

# Hyperabrupt Junction Tuning Varactor



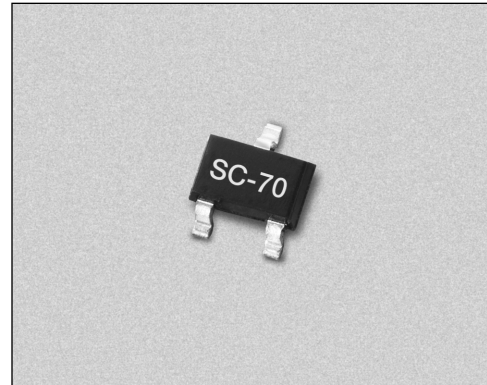
SMV1269-074

## Features

- High Capacitance Ratio
- Ultra Small Size SC-70 Package
- Designed for High Volume, Low Cost Battery Applications
- Available in Tape and Reel Packaging

## Description

The SMV1269-074 is a dual silicon hyperabrupt junction varactor diode in a common cathode configuration specifically designed for battery operation. The specified high capacitance ratio and low  $R_S$  of this varactor make it appropriate for low noise VCOs used at frequencies in wireless systems to beyond 2.5 GHz. Applications include low noise and wideband UHF and VHF VCO for GSM, PCS, CDMA and analog phones.



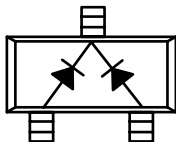
## Absolute Maximum Ratings

Characteristic	Value
Forward Current ( $I_F$ )	20 mA
Power Dissipation ( $P_D$ )	250 mW
Storage Temperature ( $T_{ST}$ )	-55°C to +150°C
Operating Temperature ( $T_{OP}$ )	-55°C to +125°C

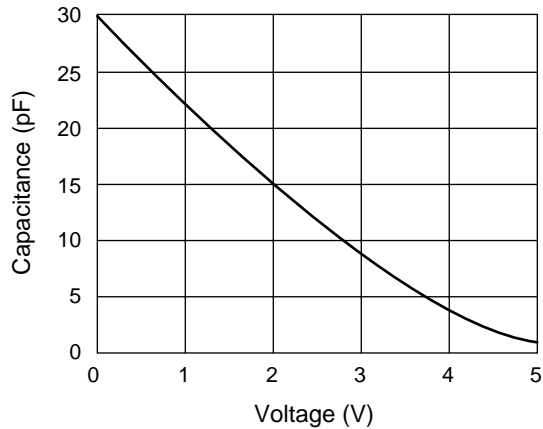
## Electrical Specifications at 25°C

Parameter	Condition	Min.	Typ.	Max.	Unit
Reverse Current ( $I_R$ )	$V_R = 8\text{ V}$			20.0	nA
Capacitance ( $C_T$ )	$C_T @ 0.5\text{ V}, V_R = 0.5\text{ V}, F = 1\text{ MHz}$	19.2	20.5	21.8	pF
Capacitance ( $C_T$ )	$C_T @ 2.5\text{ V}, V_R = 2.5\text{ V}, F = 1\text{ MHz}$	6.5	7.3	8.1	pF
Capacitance Ratio ( $C_{TR}$ )	$C_T (0.5\text{ V})/C_T (2.5\text{ V})$	2.5	2.8		
Series Resistance ( $R_S$ )	$V_R = 1\text{ V}, F = 900\text{ MHz}$		0.6	0.8	$\Omega$
Breakdown Voltage ( $V_{BR}$ )	$I_R = 10\ \mu\text{A}$	10.0			V

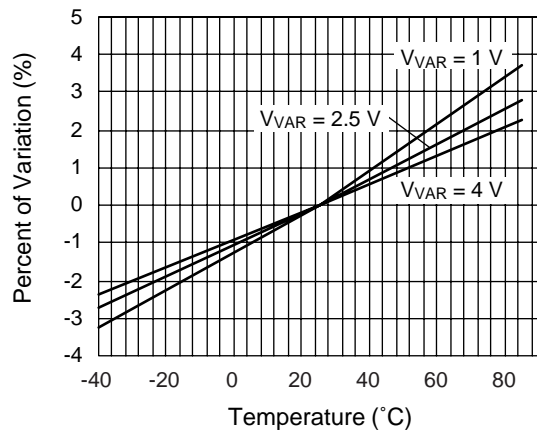
## Common Cathode Configuration



Typical Performance Data



Alpha Varactor (SMV1269-074)

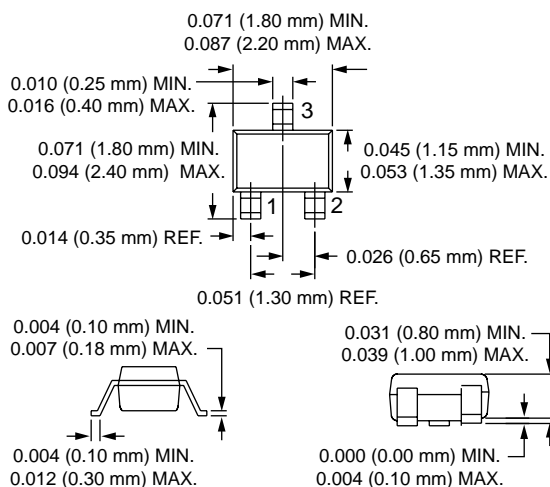


Relative Capacitance Change vs. Temperature

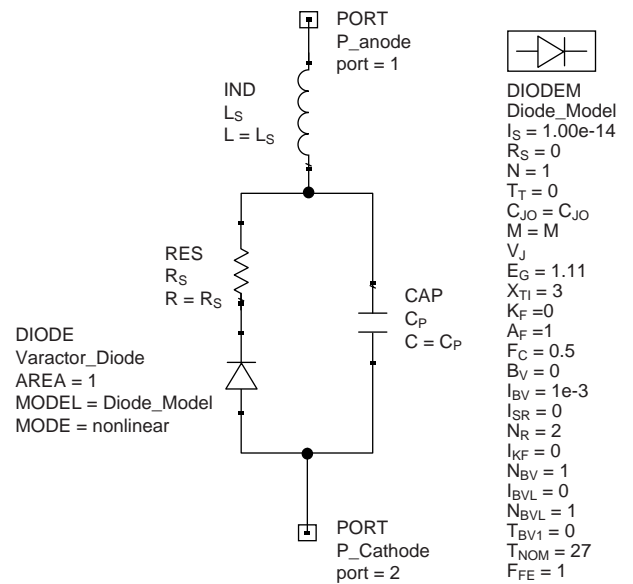
Capacitance vs. Voltage

V <sub>R</sub> (V)	C <sub>T</sub> (pF)
0	29.0
0.2	25.3
0.4	22.4
0.6	20.1
0.8	18.0
1.0	16.2
1.2	14.6
1.4	13.2
1.6	11.9
1.8	10.7
2.0	9.6
2.2	8.7
2.4	7.8
2.6	7.0
2.8	6.3
3.0	5.7
3.2	5.2
3.4	4.8
3.6	4.4
3.8	4.1
4.0	3.9
4.2	3.7
4.4	3.5
4.6	3.3
4.8	3.2
5.0	3.1

SC-70



SPICE Model



Part Number	C <sub>JO</sub> (pF)	V <sub>J</sub> (V)	M	C <sub>P</sub> (pF)	R <sub>S</sub> (Ω)	L <sub>S</sub> (nH)
SMV1269-074	28.5	6.3	4.2	0.5	0.6	1.4

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