

**Description**

The B-839x series is optimized for switching applications where low resistance at low current and low capacitance are required. The B-849x series products feature ultra low parasitic inductance. These products are specifically designed for use at frequencies which are much higher than the upper limit for conventional PIN diodes.

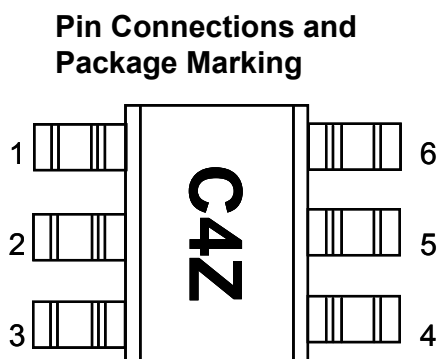
At Bay Linear, our commitment to quality components gives our customers a reliable source of RF products, which are tested at a more stringent level than our competitors. Manufacturing techniques assure that when two diodes are mounted into a single package they are taken from adjacent sites on the wafer.

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**

- **Unique Configurations in Surface Mount**
- **Add Flexibility**
- **Save Board Space**
- **Reduce Cost**
- **Switching**
- **Low Capacitance**
- **Low Resistance at Low Current**
- **Low Failure in Time (FIT) Rate**
- **Matched Diodes**
- **High Thermal Conductivity for greater Power**

**Pin Connection**

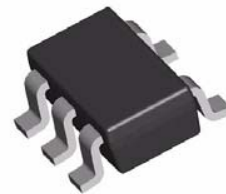


Notes:

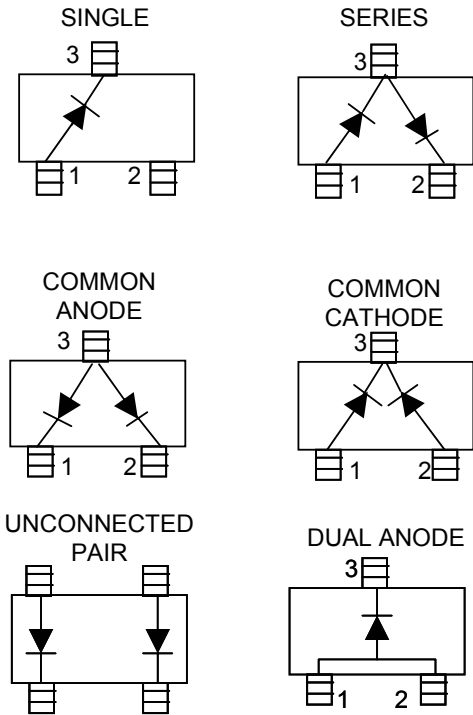
1. Package marking provides orientation and identification
2. See "Electrical Specifications" for appropriate package marking

**Ordering Information**

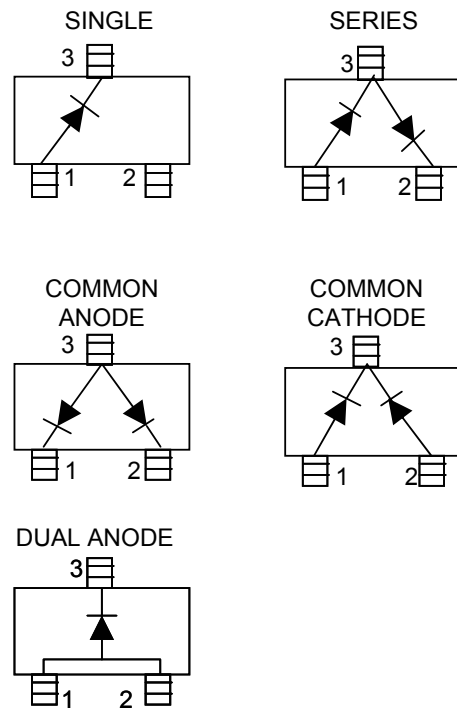
Package	Part No.
SOT-26	B839XK6 -X.X



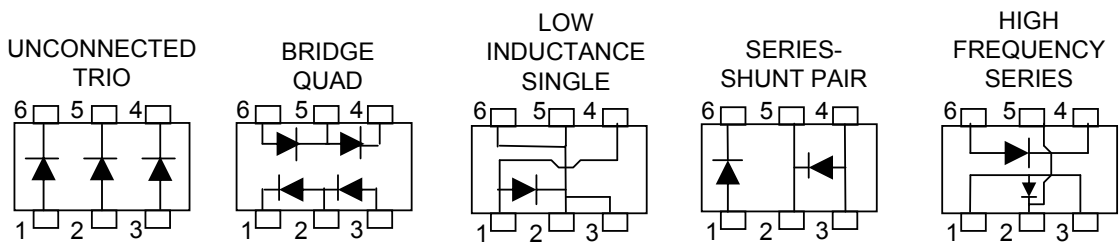
**SOT-23/SOT-143 Package  
Lead Code Identification (top view)**



**SOT-323 Package Lead  
Code Identification (top view)**



**SOT-363 Package 6 Lead  
Code Identification (top view)**



## Absolute Maximum Ratings

Parameter	Symbol	SOT-23/143	SOT-323	Units
Peak Inverse Voltage	$P_{IV}$	100	100	V
Junction Temperature	$T_J$	150	150	°C
Storage Temperature	$T_{STG}$	-65 to 150	-65 to 150	°C
Forward Current (1us puls)	$I_F$	1	1	Amp
Thermal Resistance[2]	$\theta_{jc}$	500	150	°C/W

## DC Electrical Specifications ( $T_C = 25^\circ\text{C}$ , Single Diode)

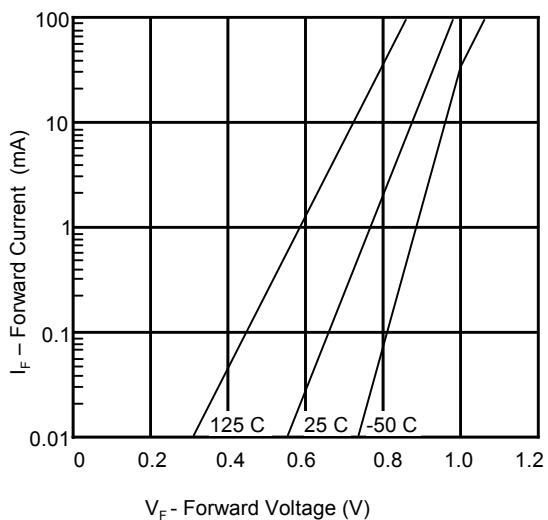
Part No.	Package Marking	Configuration	Maximum Forward Voltage VF (mV)	Typical Capacitance CT (pF)
8390 8392 8393 8394 8395 8391 8396 8397 8398 839A 839B 839C 839D 839E		Single Series Common Anode Common Cathode Unconnected Pair Single Series Common Anode Common Cathode Unconnected Trio Dual Switch Mode Low Inductance Single Series Shunt Pair High Frequency Series	100      2.5	0.30
Test Conditions			$V_R = V_{BR}$ $I_F = 5\text{mA}$ $f = 100\text{ MHz}$  Measure $I_R < 10\mu\text{A}$	$V_F = 5\text{Volt}$ $F = 1\text{ MHz}$

## Typical Parameter, $T_C = +25^\circ\text{C}$ ,

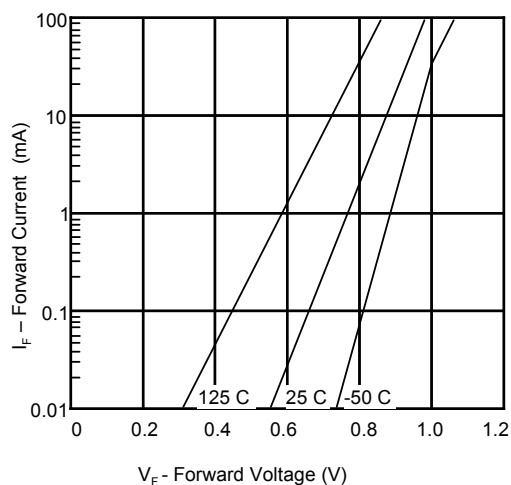
Part Number	Series Resistance $R_s$	Carrier Lifetime $t$ (ns)	Total Capacitance $C_T$ (pF)
839X	3.8	200	0.2 @5Volt
Test Conditions	$I_F = 1.0\text{ mA}$ $f = 100\text{ MHz}$	$I_F = 10\text{ mA}$ $I_R = 6\text{ mA}$	

## High Frequency (Low Inductance, 500 MHz – 3GHz) PIN Diodes

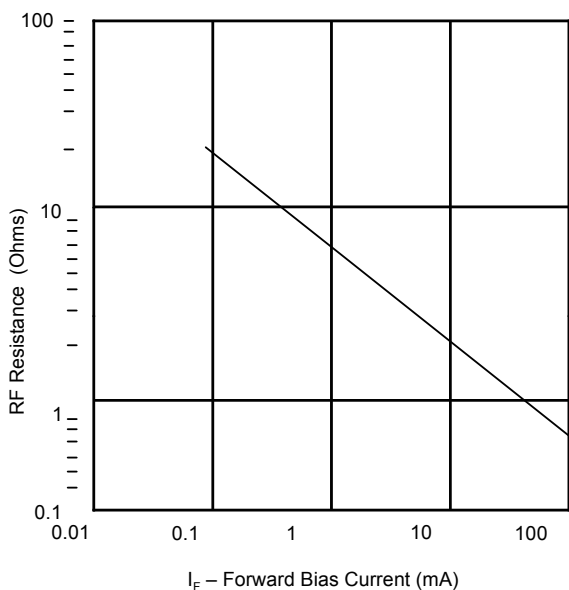
Part No.	Config.	Min. B.Voltage VBR (V)	Max. Series Resistance $R_s$	Typical Capacitance CT (pF)	Max. Capacitance CT (pF)	Typical Inductance LT (pF)
849X	Dual Anode	100	2.5	0.33	0.375	1.0
Test Conditions		$V_R = V_{BR}$ $I_R < 10\mu\text{A}$	$I_F = 5\text{mA}$	$V_R = 5\text{V}$ $f = 1\text{ MHz}$	$V_R = 5\text{V}$ $f = 1\text{ MHz}$	$f = 500\text{ MHz}$ $3\text{GHz}$



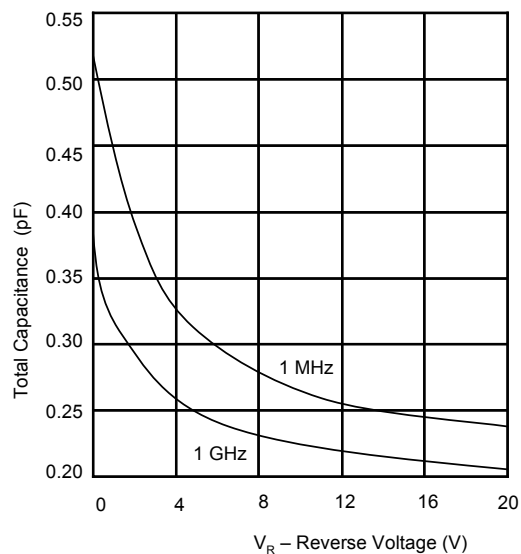
**Graph 1: Typical Forward Current vs. Forward Voltage**



**Graph 1: Typical Forward Current vs. Forward Voltage**



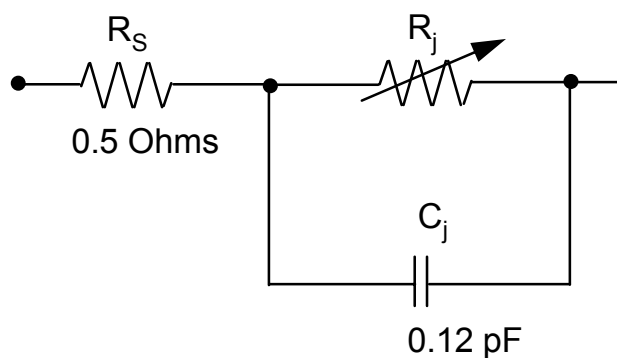
**Graph 3: Total RF Resistance at 25 C vs. Forward Bias Current.**



**Graph 4: Capacitance vs. Reverse Voltage**

### Cross Reference

Bay Part Number	Agilent Part Number
B8390	HSMP3890
B8391	HSMP 389B
B8392	HSMP 3892
B8393	HSMP 3893
B8394	HSMP 3894
B8395	HSMP 3895
B8396	HSMP 389C
B8397	HSMP 389E
B8398	HSMP 389F
B839A	HSMP 389L
B839B	HSMP 389R
B839C	HSMP 389T
B839D	HSMP 389U
B839E	HSMP 389V
B8490	HSMP 4890
B849A	HSMP 489B



$$R_T = 0.5 + R_J$$

$$C_T = C_P + C_J$$

$$R_J = 20 I_b^{1.49} \text{ Ohms}$$

where

$I$  = Forward Bias Current in mA

**Advance Information-** These data sheets contain descriptions of products that are in development. The specifications are based on the engineering calculations, computer simulations and/ or initial prototype evaluation.

**Preliminary Information-** These data sheets contain minimum and maximum specifications that are based on the initial device characterizations. These limits are subject to change upon the completion of the full characterization over the specified temperature and supply voltage ranges.

The application circuit examples are only to explain the representative applications of the devices and are not intended to guarantee any circuit design or permit any industrial property right to other rights to execute. Bay Linear takes no responsibility for any problems related to any industrial property right resulting from the use of the contents shown in the data book. Typical parameters can and do vary in different applications. Customer's technical experts must validate all operating parameters including " Typical" for each customer application.

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#### **LIFE SUPPORT AND NUCLEAR POLICY**

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Bay Linear products are not authorized for and should not be used within life support systems which are intended for surgical implants into the body to support or sustain life, in aircraft, space equipment, submarine, or nuclear facility applications without the specific written consent of Bay Linear President.

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