



MPL4700 - MPL4703
CONTROL DEVICES - MMSM PIN
AND LIMITER DIODES
RoHS Compliant

GENERAL DESCRIPTION

This series of surface mount PIN and Limiter diodes utilize new and unique monolithic MMSM technology. The technology is a package/device integration accomplished at the wafer fabrication level. Since the cathode and anode interconnections utilize precision photolithographic techniques rather than wire bonds, parasitic package inductance is tightly controlled. The package parasitics provide smooth non-resonant functionality through X Band. This series of devices meets RoHS requirements per EU Directive 2002/95/EC.

APPLICATIONS

The MPL4700 series of Limiter diodes are design for low to medium power receiver protection. The typical leakage output power for the MPL4701 is +20 dbm versus +24 dbm for the MPL4700. The MPL4702 is optimized for MRI surface coil applications.

Receiver protection circuitry frequently requires the antiparallel installation of 2 diodes. Microsemi added antiparallel versions (-406 style) of our standard (-206 style) configurations. GC4702 and GC4703 – 406.

KEY FEATURES

- Up to 10W incident RF power handling
- Antiparallel configuration available
- Low parasitics
- $L_P = 0.02nH$ Typical
- $C_P = 0.04pF$ Typical
- Broadband Performance through X-Band
- Available on Tape & Reel or on Film Frame for pick & place
- Small, SOD 323 Footprint
- RoHS Compliant ¹

1- These devices are supplied with gold terminations.

APPLICATION/BENEFITS

- Receiver protection circuits
- Broadband Switching
- Economy Switching
- RF Attenuators
- MRI

ABSOLUTE MAXIMUM RATINGS @ 25°C

Rating	Symbol	Value	Unit
Maximum Leakage Current @80% of minimum Rated V_B	I_R	0.5	μA
Operating Temperature	T_{OP}	-55 to +150	°C
Storage Temperature	T_{STG}	-65 to +150	°C

For the most current data, consult MICROSEMI's website: www.MICROSEMI.com
 Specifications are subject to change, consult the RFIS factory at (978) 442-5600 for the latest information.



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DEVICE ELECTRICAL PARAMETERS AT 25°C

Model Number	Package Style	V_B (V) $I_R=10\mu A$ (Min)	C_T (pF) ¹ @ -10V (Max)	R_S (Ω) ² @ 1mA (Typ)	R_S (Ω) ² @ 10mA (Max)	V_F $I_f = 100\mu A$ (Min)
MPL4700	206	25	0.15	4	2.0 ^a	-
MPL4701	206	15	0.20	6	2.5 ^a	-
MPL4702	406	50 ^b	3.0 ^c	12	2.0 ^a	0.45
MPL4703	406	25 ^b	0.3 ^c	6	3.0 ^a	0.73

Model Number	Package Style	V_F $I_f = 100mA$ (Max)	T_L (Typ)	Application
MPL4700	206	-	20	Receiver Protection
MPL4701	206	-	10	Receiver Protection
MPL4702	406	1.0	30	Anti-parallel Pair MRI Surface Coil Detune
MPL4703	406	1.2	20	Receiver Protection

Notes:

- 1- Capacitance is measured at $f = 1$ MHz.
- 2- Series Resistance (R_S) is measured at $f = 100$ MHz. Devices are mounted in a package suitable for testing.
 - a. R_S is measured at 1 GHz for the MPL series devices.
 - b. Not measured in anti-parallel configuration.
 - c. $V_r = 0V$. This value is the sum of two junctions.



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PACKAGE STYLE 206

OPTIONAL (NOTE 1)
CATHODE INDICATOR

CATHODE INDICATOR

GLASS

SILICON

D
2 PLCS

GOLD PADS
2 PLCS

E

F

G

NOTES

1. AT THE DESCRETION OF THE SUPPLIER.

DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.038	0.048	0.965	1.219
B	0.011	0.021	0.279	0.533
C	0.018	0.028	0.457	0.711
D	0.014	0.024	0.356	0.610
E	0.006	0.016	0.152	0.406
F	0.007	0.017	0.178	0.432
G	0.011	0.021	0.279	0.533

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PACKAGE STYLE 406

Technical drawing of Package Style 406 showing top, side, and detail views with dimensions A through H.

3D perspective views of the package showing the top and bottom surfaces.

DIM	INCHES			MM		
	MIN	TYP	MAX	MIN	TYP	MAX
A	–	0.023	–	–	0.584	–
B	–	0.043	–	–	1.092	–
C	0.014	–	0.020	0.356	–	0.508
D	–	0.019	–	–	0.483	–
E	–	0.039	–	–	0.991	–
F	–	0.012	–	–	0.305	–
G	–	0.002	–	–	0.051	–
H	–	0.002	–	–	0.051	–

Revision History

Revision Level / Date	Para. Affected	Description
1 / 21 October 2013	-	Initial Release
2 / 17 November 2014	A	Add Part# MPL4703 and Application notes

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