

### MMBD2004SW

#### HIGH VOLTAGE SURFACE MOUNT DUAL SWITCHING DIODE

### **Features**

- Fast Switching Speed: Maximum of 50ns
- High Reverse Breakdown Voltage: 300V
- Low Leakage Current: Maximum of 100nA when V<sub>R</sub> = 240V at Room Temperature
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- Qualified to AEC-Q101 Standards for High Reliability
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

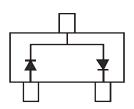
## **Mechanical Data**

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin annealed over Copper leadframe.
   (Lead Free Plating) Solderable per MIL-STD-202, Method 208@3
- · Polarity: See Diagram
- Weight: 0.006 grams (approximate)





Top View



Top View Internal Schematic

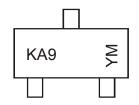
# Ordering Information (Notes 4 & 5)

Part Number	Compliance	Case	Packaging
MMBD2004SW-7-F	Standard	SOT323	3000/Tape & Reel
MMBD2004SWQ-7-F	Automotive	SOT323	3000/Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com/quality/lead\_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com.
- Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

# **Marking Information**



KA9= Product Type Marking Code YM = Date Code Marking Y = Year (ex: B = 2014) M = Month (ex: 9 = September)

### Date Code Key

Year	2003	2004			2013	2014	2015	2016	3 20	)17	2018	2019
Code	Р	R			Α	В	С	D		E	F	G
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



## Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	$V_{RRM}$	300	V
Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RWM</sub> V <sub>R</sub>	240	٧
RMS Reverse Voltage	V <sub>R(RMS)</sub>	170	V
Forward Continuous Current	I <sub>F</sub>	225	mA
Peak Repetitive Forward Current	I <sub>FRM</sub>	625	mA
Non-Repetitive Peak Forward Surge Current @ t = 1.0µs @ t = 1.0s	I <sub>FSM</sub>	4.0 1.0	А

## **Thermal Characteristics**

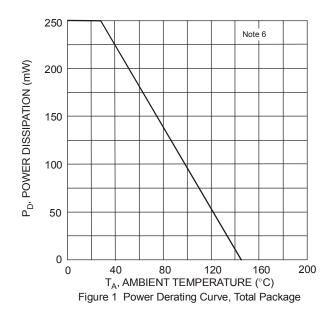
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	$P_{D}$	250	mW
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{ heta JA}$	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

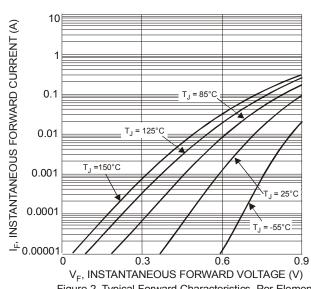
# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	V <sub>(BR)R</sub>	300		<b>V</b>	I <sub>R</sub> = 100μA
Forward Voltage	V <sub>F</sub>	_	0.87 1.0	٧	I <sub>F</sub> = 20mA I <sub>F</sub> = 100mA
Peak Reverse Current (Note 7)	I <sub>R</sub>	_	100		V <sub>R</sub> = 240V V <sub>R</sub> = 240V, T <sub>J</sub> = +150°C
Total Capacitance, per Element	CT	_	5.0	pF	V <sub>R</sub> = 0, f = 1.0MHz
Reverse Recovery Time	t <sub>rr</sub>	_	50	ns	$I_F = I_R = 30 \text{mA},$ $I_{rr} = 3.0 \text{mA}, R_L = 100 \Omega$

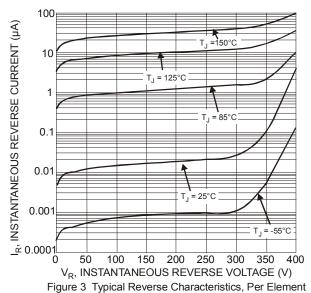
Notes:

- 6. Part mounted on FR-4 PC Board with recommended pad layout, which can be found on our website at http://www.diodes.com.
- 7. Short duration pulse test used to minimize self-heating effect.









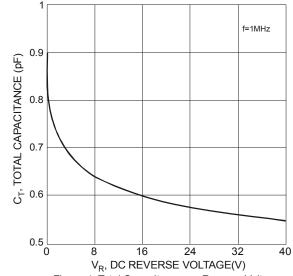
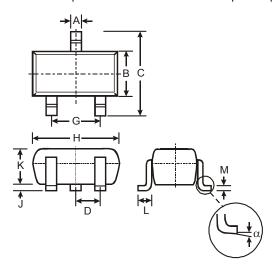


Figure 4 Total Capacitance vs. Reverse Voltage,
Per Element

# **Package Outline Dimensions**

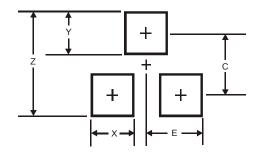
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT323							
Dim	Min	Max	Тур				
Α	0.25	0.40	0.30				
В	1.15	1.35	1.30				
C	2.00	2.20	2.10				
D	1	-	0.65				
G	1.20	1.40	1.30				
Н	1.80	2.20	2.15				
7	0.0	0.10	0.05				
K	0.90	1.00	1.00				
L	0.25	0.40	0.30				
М	0.10	0.18	0.11				
α	0°	8°	-				
All Dimensions in mm							

# **Suggested Pad Layout**

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	2.8
X	0.7
Y	0.9
С	1.9
E	1.0



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