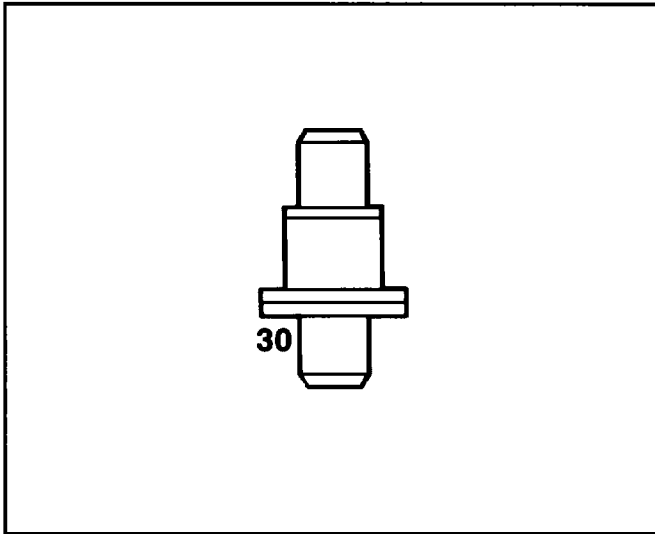




1N4386-88 and 1N5150-5157 Series

High Power Multiplier Varactors



Description

These series of high power silicon multiplier diodes are designed for efficient frequency conversion at output frequencies 150 MHz to 10 GHz. These diodes are intended for use in either doublers or triplers.

Features

- HIGH POWER
- HERMETIC SEALS
- LOW THERMAL RESISTANCE
- HIGH EFFICIENCY

Applications

These series of varactor diodes are intended for use in multipliers specifically designed as transmitters for communication and telemetry applications.

Specifications @ $T_A = 25^\circ\text{C}$

Electrical Specifications									
Model ¹ Number	Case Style	Input Frequency (MHz)	Output Frequency (MHz)	Maximum Input Power (Watts)	Minimum ² Breakdown Voltage (Volts)	Series ³ Resistance R_S (Ohms)	Min./Max. ⁴ Junction Capacitance C_j (pF)	Maximum Thermal Resistance	Minimum Output Power (Watts)
1N4386	24	50	150	50.0	250	1.50	—/50.00	6	25.0
1N4387	24	150	450	30.0	150	0.70	—/35.00	5	15.0
1N4388	24	500	1000	20.0	100	0.25	—/20.00	9	11.0
1N5149	56	500	1000	20.0	80	0.25	5.00/20.00	9	11.0
1N5150	56	500	1000	35.0	80	0.25	5.00/20.00	9	24.0
1N5150A	56	500	1000	35.0	80	0.25	10.80/13.20	6	25.0
1N5151	32	1000	2000	12.0	75	0.50	5.00/7.50	23	6.0
1N5152	30	1000	2000	12.0	75	0.50	5.00/7.50	23	6.0
1N5153	56	1000	2000	12.0	75	0.50	5.00/7.50	23	6.0
1N5152A	30	1000	2000	12.0	75	0.50	5.40/6.60	15	7.0
1N5153A	56	1000	2000	12.0	75	0.50	5.40/6.60	15	7.0
1N5154	32	2000	6000	5.0	35	0.90	1.00/3.00	35	2.0
1N5155	30	2000	6000	5.0	35	0.90	1.00/3.00	35	2.0
1N5155A	30	2000	6000	5.0	35	0.90	1.71/2.09	20	2.0
1N5156	32	5000	10000	2.5	20	0.50	0.50/1.00	38	1.0
1N5157	30	5000	10000	2.5	20	1.00	0.50/1.00	38	1.0

NOTES:

- Standard case styles are listed for each model number.
- Breakdown voltage (V_B) is measured at a reverse bias current of 10 microamperes.
- Series resistance (R_S) is measured at -6 volts and 500 MHz.
- Junction capacitance is measured at a 1 MHz and -6 volts.

MAXIMUM RATINGS

Temperature Range	
Operating Range	-65°C to +200°C
Storage Range	-65°C to +200°C
Maximum Voltage	See breakdown voltage

ENVIRONMENTAL PERFORMANCE

These series of high power multiplier varactor diodes are capable of meeting the 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.

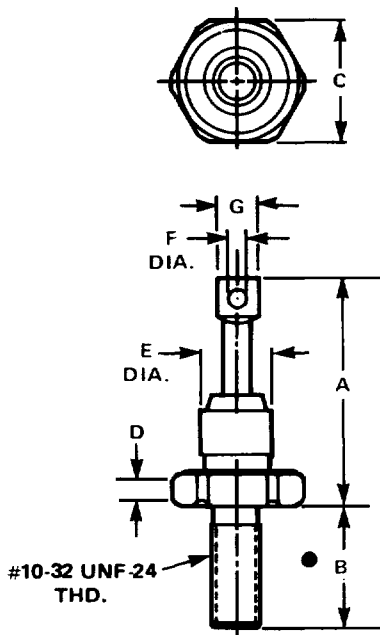
ENVIRONMENTAL RATINGS (Per MIL-STD-750)

	Method	Level
Temperature:		
Storage	1031	-65°C to +200°C
Operating	—	-65°C to +200°C
Cycling	1051	5 cycles
Solderability	2026	230°C as applicable
Thermal Shock	1056	5 cycles, 0-100°C
Moisture Resistance	1021	10 days 90-98% Relative Humidity
Shock	2016	5 blows (X,Y,Z @ 1500 g's)
Vibration Fatigue	2046	32 hours (X,Y,Z @ 20 g's min.)
Vibration Variable Frequency	2056	4 four minute cycles (X,Y,A @ 20 min., 100-2000 Hz)
Constant Acceleration	2006	X,Y,Z, @ 20,000 g's
Terminal Strength	2036	Package dependent
Salt Atmosphere	1041	35°C for 24 hours

Case Styles

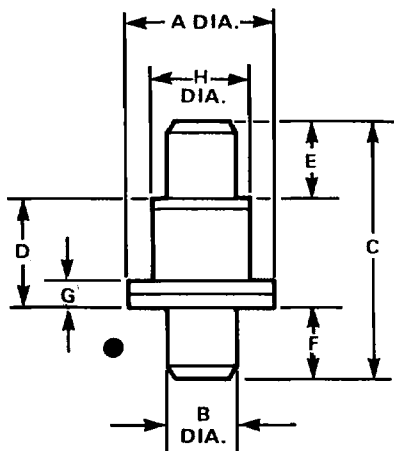
● DENOTES CATHODE NOT TO SCALE

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DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	— —	0.800	— —	20,32
B	0.422	0.453	10,72	11,51
C	0.424	0.437	10,77	11,10
D	0.060	— —	1,52	— —
E	— —	0.290	— —	7,37
F	0.080	— —	2,03	— —
G	— —	0.160	— —	4,06

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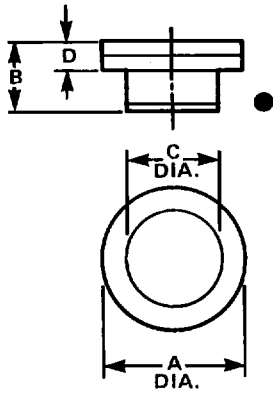


DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.119	0.127	3,02	3,22
B	0.060	0.064	1,52	1,63
C	0.205	0.225	5,21	5,72
D	0.085	0.097	2,16	2,46
E	0.060	0.064	1,52	1,63
F	0.060	0.064	1,52	1,63
G	0.016	0.024	0,41	0,61
H	0.079	0.083	2,01	2,11

$C_P = 0.18 \text{ pF Typical}$
 $L_S = 0.40 \text{ nH Typical}$

Case Styles (Cont'd)

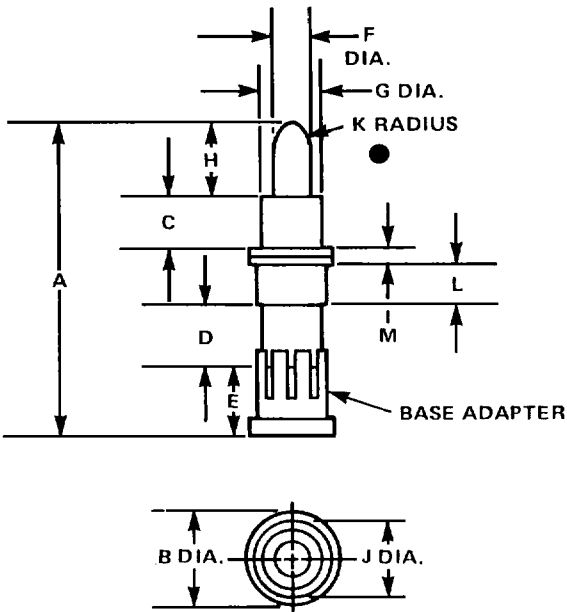
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DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.119	0.125	3,02	3,18
B	0.055	0.065	1,40	1,65
C	0.077	0.083	1,96	2,11
D	— —	0.025	— —	0,64

$C_P = 0.30$ pF Typical
 $L_S = 0.40$ nH Typical

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DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.766	0.792	19,46	20,12
B	— —	0.240	— —	6,10
C	0.130 REF.		3,30 REF.	
D	0.145	0.155	3,68	3,94
E	0.180	0.190	4,57	4,83
F	0.092	0.094	2,34	2,39
G	0.155	0.165	3,94	4,19
H	0.180	0.190	4,57	4,83
J	0.185	0.195	4,70	4,95
K	0.030	0.046	0,76	1,17
L	0.095	0.105	2,41	2,67
M	— —	0.030	— —	0,76

Base adaptor optional.
 $C_P = 0.35$ pF Typical
 $L_S = 3.0$ nH Typical