

Surface Mount Hyperabrupt Varactors

Rev. V3

Features

- · Surface Mount Packages
- · High Quality Factor
- Capacitance Ratio to 9.5:1
- Tape and Reel Packaging Available
- SPC Monitored Ion Implantation for Excellent
- C-V Repeatability
- Singles and Common Cathode Pairs
- Lead-Free
- RoHS* Compliant

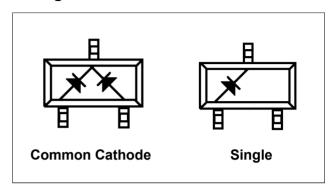
Description

The MAVR-000400 series are ion-implanted, hyperabrupt junction, silicon tuning varactors in the SOT-23 surface mount package. These thermal oxide passivated diodes feature high capacitance ratio and quality factor. They are well suited for octave bandwidth tuning in the HF to UHF frequency bands. The standard capacitance tolerance is ±10%, with tighter tolerances available. Capacitance matching at one or more bias voltages is also available. These diodes are supplied with 100% matte Sn plating.

Applications

The MAVR-000400 series tuning varactors are useful for octave bandwidth tuning applications in the HF through UHF ranges. Applications include VCOs and voltage tuned filters in radios, cable TV tuners and test instruments where low cost and excellent lot-to-lot repeatability are critical. Linear tuning performance is available from 3 to 8 volts.

Configurations



RoHS Compliant Parts¹

RoHS Compliant Part Number	Configuration		
MAVR-000401-0287AT	Single		
MAVR-000403-0287AT	Single		
MAVR-000404-0287AT	Single		
MAVR-000405-0287AT	Single		
MAVR-000407-0287AT	Single		
MAVR-000409-0287AT	Single		
MAVR-000401-0287FT	Common Cathode		
MAVR-000403-0287FT	Common Cathode		
MAVR-000404-0287FT	Common Cathode		
MAVR-000405-0287FT	Common Cathode		
MAVR-000407-0287FT	Common Cathode		
MAVR-000409-0287FT	Common Cathode		

Suffix refers to package style, configuration and packaging requirements. Other packages and configurations may be available upon request.

^{*} Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.



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Electrical Specifications @ $T_A = +25$ °C

Breakdown Voltage @ I_R = 10 μ A, V_b = 22 V Minimum Reverse Leakage Current @ V_R = 20V, I_R = 100 nA Maximum

	C _T ³ (pF) f = 1 MHz, V _R = 4 V			Capacitance Ratio	Q Factor
RoHS Compliant Part No. Base ²				CT2 / CT20	f = 50 MHz V _R = 4 V
	Min.	Nom.	Max.	Тур.	Min.
MAVR-000401-0287AT	9.0	10.0	11.0	6	250
MAVR-000403-0287AT	13.5	15.0	16.5	7	250
MAVR-000404-0287AT	16.2	18.0	19.8	7	175
MAVR-000405-0287AT	19.8	22.0	24.2	7.5	175
MAVR-000407-0287AT	29.7	33.0	36.3	9	150
MAVR-000409-0287AT	42.3	47.0	51.7	9.5	150
MAVR-000401-0287FT	9.0	10.0	11.0	6	250
MAVR-000403-0287FT	13.5	15.0	16.5	7	250
MAVR-000404-0287FT	16.2	18.0	19.8	7	175
MAVR-000405-0287FT	19.8	22.0	24.2	7.5	175
MAVR-000407-0287FT	29.7	33.0	36.3	9	150
MAVR-000409-0287FT	42.3	47.0	51.7	9.5	150

^{2.} The suffix defines package style, configuration and packaging information. Contact representative for complete part identification.

Absolute Maximum Ratings^{4,5}

@ T_A = +25°C (Unless Otherwise Noted)

Parameter	Absolute Maximum		
Reverse Voltage	22 V		
Forward Current	50 mA		
Total Power Dissipation	250 mW		
Operating Temperature	-55°C to +125°C		
Storage Temperature	-55°C to +125°C		

Operation of this device above any one of these parameters may cause permanent damage.

^{3.} Capacitance specification is per diode

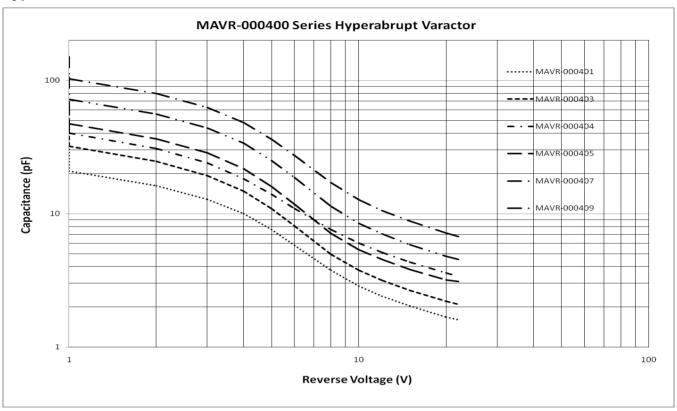
Please refer to application note M538 for surface mounting instructions.



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Typical Performance Curves



Bias (V)	MAVR-000401	MAVR-000403	MAVR-000404	MAVR-000405	MAVR-000407	MAVR-000409
0	30.37	47.05	59.64	69.45	105.60	150.59
1	20.86	32.12	40.43	47.47	72.34	103.10
2	16.19	24.72	30.89	36.55	55.93	79.70
3	12.83	19.33	24.00	28.57	44.02	62.79
4	9.99	14.74	18.35	21.73	33.85	48.45
5	7.59	10.90	13.95	15.95	25.13	36.27
6	5.80	8.08	10.94	11.73	18.64	27.26
8	3.76	4.96	7.61	7.11	11.37	17.11
10	2.86	3.76	6.00	5.37	8.45	12.73
12	2.41	3.17	5.12	4.53	7.05	10.58
15	2.03	2.66	4.33	3.81	5.87	8.79
20	1.68	2.21	3.60	3.18	4.81	7.17
22	1.60	2.09	3.39	3.11	4.53	6.75



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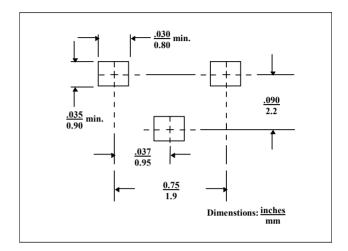
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Mounting Information

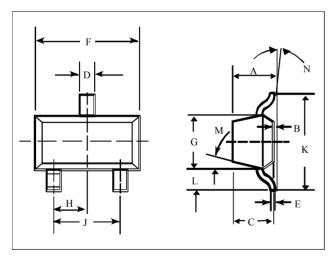
The illustration indicates the recommended mounting pad configuration for the SOT-23 package. Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275°C and the body temperature does not exceed +260°C, using RoHS compliant solders

Please refer to Application Note M538 for surface mounting instructions.

SOT-23



SOT-23 (Case Style 287)



SOT-23 (Case Style 287)

DIM.	INC	HES	MILLIMETERS		
DIWI.	MIN.	MAX.	MIN.	MAX.	
Α	_	0.048		1.22	
В	_	0.008	_	0.20	
С	_	0.040	_	1.00	
D	0.013	0.020	0.35	0.50	
E	0.003	0.006	0.08	0.15	
F	0.110	0.119	2.80	3.00	
G	0.047	0.056	1.20	1.40	
Н	0.037 typical		0.95 typical		
J	0.075 typical		1.90 t	ypical	
K	_	0.103	_	2.60	
L	_	0.024	_	0.60	
DIM.	OIM. GRADIENT				
М	10° max.				
N	2°30°				



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