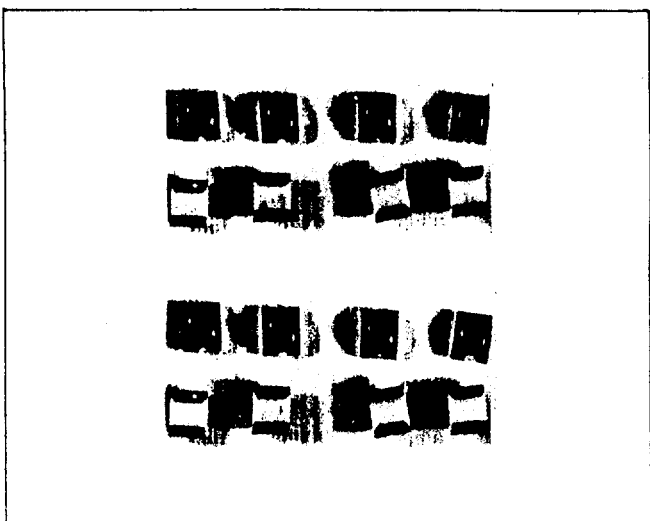


# SURFACE MOUNT TUNING DIODES

Series  
 1M1401 - 1M1412  
 1M6520 - 1M6525  
 1M5461A-1M5476A

Many popular axial leaded glass packaged tuning diode types are now available in the MSI 1M Case for surface mount assemblies. The tuning diode chips, mounted on high density alumina substrates, are epoxy coated to provide reliable operating performance in equipments ranging from mobile radios to cellular telephones. The cathode is readily distinguished from the anode by the white dot on the epoxy side and by the hexagon shape of the gold plated contact on the mounting side of the 1M Case.

Tuning Diode types not listed here may be ordered in the MSI 1M Case by replacing the two character prefix of the JEDEC or other type number by 1M. For example, to order the DO-7 packaged 1N5139 tuning diode in the 1M Case, specify the 1M5139; to order the MV1404, the 1M1404 is specified and other types are ordered in a similar manner. In some assemblies, the footprint of the 1M Case gold plated wraparound contacts may fit the solder pad layouts of surface mount diodes made by other manufacturers. Tuning diodes to meet special requirements for capacitance, capacitance ratio, Q and reverse voltage ratings will be quoted upon request.



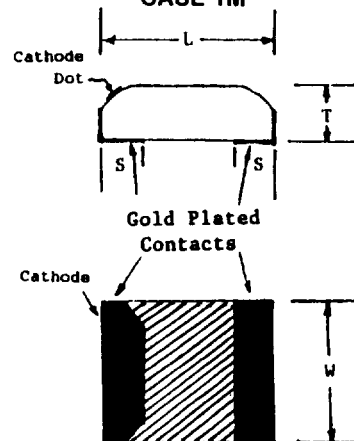
## MORE HYPERABRUPT

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°)

Type No.	Diode Capacitance, C <sub>T</sub> (pf)*						Capacitance Ratio		Q <sub>2</sub> @ 1 MHz
	@ 1V/1MHz			@ 2V/1MHz			C <sub>1</sub> /C <sub>10</sub>	C <sub>2</sub> /C <sub>10</sub>	
	min	nom	max	min	nom	max	min	min	min
1M1412					8	12		10:1	200
1M1411					12	18		10:1	200
1M1410					17	26		10:1	200
1M1409					27	39		10:1	200
1M1408					39	56		10:1	200
1M1407					56	80		10:1	200
1M1406					80	120		10:1	200
1M1404				96	120	144		10:1	200
1M1403				140	175	210		10:1	200
1M1405				200	250	300		10:1	200
1M1402				301	360	432		10:1	200
1M1401	468	550	633				14:1		200
VR (min)	12 Vdc @ IR=10 uAdc								
IR (max)	0.01 uAdc @ VR=10 Vdc								

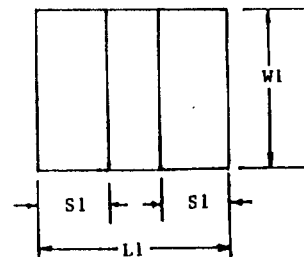
\*To order devices with C<sub>T</sub> Nom. ±10%, add suffix A; for ±5%, add suffix B.

### DIMENSIONAL OUTLINE CASE 1M



Dim	Case 1M			
	Millimeters		Inches	
L	3.15	3.43	0.124	0.135
W	2.41	2.62	0.095	0.103
S	0.69	0.84	0.027	0.033
T	0.91	1.17	0.036	0.046

Dim.	1M Solder Pad Layout			
	Millimeters		Inches	
L1	3.47	3.63	0.136	0.143
W1	2.82	3.07	0.111	0.121
S1	1.14	1.35	0.045	0.053



CASE 1M SOLDER PAD LAYOUT

## SURFACE MOUNT TUNING DIODES

### HYPERABRUPT

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ$ )

Type No.	Diode Cap. C2.5 min/max	CT* (pf) @ C4		C (Volts Bias) / 1 MHz		Capacitance Ratio				Q4 @ 50 MHz min	VR (Vdc) @ IR=10 uA min	IR (nAdc) @ VR=	
		min/max	C8	C20	C4/C8	C4/C20	min	max	10V max			20V max	
1M6520	25.0/29.0	18.0/22.0								80	12	100	
1M6520A		18.0/22.0	7.5/10.5			1.7	2.9			160	15	100	
1M6520B		18.0/22.0	7.5/10.5	3.1/3.9				4.6	7.1	160	22		100
1M6520C		19.0/21.0	7.8/9.2			2.0	2.7			160	15	100	
1M6520D		19.0/21.0	7.8/9.2	3.1/3.9		2.0	2.7	4.0	6.8	160	22		100
1M6522	62.0/72.0	45.0/55.0								65	12	100	
1M6522A		45.0/55.0	18.0/25.0			1.8	2.1			125	15	100	
1M6522B		45.0/55.0	18.0/25.0	7.3/9.2				4.9	7.5	125	22		100
1M6522C		47.5/52.5	18.4/21.6							125	15	100	
1M6522D		47.5/52.5	18.4/21.6	7.3/9.2		2.2	2.8	6.2	6.9	125	22		100
1M6523	135.0/160.0	100.0/120.0								40	12	100	
1M6523A		100.0/120.0	39.0/55.0			1.8	3.1			80	15	100	
1M6523B		100.0/120.0	39.0/55.0	16.0/20.0				5.0	7.5	80	22		100
1M6523C		104.5/115.5	41.4/48.6			2.1	2.8			80	15	100	
1M6523D		104.5/115.5	41.4/48.6	16.0/20.0		2.1	2.8	5.2	7.2	80	22		100
1M6524	195.0/225.0	140.0/170.0								35	12	100	
1M6524A		140.0/170.0	55.0/80.0			1.7	3.8			70	15	100	
1M6524B		140.0/170.0	55.0/80.0	22.5/28.0				5.0	7.6	70	22		100
1M6524C		147.0/163.0	59.8/70.2			2.1	2.8			70	15	100	
1M6524D		147.0/163.0	59.8/70.2	22.5/28.0		2.1	2.8	5.2	7.2	70	22		100
1M6525	250.0/290.0	180.0/220.0								30	12	100	
1M6525A		180.0/220.0	70.0/105			1.7	3.1			60	15	100	
1M6525B		180.0/220.0	70.0/105	29.0/36.0				5.0	7.6	60	22		100
1M6525C		190.0/210.0	78.0/92.0			2.0	2.7			60	15	100	
1M6525D		190.0/210.0	78.0/92.0	29.0/36.0		2.0	2.7	5.3	7.3	60	22		100

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ$ )

### ABRUPT

Diode Cap. CT* C2/C10 @ 4V/1 MHz pf	High Q For Many VHF-UHF Uses				Good Q For Receivers and Synthesizers				Higher 45V VR with Good Q				Popular 60 V Varactor				Solid 65 V High Q Varactors			
	Type No.	Ratio C2/C30	Q4 @ 50 MHz	min	Type No.	Ratio C2/C30	Q4 @ 50 MHz	min	Type No.	Ratio C2/C40	Q4 @ 50 MHz	min	Type No.	Ratio C4/C60	Q4 @ 50 MHz	min	Type No.	Ratio C4/C60	Q4 @ 50 MHz	min
	6.8	1M5461A	2.7/3.1	600		1M5441A	2.5/3.1	450		1M5681A	3.1/3.3	600		1M5139	2.7/2.9	350		1M5696A	2.7/2.9	450
8.2	1M5462A	2.8/3.1	600		1M5442A	2.5/3.1	450		1M5682A	3.1/3.3	600						1M5697A	2.7/2.9	450	
10.0	1M5463A	2.8/3.1	550		1M5443A	2.6/3.1	400		1M5683A	3.2/3.4	550		1M5140	2.8/3.0	300		1M5698A	2.8/3.0	400	
12.0	1M5464A	2.8/3.1	550		1M5444A	2.6/3.1	400		1M5684A	3.2/3.4	550		1M5141	2.8/3.0	300		1M5699A	2.8/3.0	400	
15.0	1M5465A	2.8/3.1	550		1M5445A	2.6/3.1	400		1M5685A	3.2/3.4	550		1M5142	2.8/3.0	250		1M5700A	2.8/3.0	400	
18.0	1M5466A	2.9/3.1	500		1M5446A	2.6/3.1	350		1M5686A	3.2/3.4	500		1M5143	2.8/3.0	250		1M5701A	2.8/3.0	375	
20.0	1M5467A	2.9/3.1	500		1M5447A	2.6/3.1	350						1M5144	3.2/3.4	200		1M5702A	3.2/3.4	375	
22.0	1M5468A	2.9/3.2	500		1M5448A	2.6/3.2	350		1M5687A	3.3/3.5	500									
27.0	1M5469A	2.9/3.2	500		1M5449A	2.6/3.2	350		1M5688A	3.3/3.5	500		1M5145	3.2/3.4	200		1M5703A	3.2/3.4	350	
33.0	1M5470A	2.9/3.2	500		1M5450A	2.6/3.2	300		1M5689A	3.3/3.5	500		1M5146	3.2/3.4	200		1M5704A	3.2/3.4	350	
39.0	1M5471A	2.9/3.2	450		1M5451A	2.6/3.2	300		1M5690A	3.3/3.5	450		1M5147	3.2/3.4	200		1M5705A	3.2/3.4	325	
47.0	1M5472A	2.9/3.2	400		1M5452A	2.6/3.2	250		1M5691A	3.3/3.5	400		1M5148	3.2/3.4	200		1M5706A	3.2/3.4	300	
56.0	1M5473A	2.9/3.3	300		1M5453A	2.6/3.3	200		1M5692A	3.3/3.5	350						1M5707A	3.2/3.4	225	
68.0	1M5474A	2.9/3.3	250		1M5454A	2.7/3.3	175		1M5693A	3.3/3.5	250						1M5708A	3.2/3.4	175	
82.0	1M5475A	2.9/3.3	225		1M5455A	2.7/3.3	175		1M5694A	3.3/3.5	225						1M5709A	3.2/3.4	150	
100.0	1M5476A	2.9/3.3	200		1M5456A	2.7/3.3	175		1M5695A	3.3/3.5	200						1M5710A	3.2/3.4	150	
VR (min)	30 Vdc @ IR=10 uAdc								45 Vdc min @ IR=10 uA				60 Vdc min @ IR=10 uA				65 Vdc min @ IR=10 uA			
IR (max)	0.02 uAdc @ VR=25 Vdc								20 nA max @ VR=40 Vdc				20 nA max @ VR=55 Vdc				20 nA max @ VR=60 Vdc			

\* To order devices 5%, replace suffix A with suffix B