



DATA SHEET

BC846W,BC847W,BC848W,BC849W,BC850W SERIES

NPN GENERAL PURPOSE TRANSISTORS

VOLTAGE 30/45/65 Volts **CURRENT** 150 mWatts

SOT-323

Unit: inch (mm)

FEATURES

- General purpose amplifier applications
- NPN epitaxial silicon, planar design
- Collector current $I_C = 100\text{mA}$
- Both normal and Pb free product are available :
Normal : 80~95% Sn, 5~20% Pb
Pb free: 98.5% Sn above

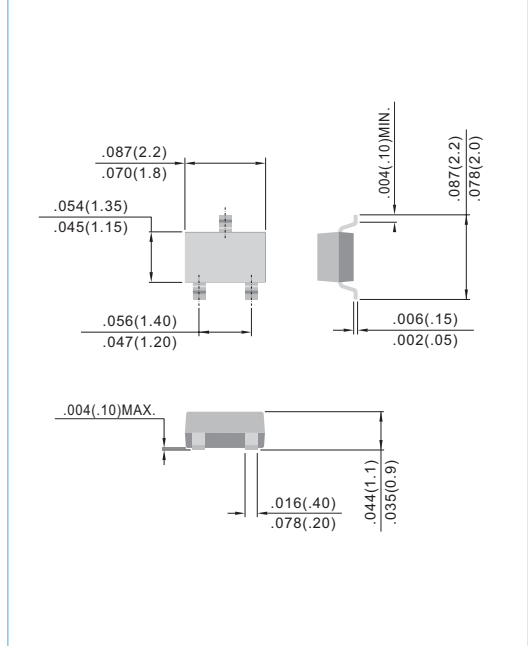
MECHANICAL DATA

Case: SOT-323, Plastic

Terminals: Solderable per MIL-STD-202, Method 208

Approx. Weight: 0.0052 gram

Device Marking:				
BC 846AW =46A	BC 847AW =47A	BC 848AW =48A		
BC 846BW =46B	BC 847BW =47B	BC 848BW =48B	BC 849BW =49B	BC 850BW =50B
	BC 847CW =47C	BC 848CW =48C	BC 849CW =49C	BC 850CW =50C



ABSOLUTE RATINGS

PARAMETER	Symbol	Value	Units
Collector - Emitter Voltage	V_{CE0}	65 45 30	V
Collector - Base Voltage	V_{CBO}	80 50 30	V
Emitter - Base Voltage	V_{EBO}	6.0 6.0 5.0	V
Collector Current - Continuous	I_C	100	mA

THERMAL CHARACTERISTICS

PARAMETER	Symbol	Value	Units
Max Power Dissipation (Note 1)	P_{TOT}	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}\text{C}$

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 BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65 45 30	-	-	V
Collector - Base Breakdown Voltage BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	80 50 30	-	-	V
Emitter - Base Breakdown Voltage BC846AW,BW BC847AW/BW/CW,BC850BW/CW BC848AW/BW/CW,BC849BW/CW	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	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 "AW" BC846-BC850 Suffix "BW" BC847-BC850 Suffix "CW"	h_{FE}	$I_C=10\mu A, V_{CE}=5V$	-	90 150 270	-	-
DC Current Gain BC846-BC848 Suffix "AW" BC846-BC850 Suffix "BW" BC847-BC850 Suffix "CW"	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	$V_{CE(SAT)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5.0mA$	-	0.7 0.9	-	V
Base - Emitter Voltage	$V_{CE(SAT)}$	$I_C=2mA, V_{CE}=5.0V$ $I_C=10mA, V_{CE}=5.0V$	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 (BC846AW,BC847AW,BC848AW)

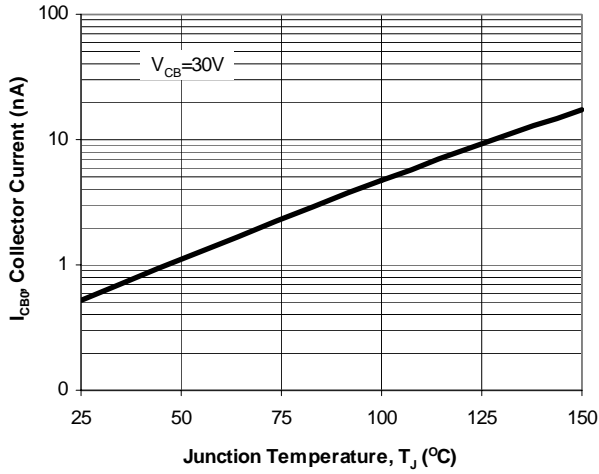


Fig. 1. Typical I_{CB0} vs. Junction Temperature

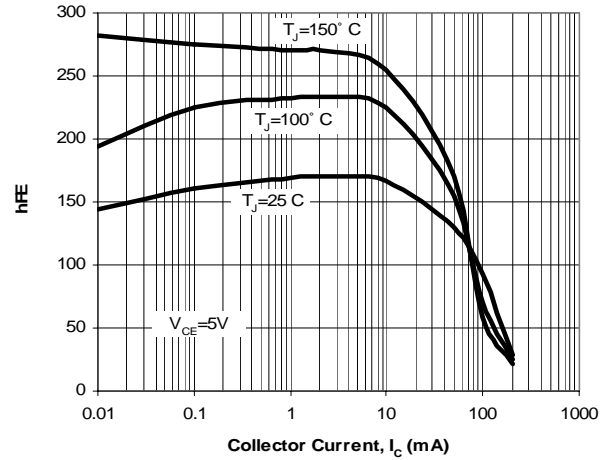


Fig. 2. Typical h_{FE} vs. Collector Current

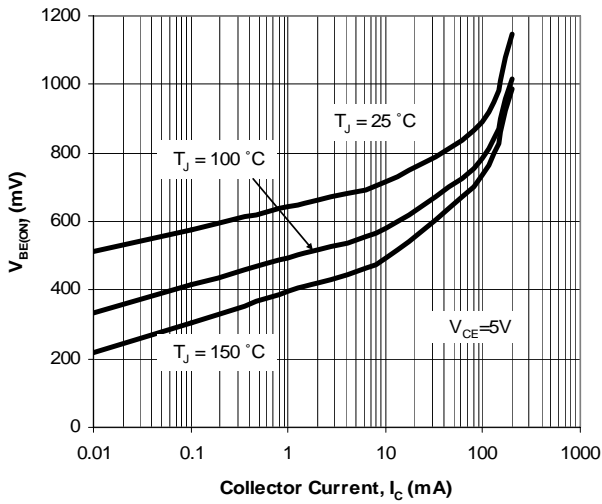


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

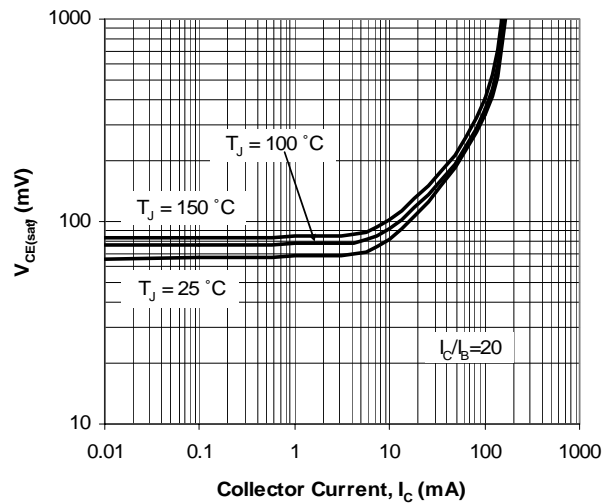


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

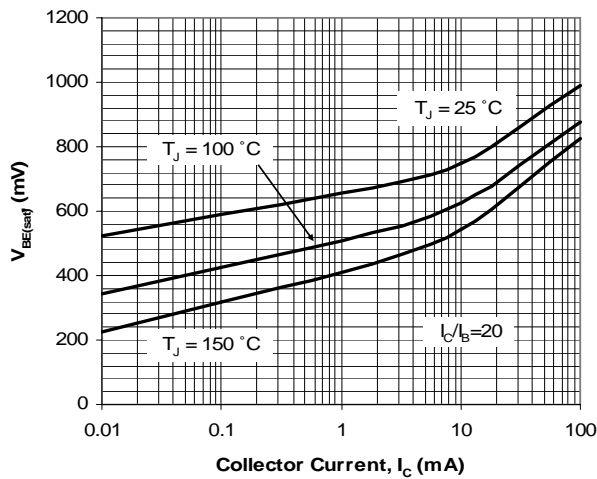


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

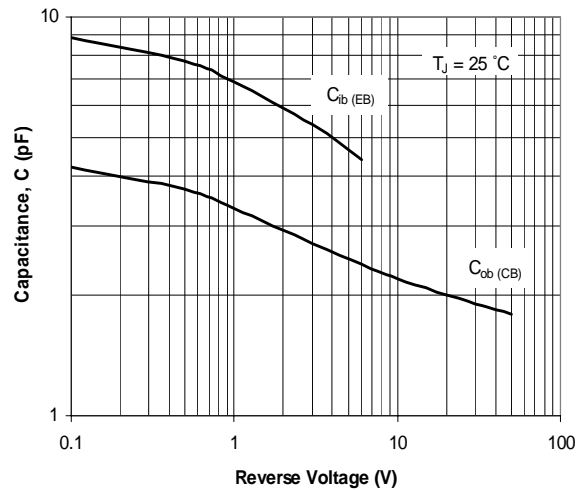


Fig. 6. Typical Capacitances vs. Reverse Voltage



ELECTRICAL CHARACTERISTICS CURVE (BC846BW,BAC847BW,BC848BW,BC849BW,BC850BW)

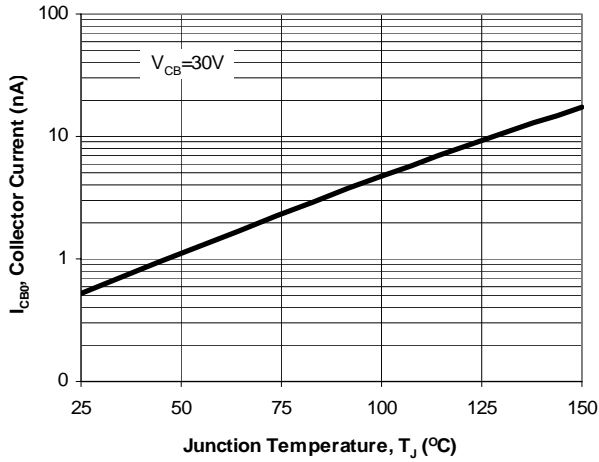


Fig. 1. Typical I_{CBO} vs. Junction Temperature

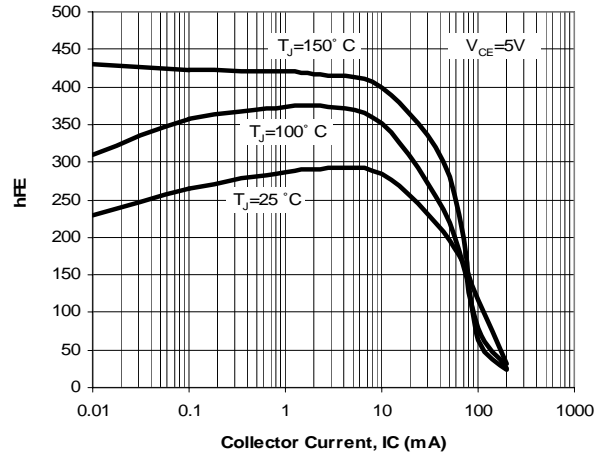


Fig. 2. Typical h_{FE} vs. Collector Current

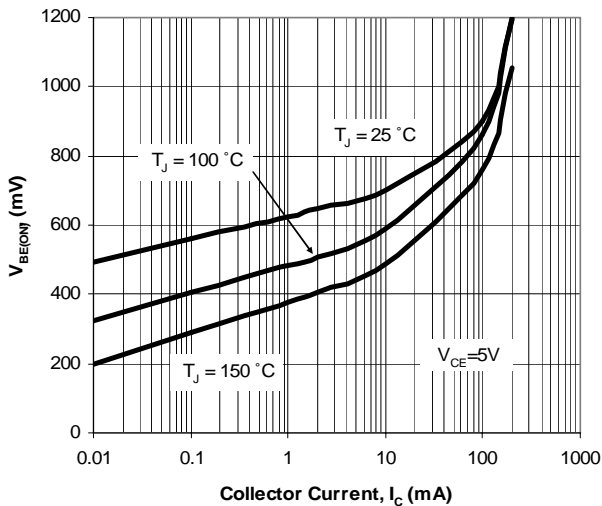


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

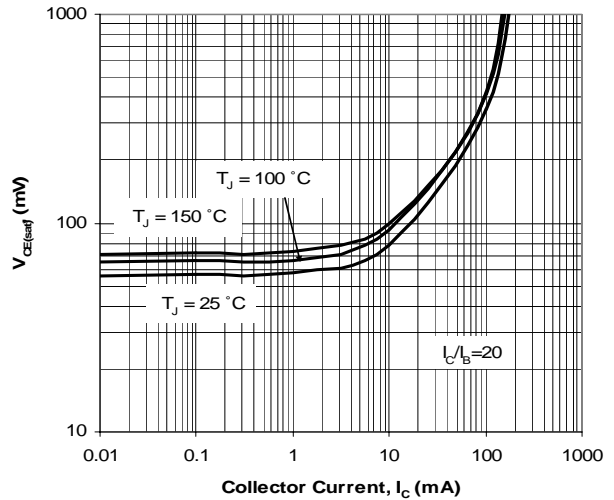


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

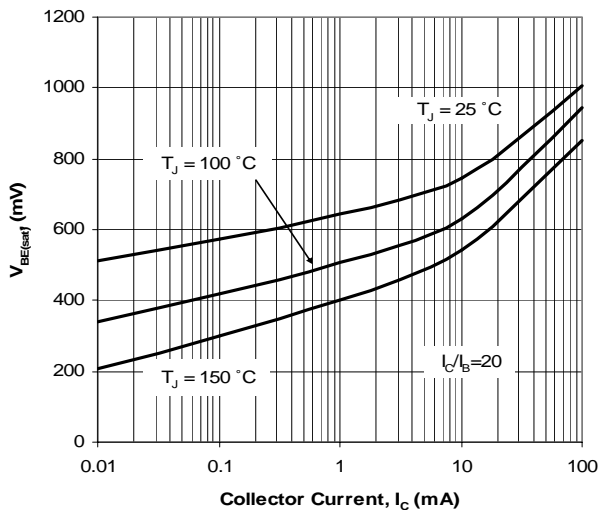


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

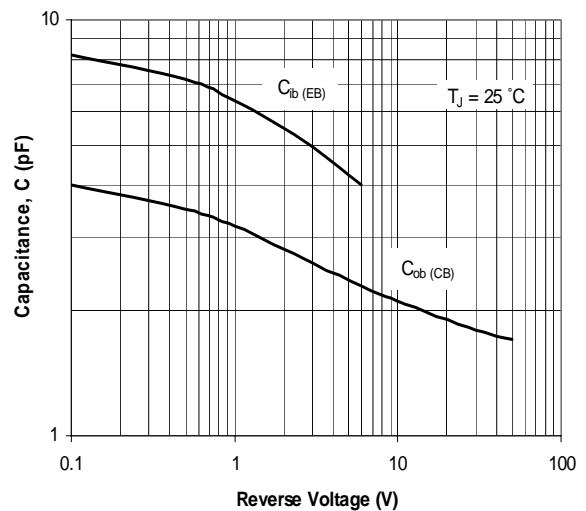


Fig. 6. Typical Capacitances vs. Reverse Voltage



ELECTRICAL CHARACTERISTICS CURVE (BAC847CW, BC848CW, BC849CW, BC850CW)

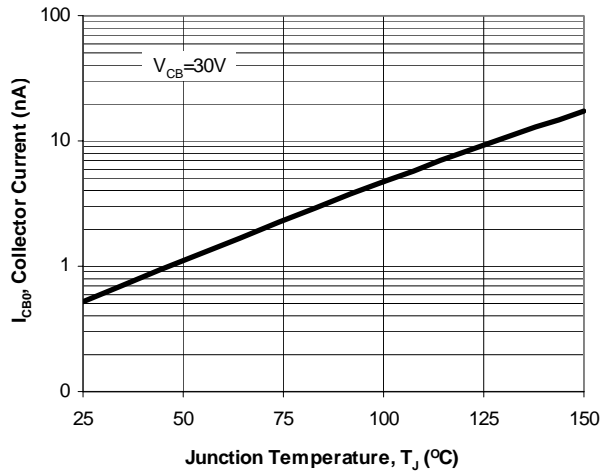


Fig. 1. Typical I_{CBO} vs. Junction Temperature

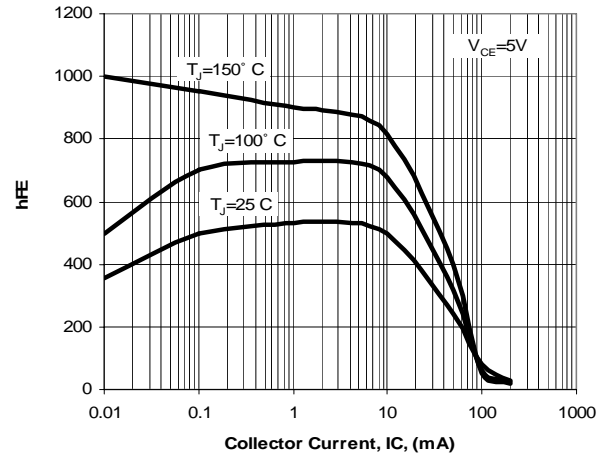


Fig. 2. Typical h_{FE} vs. Collector Current

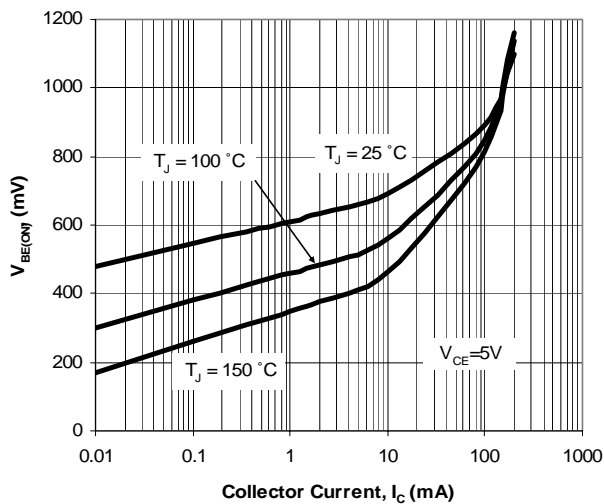


Fig. 3. Typical $V_{BE(ON)}$ vs. Collector Current

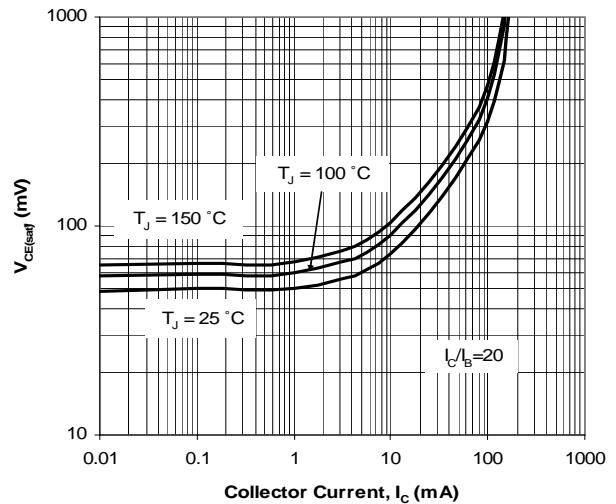


Fig. 4. Typical $V_{CE(SAT)}$ vs. Collector Current

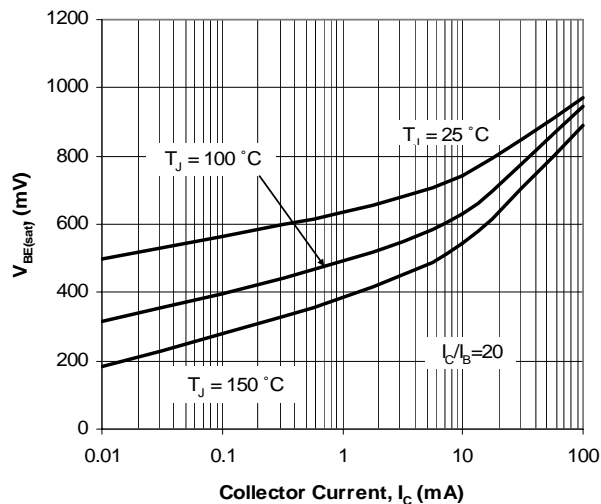


Fig. 5. Typical $V_{BE(SAT)}$ vs. Collector Current

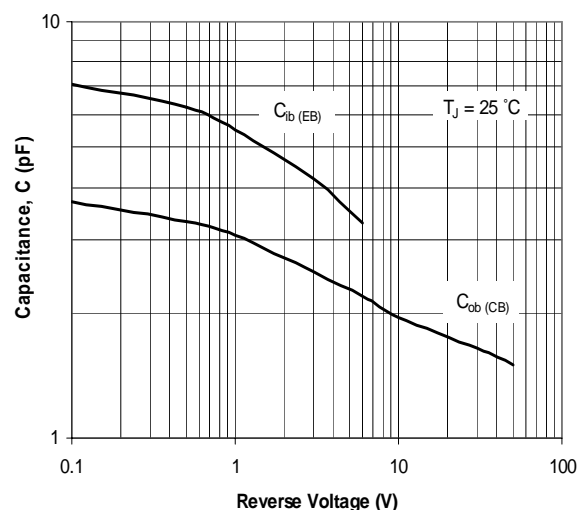


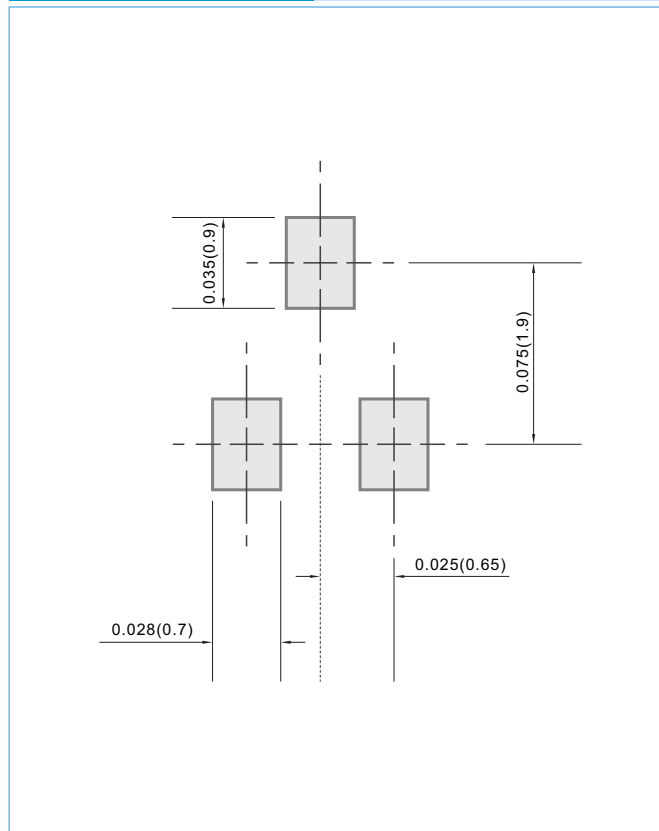
Fig. 6. Typical Capacitances vs. Reverse Voltage



MOUNTING PAD LAYOUT

SOT-323

Unit: inch (mm)



ORDER INFORMATION

- Packing information
 - T/R - 12K per 13" plastic Reel
 - T/R - 3.0K per 7" plastic Reel

LEGAL STATEMENT

IMPORTANT NOTICE

This information is intended to unambiguously characterize the product in order to facilitate the customer's evaluation of the device in the application. The information will help the customer's technical experts determine that the device is compatible and interchangeable with similar devices made by other vendors. The information in this data sheet is believed to be reliable and accurate. The specifications and information herein are subject to change without notice. New products and improvements in products and product characterization are constantly in process. Therefore, the factory should be consulted for the most recent information and for any special characteristics not described or specified.

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