

# Surface Mount Abrupt Tuning Varactors

## MA45430 Series

V3.00

### Features

- Surface Mount Package
- Low Cost
- High Quality Factor
- Tape and Reel Packaging Available
- SPC Controlled Process for Superior C-V Repeatability
- Available as Singles and Common Cathode Pairs

### Description

The MA45430 series are abrupt 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 tuning in the HF to UHF frequency bands. The standard capacitance tolerance is  $\pm 10\%$ , with tighter tolerances available. Capacitance matching at one or more bias voltages is also available.

### Applications

The MA45430 series tuning varactor is useful for 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.

### Ordering Information

The part numbers shown are for single diodes. When ordering diodes in common cathode pairs add suffix "CK." For example, MA45436CK specifies model number MA45436 as a common cathode pair. To order parts on tape and reel add suffix T/R to the end of the part number. i.e. MA45436CK - T/R.

### Mounting Information

The diagram below indicates the recommended mounting pad configuration for the SOT-23 package. Solder paste containing flux should be screened onto the pads to a thickness of 0.005 inches. The SOT-23 device is placed in position, firmly adhering to the solder paste.

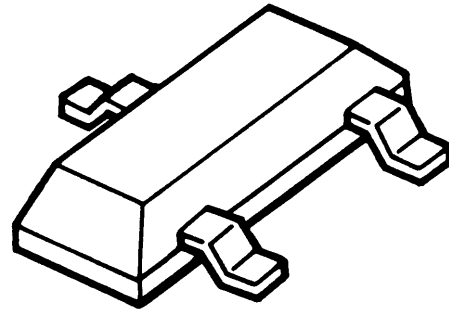
Permanent attachment is performed by a reflow soldering procedure. The tab temperature must not exceed 275°C and the body temperature must not exceed 250°C.

Specifications Subject to Change Without Notice.

### M/A-COM, Inc.

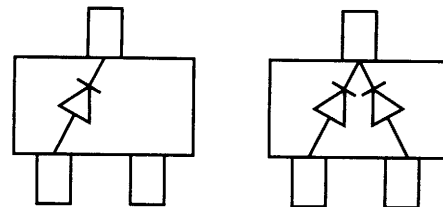
North America: Tel. (800) 366-2266 ■ Asia/Pacific: Tel. +81 3 3263 8761 ■ Europe: Tel. +44 (1344) 869 595  
 Fax (800) 618-8883 Fax +81 3 3263 8769 Fax +44 (1344) 300 020

### SOT-23



### Configurations

TOP VIEW



(SINGLE)

(COMMON CATHODE PAIR)

### Absolute Maximum Ratings at 25°C

Parameter	Absolute Maximum
Reverse Voltage	30 V
Forward Current	50 mA
Total Power Dissipation <sup>1</sup>	250 mW
Junction Operating Temperature	-55°C to +150°C
Storage Temperature	-55°C to +150°C

Note:

1. At 25°C case temperature. Derate linearly to 0 mW at 150°C.

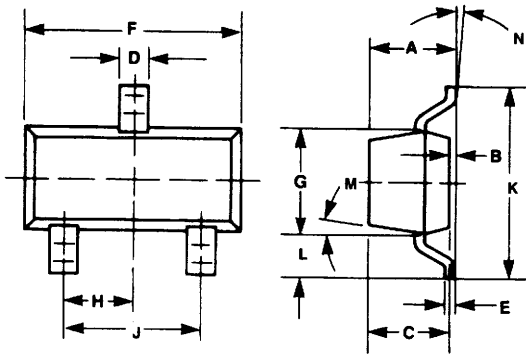
**Electrical Specifications @ 25°C**

Minimum Breakdown Voltage ( $V_B$ ) = 30 Volts at 10 $\mu$ A  
 Maximum Reverse Current ( $I_R$ ) = 100 nA at 24 Volts  
 Lower capacitance values available upon request

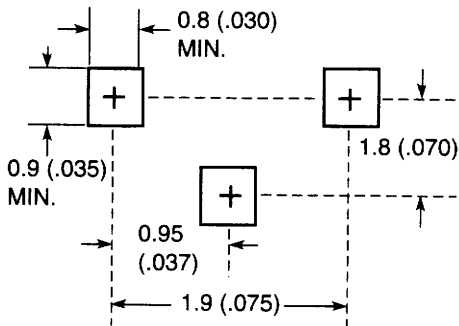
Model Number	Total Capacitance $C_{T4} \pm 10\%$ (pF)	Minimum Capacitance Ratio $C_{T0}/C_{T30}$	Minimum Q
MA45436	4.7	4.5	1800
MA45437	5.6	4.5	1700
MA45438	6.8	4.5	1600
MA45439	8.2	4.5	1500
MA45440	10.0	4.5	1300
MA45441	12.0	4.6	1200
MA45444*	22.0	4.6	1000
MA45445*	27.0	4.7	900
MA45446*	33.0	4.7	750
MA45448*	47.0	4.7	400
Test Conditions	$V_R = 4$ V $f = 1$ MHz	$V_R = 0/30$ V $f = 1$ MHz	$V_R = 4$ V $f = 50$ MHz

\* Available as single diodes only.

**Case Style  
SOT-23 (High Profile)**

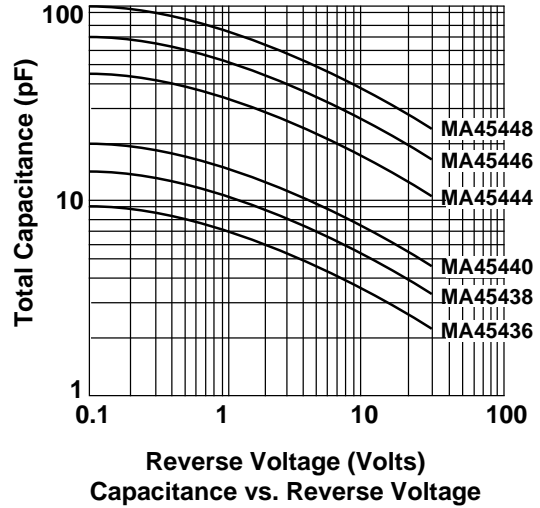


**DIMENSIONS MILLIMETERS (INCHES)**



**Typical Performance Curve**

CAPACITANCE vs REVERSE VOLTAGE



DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	—	0.048	—	1.22
B	—	0.008	—	0.20
C	—	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
H	0.037 typical		0.95 typical	
J	0.075 typical		1.90 typical	
K		0.103		2.60
L		0.024		0.60

DIM.	GRADIENT
M	10° max. <sup>1</sup>
N	2°...30°

Note:  
1. Applicable on all sides

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