Limiter Diodes

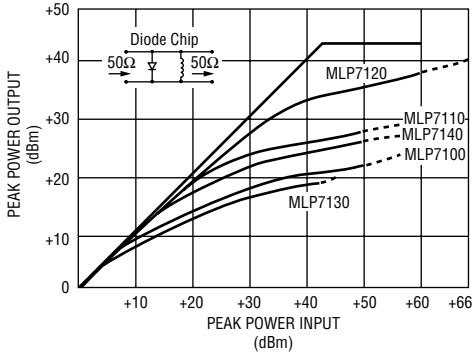
Description
The **MicroMetrics** MLP 7100 series Limiter diodes are specially processed PIN diodes with a thin intrinsic region designed for use in passive or active limiters over the entire range of frequencies from 100 MHz to beyond 20 GHz. The different "I" region thicknesses and capacitances provide variable threshold and leakage power levels and power handling capability.

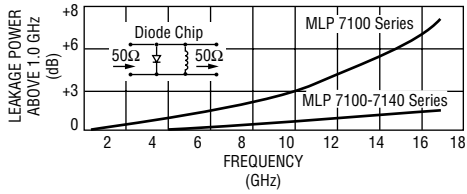
Applications
The MLP 7100 series limiters are for use in waveguides, coax, microstrip or stripline. Single or cascade devices may be used depending on power levels.

Features
- Low Loss
- Greater Bandwidth
- Fast Turn on Time

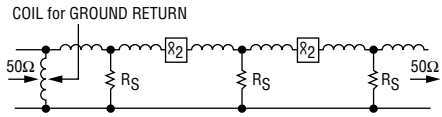
Packaging
- Chip, Glass, Ceramic, Surface Mount

Typical Performance





High Power Equivalent Circuit



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Electrical Characteristics

V_b TYP (V)	C_{j0} TYP (pF)	C_{j6} MAX (pF)	R_S Typ[6] @ 10 mA (Ω)	R_S Typ[6] @ 10 mA (Ω)	T_l TYP (nS)	θ_p[1] TYP (°C/W)	Maximum Thermal Resistance (°C/W)	Part Number
20-45	0.20	0.15	1.5	5.0	5	20	100	MLP7100
-	0.50	0.30	1.2	4.5	10	12	80	MLP7101
-	0.70	0.50	1.0	4.0	10	10	55	MLP7102
45-75	0.20	0.15	1.5	4.0	10	15	80	MLP7110
-	0.50	0.30	1.2	3.5	15	10	60	MLP7111
-	0.70	0.50	1.0	3.0	20	6	40	MLP7112
120-180	0.20	0.15	1.5	3.5	50	1.2	40	MLP7120
-	0.60	0.30	1.0	3.0	50	0.5	20	MLP7121
-	0.80	0.50	0.5	3.0	100	0.3	15	MLP7122
15-30	0.12	0.10	2.0	4.0	530	12	0	MLP7130
-	0.20	0.15	1.5	3.0	520	8	0	MLP7131
30-60	0.12	0.10	2.0	4.0	720	10	0	MLP7140
-	0.20	0.15	1.5	4.0	715	7	0	MLP7141

Max. Peak P_{in} @1.0 μs (dBm)	Typical Threshold[2] (dB)	Leakage[2] P_{out} TYP (dBm)	Insertion Loss[3] TYP (dB)	CW[4] Pin MAX (W)	Recovery[5] Time, Typ (nS)	Part Number
+50	+10	+22	0.1	21	0	MLP7100
+53	+10	+24	0.2	31	0	MLP7101
+56	+10	+25	0.2	41	0	MLP7102
+53	+15	+27	0.1	32	0	MLP7110
+56	+15	+29	0.2	42	0	MLP7111
+59	+15	+31	0.2	52	0	MLP7112
+60	+20	+39	0.1	55	0	MLP7120
+63	+20	+41	0.2	10	50	MLP7121
+66	+20	+44	0.2	15	50	MLP7122
+47	+7	+19	0.1	2	5	MLP7130
+50	+7	+22	0.1	3	5	MLP7131
+47	+12	+24	0.1	3	10	MLP7140
+50	+12	+27	0.1	4	10	MLP7141

Notes:
1. Pulsed thermal impedance is given for a 1 μs pulse. CW thermal impedance presumes infinite heat sink.
2. Threshold input power produces 1 dB increase in insertion loss. Figure shows typical leakage power curves. Data taken for 1.0 GHz.
3. Chip loss can be represented as a resistance in shunt with the junction capacitance. R_p is measured at 3 GHz, zero Bias. Loss data shown are for 10 GHz for 0.15 and 0.30 pF chips, 5 GHz for 0.50 pF chips. Loss is measured at -10 dBm input.
4. Note that CW power and average power are not synonymous. Power ratings are computed in terms of a peak junction temperature of 200°C, for short pulses, an average junction temperature of 125°C, and an ambient of 25°C. Duty factor 0.001 assumed for maximum pulse power input. Figure shows power derating with temperature.
5. Recovery time is measured with ground return (less than 1.0 Ohm) to 1 dB excess loss, at 1 GHz.
6. Series resistance is measured at 500 MHz.
7. Limiter diodes with higher capacitance and/or higher breakdown voltage for very high power applications are available on request.

Maximum Ratings

Operating Temperature	-55°C to +150°C
Maximum Leakage Current	0.5 mA at 88% of minimum rated breakdown