High Q Hyperabrupt Tuning Varactors

MA4ST550 Series

V3.00

Features

- High Q
- Usable Capacitance Change of 7:1
- Low Reverse Leakage for Good Post Tuning Drift Characteristics
- Reproducible C-V Curves

Description

The MA4ST550 family of high Q Silicon Hyperabrupt Tuning Varactors is available in a series of low parasitic capacitance microwave packages or in chip form. The MA4ST550 series of diodes is available with junction capacitances of approximately 0.8 pF to 8.2 pF at -4 volts. These diodes have capacitance change ratios as high as 7:1.

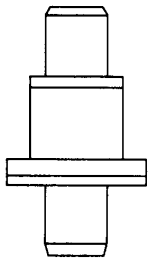
Applications

The MA4ST550 series is appropriate for use in VCOs with frequencies within the range of approximately 1-14 GHz where a large capacitance change is required. These diodes are suited for VCOs in missile seekers, telecommunication systems and electronic warfare systems with critical post tuning drift specifications.

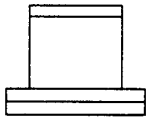
Environmental Performance

All tuning varactors in ceramic packages are capable of meeting the performance tests dictated by the methods and procedures of the latest revisions of MIL-S-19500, MIL-STD-202 and MIL-STD-750 which specify mechanical, electrical, thermal and other environmental tests common to semiconductor products.

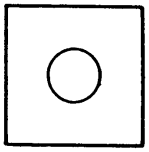
Case Styles



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134

Absolute Maximum Ratings at 25°C

Parameter	Absolute Maximum
Reverse Voltage	Same as Breakdown Voltage
Operating Temperature	- 65°C to +150°C
Storage Temperature	- 65°C to +200°C
Temperature Coefficient	400 ppm/°C at -4 Volts

Electrical Specifications at 25°C

Breakdown Voltage = 22 Volts Minimum @ 10 Microamps

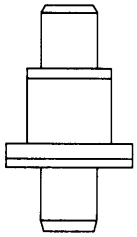
Reverse Current = 50 nAmps Maximum @ 20 Volts and 25°C

Model Number	Case[1] Style	Total Capacitance[2,3] @ - 4V (pF) Min./Max.	Total Capacitance[2,3] @ - 20V (pF) Min./Max.	Typical @ - 4 Volts 50 MHz
MA4ST551	30	0.72-0.88	0.30-0.38	650
MA4ST552	30	0.90-1.10	0.34-0.42	650
MA4ST553	30	1.08-1.32	0.38-0.48	600
MA4ST554	30	1.35-1.65	0.43-0.58	600
MA4ST555	30	1.62-1.98	0.51-0.68	550
MA4ST556	30	1.98-2.42	0.58-0.78	550
MA4ST557	30	2.43-2.97	0.68-0.88	500
MA4ST558	30	2.97-3.63	0.82-1.02	500
MA4ST559	30	3.51-4.29	0.93-1.18	450
MA4ST560	30	4.23-5.16	1.13-1.43	450
MA4ST561	30	5.04-6.16	1.33-1.63	450
MA4ST562	30	6.12-7.48	1.58-1.98	400
MA4ST563	30	7.38-9.02	1.88-2.38	400

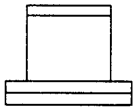
Notes:

1. The standard case style is 30. Other packages and chips shown at the bottom of this page are available. When ordering, specify the desired case style by adding the case designation as a suffix to the model number, i.e. MA4ST552-134 is a 15 X 15 mil chip diode. See appendix for complete dimensions.
2. Capacitance is measured at 1 MHz.
3. The total capacitance values shown are for devices housed in case style 30. Other case styles will result in different values due to different case parasitics. Case parasitics (C_P and L_S) are given for available case styles along with the outline drawings in the appendix.

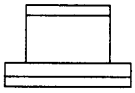
Case Styles



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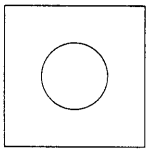
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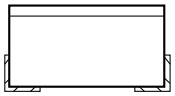
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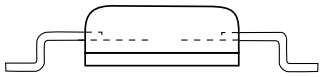
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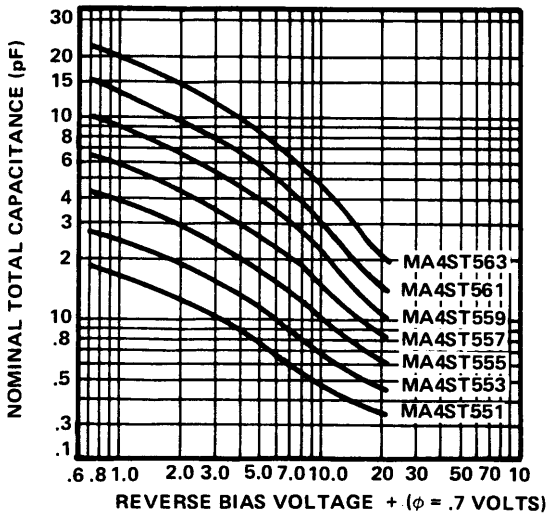


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Typical Performance Curves

CAPACITANCE vs REVERSE BIAS VOLTAGE (CASE STYLE 30)



CAPACITANCE vs REVERSE BIAS VOLTAGE (CHIPS)

