

DATA SHEET

SMV1130 Series: Hyperabrupt Junction Tuning Varactor

Features

- High tuning ratio
- Low series resistance
- SC-79 and SOT-23 packages
- Designed for high-volume, low-cost applications
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020



Description

The SMV1130 is a surface mount varactor diode offered in the SC-79 and SOT-23 plastic packages. This varactor is designed for very high capacitance tuning ratio while having low series resistance, which makes these devices especially attractive for wideband VCO applications.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Absolute Maximum Ratings



Characteristic	Value
Reverse voltage (V_R)	26 V
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


Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: *Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.*

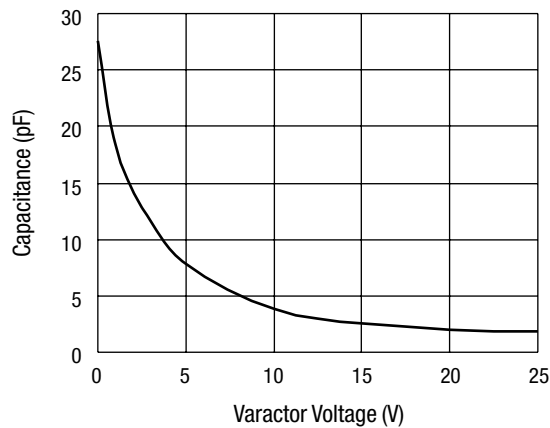
Operating Characteristics at 25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse current	I_R	$V_R = 21\text{ V}$			20	nA
Capacitance	C_{T1}	$V_R = 1\text{ V}, F = 1\text{ MHz}$	17.4		21.2	pF
Capacitance ratio	C_{T1}/C_{T3}	$C_T(1\text{ V})/C_T(3\text{ V})$	1.47		1.76	
Capacitance ratio	C_{T1}/C_{T9}	$C_T(1\text{ V})/C_T(9\text{ V})$	3.7		4.5	
Series resistance	R_S	$V_R = 1\text{ V}, F = 500\text{ MHz}$			0.8	Ω
Breakdown voltage	V_B	$I_R = 10\ \mu\text{A}$	26			V

	
Single	Single
SC-79	SOT-23
SMV1130-079 Marking: Cathode	
SMV1130-079LF Marking: Cathode	SMV1130-001LF Marking: HW1
$L_S = 0.7\text{ nH}$	$L_S = 1.5\text{ nH}$

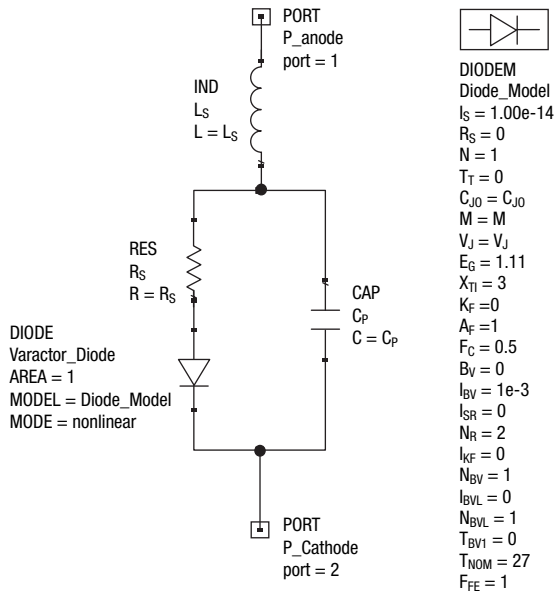
 LF denotes lead (Pb)-free, RoHS-compliant packaging option as an alternative to our standard tin/lead (Sn/Pb) packaging.

Typical Performance Data



Capacitance vs. Voltage

SPICE Model



Part Number	C_{JO} (pF)	V_J (V)	M	C_P (pF)	R_S (Ω)	L_S (nH)
SMV1130-079	25.8	10	3.7	1.8	0.8	0.7

Recommended Solder Reflow Profiles

Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

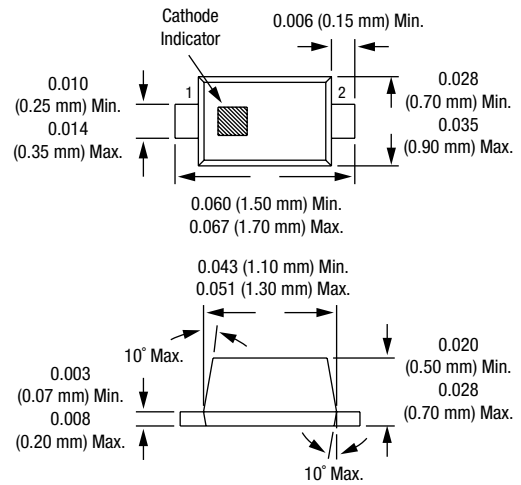
Tape and Reel Information

Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

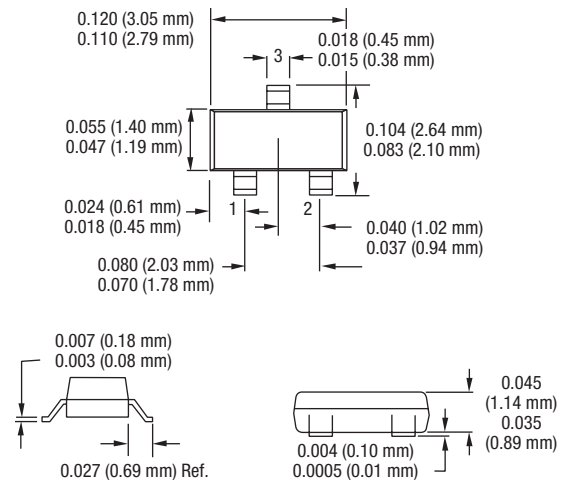
Capacitance vs. Voltage

V_R (V)	C_T (pF)
0	27.6
1	18.5
2.5	12.8
5	7.9
10	3.8
15	2.6
20	2
25	1.8

SC-79



SOT-23



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