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Mouser Electronics
1000 N. Main St.
Mansfield, Texas 76063

ATTN: Quality/Purchasing Manager

Subject: Product Change Notification- MA4L PIN Diode Limiter Series Test Change

PCN #: PCN-00666

Dear Valued Customer:

This Product Change Notification (PCN) improves the 100% production testing of junction capacitance for the MA4L PIN diode limiter series. The following part numbers are affected.

MA4L011-134 MA4L021-134 MA4L022-134 MADL-011009-01340W
MA4L032-134 MADL-011010-01340W MA4L062-134 MADL-011011-01340W
MA4L031-134

The MA4L Limiter Series datasheet currently defines the minimum and maximum values of C_{j0V} , 1 MHz (junction capacitance @ 0V D.C. bias @ 1 MHz). The production measurement taken at 0V @ 1 MHz is not a sufficiently large enough reverse voltage stimulus to adequately deplete the carriers from the intrinsic region of the diode to provide the more accurate and required microwave capacitance value. Consequently, the C_{j0V} @ 1 MHz measured value is higher than the true C_{j0V} at microwave frequencies > 100 MHz, where higher frequency microwave carrier depletion occurs at 0V bias. Zero volt (0V) D.C. reverse voltage is the nominal stimulus for PIN limiter diodes in a shunt circuit structure in the low loss state. To create equivalency to the true microwave junction capacitance @ 0V for frequencies > 100 MHz, the magnitude of D.C. reverse voltage must be increased to -10V @ 1 MHz for these devices.

As a result, the MA4L Series PIN Limiter Diode datasheet will be updated to define a C_{j0V} @ 1 MHz typical value for historical reference only, and remove the C_{j0V} @ 1 MHz minimum and maximum values. Those values will be replaced by $C_{j@-10V}$ typical and maximum capacitance values @ 1 MHz, where 100% on wafer production testing is performed.

This change is the result of defining a more accurate 1 MHz production test condition for diode junction capacitance in order to emulate the higher microwave frequency C_{j0V} value required for higher frequency limiter circuits modeling and design. There are no changes to materials or processes and there are no changes to form, fit, function or reliability.

This test change is being implemented immediately. You are receiving this notification because you have purchased one or more of these part numbers in the past two years.

Sincerely,

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Old Datasheet Specifications

Un-Packaged Die Electrical Specifications at $T_{AMB} = 25^{\circ}\text{C}$

Part Number	Minimum V_{REV} 10 μA	Maximum V_{REV} 10 μA	Minimum C_{j0V} 1 MHz	Maximum C_{j0V} 1 MHz	Maximum $R_{S\ 10mA}$ 500 MHz	Nominal Characteristics			
	V_R	V_R	pF	pF	Ohms ¹	Carrier Lifetime $I_{FOR} = 10\text{mA}$ $I_{REV} = -6\text{mA}$ nS ¹	I-Region Thickness μm	Contact Diameter mils	Thermal Resistance $^{\circ}\text{C/W}^1$
MA4L011-134	15	35	0.08	0.18	2.10	10	2	1.2	175
MA4L021-134	20	35	0.10	0.20	2.10	10	2	1.2	175
MADL-011021-14210G	20	35	0.17	0.24	2.00	10	2	2.6 X 5.8	175
MA4L022-134	20	35	0.09	0.19	2.00	10	2	1.2	175
MADL-011009-01340W	20	35	0.16	0.23	1.50	10	2	3.0	175
MA4L031-134	30	50	0.14	0.21	2.00	20	3	1.4	150
MA4L032-134	30	50	0.13	0.20	2.50	15	3	1.5	150
MADL-011010-01340W	30	50	0.17	0.24	1.50	15	3	3.0	150
MA4L062-134	60	75	0.07	0.15	2.50	10	4	1.5	150
MADL-011011-01340W	60	75	0.05	0.17	2.30	10	4	3.0	150
MA4L101-134	100			0.15	2.00	90	13	3.5	30
MADL-000301-01340W	200			0.20	1.50	200	20	3.0	30
MA4L401-134	250			0.30	1.20	800	25	4.5	25

Note:

1. Test performed with the chip bonded into a ceramic pill package, ODS-30, mounted to an infinite heatsink. Chip only thermal resistance is approximately 2°C/W less

New Datasheet Specifications

Un-Packaged Die Electrical Specifications at $T_{AMB} = 25^{\circ}\text{C}$

Part Number	Min/Max V_b 10 μA	Typical C_{j-10V} 1 MHz	Maximum C_{j-10V} 1 MHz	Typical C_{j0V} 1 MHz	Maximum $R_{S\ 10mA}$ 500 MHz	Nominal Characteristics			
	V_R	V_R	pF	pF	Ohms ¹	Carrier Lifetime $I_{FOR} = 10\text{mA}$ $I_{REV} = -6\text{mA}$ nS ¹	I-Region Thickness μm	Contact Diameter mils	Thermal Resistance $^{\circ}\text{C/W}^1$
MA4L011-134	15/35	0.13	0.18	0.21	2.10	10	2	1.2	35
MA4L021-134	20/35	0.11	0.16	0.19	2.10	10	2	1.2	35
MADL-011021-14210G	20/35	0.18	0.23	0.26	2.00	10	2	2.6 X 5.8	35
MA4L022-134	20/35	0.12	0.17	0.20	2.00	10	2	1.2	35
MADL-011009-01340W	20/35	0.15	0.20	0.23	1.50	10	2	3.0	35
MA4L031-134	30/50	0.14	0.20	0.24	2.00	20	3	1.4	34
MA4L032-134	30/50	0.12	0.18	0.22	2.50	15	3	1.5	34
MADL-011010-01340W	30/50	0.15	0.21	0.25	1.50	15	3	3.0	34
MA4L062-134	50/75	0.08	0.11	0.14	2.50	10	4	1.5	33
MADL-011011-01340W	50/75	0.10	0.13	0.16	2.30	10	4	3.0	33
MA4L101-134	100/175	0.08 ²	0.16 ²	0.15	2.00	90	13	3.5	25
MADL-000301-01340W	200/300	0.10 ²	0.20 ²	0.20	1.50	200	20	3.0	39
MA4L401-134	250/300	0.08 ²	0.11 ²	0.30	1.20	800	25	4.5	16

Note:

1. Test performed with the chip bonded into a ceramic pill package, ODS-30, mounted to an infinite heatsink. Chip only thermal resistance is approximately 2°C/W less.

2. Junction capacitance measured at 1 MHz @ -50V Reverse Voltage.