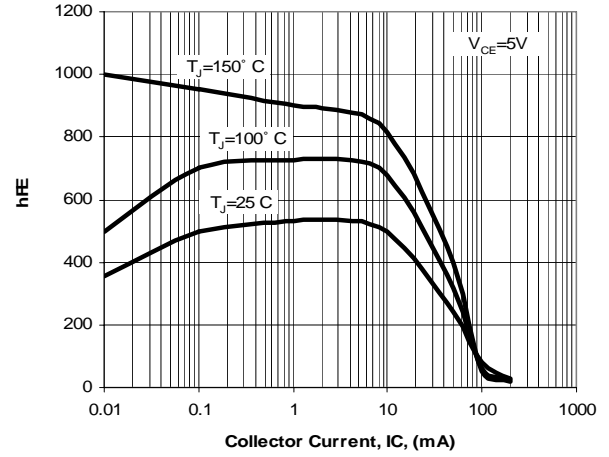


Fig. 2. Typical  $h_{FE}$  vs. Collector Current

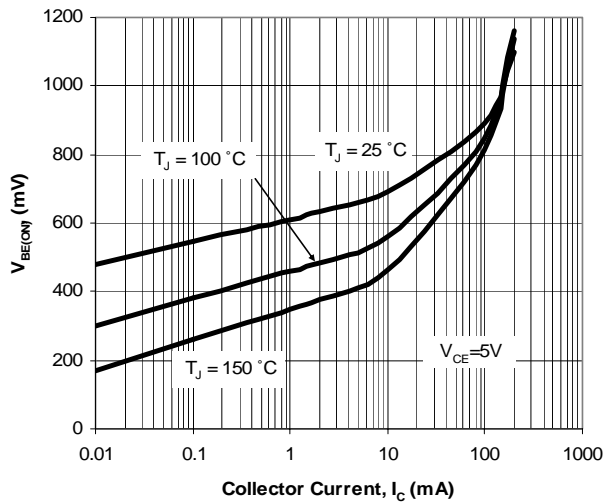


Fig. 3. Typical  $V_{BE(ON)}$  vs. Collector Current

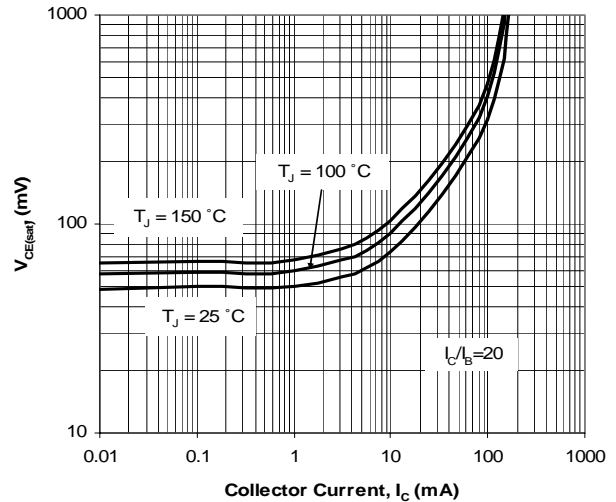


Fig. 4. Typical  $V_{CE(SAT)}$  vs. Collector Current

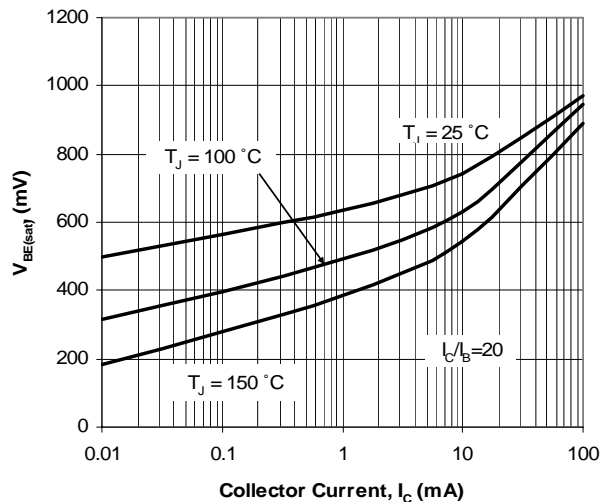


Fig. 5. Typical  $V_{BE(SAT)}$  vs. Collector Current

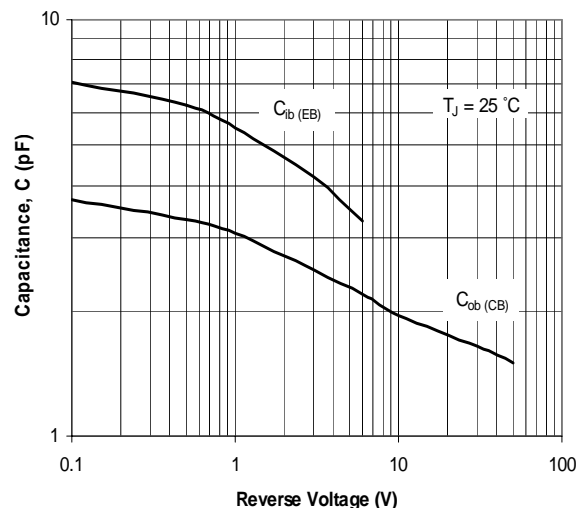
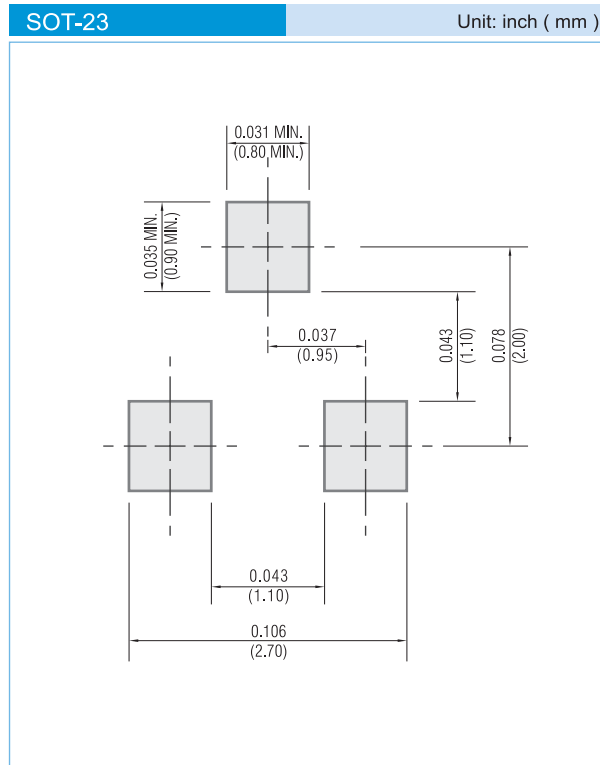


Fig. 6. Typical Capacitances vs. Reverse Voltage



**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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