Bay Linear

Inspire the Linear Power

Surface Mount Zero Bias Schottky Detector Diodes

B8250 Series

Description

The B-8250 line of zero bias Schottky detector diodes by Bay Linear have been engineered for use in small signal (Pin<-20 dBm) applications at frequencies below 2.0 GHz. The ideal applications are for RF/ID and RF Tags where primary (DC bias) power is not available.

At Bay Linear, our commitment to quality components gives our customers a reliable second source of products, which are tested at a more stringent level than our competitors. Manufacturing techniques assure that when two diodes are mounted into a single package they are taken from adjacent sites on the wafer.

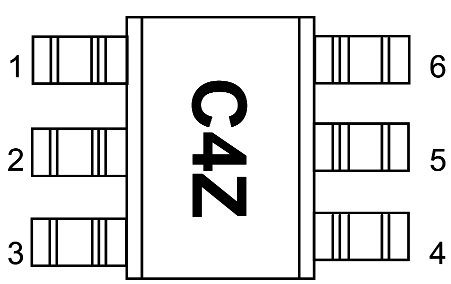
In cross referenced parts, we guarantee pin to pin compatibility. The various package configurations available provide a low cost solution to a wide variety of design problems.

Features

- **Surface Mount SOT-23 3 Pin Packages**
- **SOT-143 Packages 4 Pin Packages**
- **Miniature SOT-323/363 3 pin and 6 pin**
- **High Detection Sensitivity: up to 50mV/µW at 915 MHz**
- **Low Flicker Noise: -165 dBV/Hz at 100Hz**
- **Low reverse leakage**
- **Matched Diodes**
- **High Thermal Conductivity for greater Power**

Pin Connection

Pin Connections and Package Marking



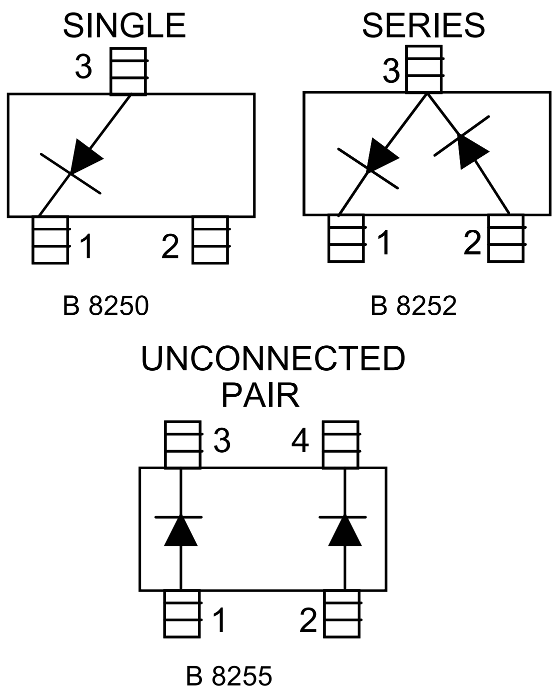
Notes:

1. Package marking provides orientation and identification
2. See "Electrical Specifications" for appropriate package marking

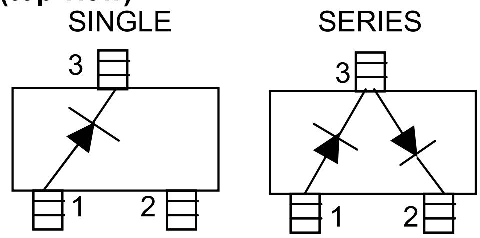
Ordering Information

Package	Part No.
SOT-26	B850XK6 -X.X

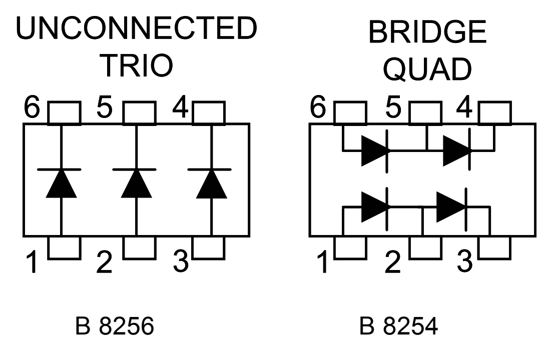
SOT-23/SOT-143 Package Lead Code Identification (top view)



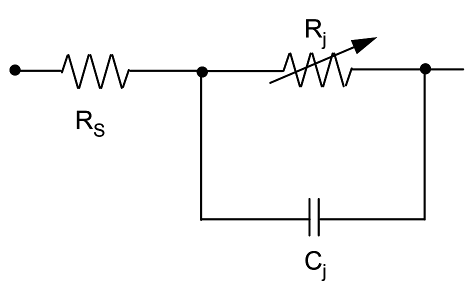
SOT-323 Package Lead Code Identification (top view)



SOT-23 Package 6 Lead Code Identification (top view)



Equivalent Linear Circuit Model



RS=series resistance (see Table of SPICE parameters)
CJ = junction capacitance (see Table of SPICE parameters)
RJ = 8.33 X 10-5nT

where
Ib = externally applied bias current in amps
Is = saturation current (see table of SPICE parameters)
T = temperature, °K
n = ideality factor (see table of SPICE parameters)

SPICE PARAMETER

Parameter	Units	B 825X
B_V	V	5.0
C_{JO}	pF	0.175
E_G	eV	0.68
I_{BV}	A	2.9 E-4
I_S	A	2.9 E-6
N		1.03
R_S	Ω	26
P_B (V_J)	V	0.350
P_T(XT1)		1.95
M		0.49

Absolute Maximum Ratings

Parameter	Symbol	SOT-23/143	SOT-323	Units
Peak Inverse Voltage	P_{IV}	2.0	2.0	V
Junction Temperature	T_J	150	150	°C
Storage Temperature	T_{STG}	-65 to 150	-65 to 150	°C
Operating Temperature	T_{NP}	-65 to 150	-65 to 150	°C
Thermal Resistance[2]	θjc	500	150	°C/W

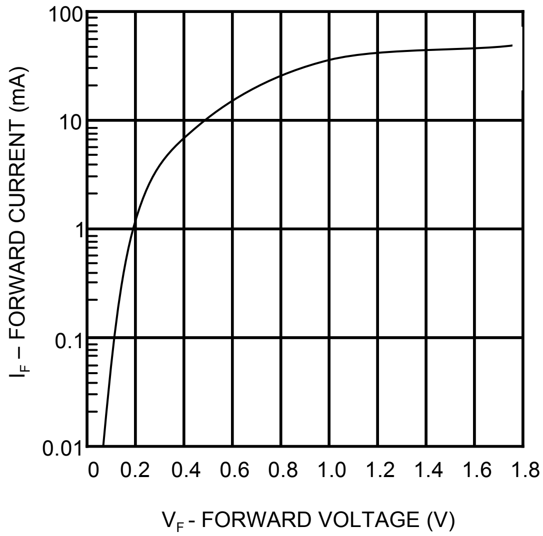
DC Electrical Specifications (T_C = 25°C, Single Diode)

Part No.	Package Marking	Configuration	Maximum Forward Voltage VF (mV)		Typical Capacitance CT (pF)
8250 8251 8252 8253 8254 8255 8256	C0 C1 C2 C3 C4 C5 C6	Single Single Series Pair[2,3] Series Pair[2,3] Bridge Quad Unconnected Pair[2,3] Unconnected Trio	150	250	0.30
Test Conditions			I_F=0.1 mA	IF=1.0 mA	V_F=-0.5V to -1.0V F=1 MHz

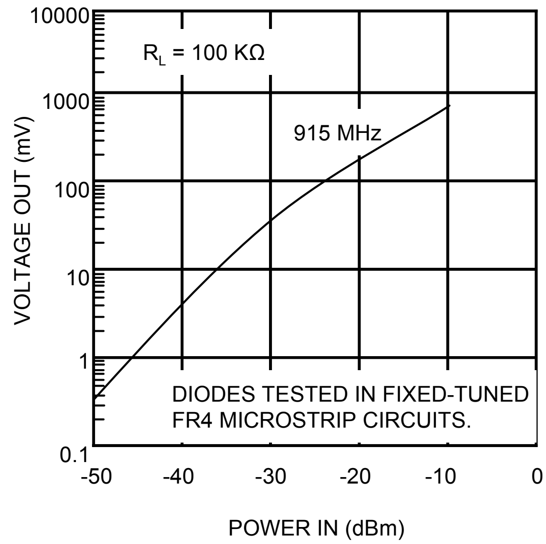
DC Electrical Specifications, TC = +25°C, Diode Pairs

Part Number	Maximum Forward Voltage Difference ΔVF (mV)	Maximum Capacitance Difference ΔCT (pF)
8252 8253	15	-0.5
Test Conditions	I_F = 0.1mA	V_F = -0.5V to -1.0 V F = 1 MHz

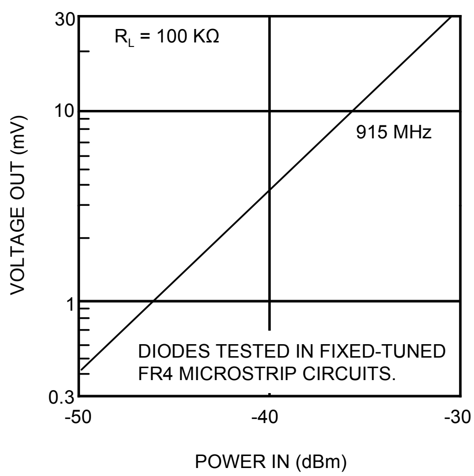
Notes:
1. Operation in excess of any one of these conditions may result in permanent damage to the device
2. TC = +25°C, where TC is defined to be the temperature at the package pins where contact is made to the circuit board



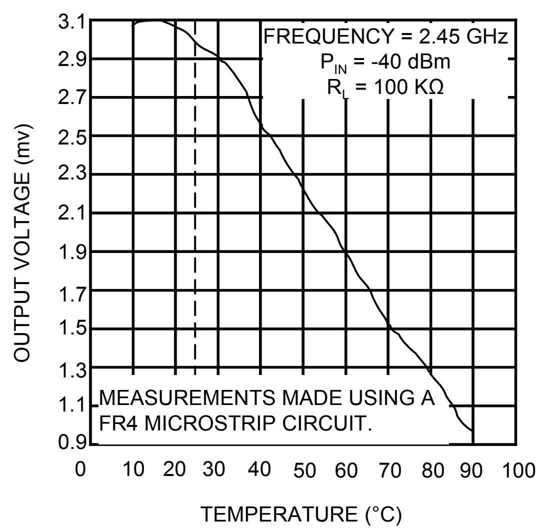
Graph 1: Typical Forward Current vs. Forward Voltage



Graph 2: +25°C Output Voltage vs. Input Power at Zero Bias



Graph 3: +25°C Expanded Output Voltage vs. Input Power. See Figure 2.



Graph 4: +25°C Output Voltage vs. Temperature.