

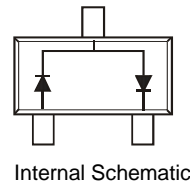
HIGH VOLTAGE SURFACE MOUNT DUAL SWITCHING DIODE

Features

- Fast Switching Speed: Maximum of 50ns
- High Reverse Breakdown Voltage: 300V
- Low Leakage Current: Maximum of 100nA when $V_R = 240V$ at Room Temperature
- Surface Mount Package Ideally Suited for Automated Insertion
- Dual Series Configuration
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([MMBD2004SQ](#))**

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

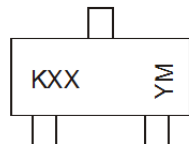


Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
MMBD2004S-7-F	Commercial	SOT23	3000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



KXX = Product Type Marking Code (KA9 or KAE)
 YM = Date Code Marking
 Y = Year (ex: G = 2019)
 M = Month (ex: 9 = September)

Date Code Key

Year	2001	2002	2003	2019	2020	2021	2022	2023	2024	2025	2026
Code	M	N	P	G	H	I	J	K	L	M	N
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +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 _{RWM} V _R	240	V
RMS Reverse Voltage	V _{R(RMS)}	170	V
Forward Continuous Current (Note 5)	I _{FM}	225	mA
Peak Repetitive Forward Current (Note 5)	I _{FRM}	625	mA
Non-Repetitive Peak Forward Surge Current	I _{FSM}	4.0 1.0	A
	@ t = 1.0μs @ t = 1.0s		

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	350	mW
Thermal Resistance Junction to Ambient Air (Note 5)	R _{θJA}	357	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V _{(BR)R}	300	—	V	I _R = 100μA
Forward Voltage	V _F	—	0.87 1.0	V	I _F = 20mA I _F = 100mA
Reverse Current (Note 6)	I _R	—	100	nA μA	V _R = 240V V _R = 240V, T _J = +150°C
Total Capacitance	C _T	—	5.0	pF	V _R = 0, f = 1.0MHz
Reverse Recovery Time	t _{RR}	—	50	ns	I _F = I _R = 30mA, I _{RR} = 3.0mA, R _L = 100Ω

Notes: 5. Part mounted on FR-4 substrate with pad dimensions 1 inch x 1 inch, 2oz copper, single-sided PC board.
6. Short duration pulse test used to minimize self-heating effect.

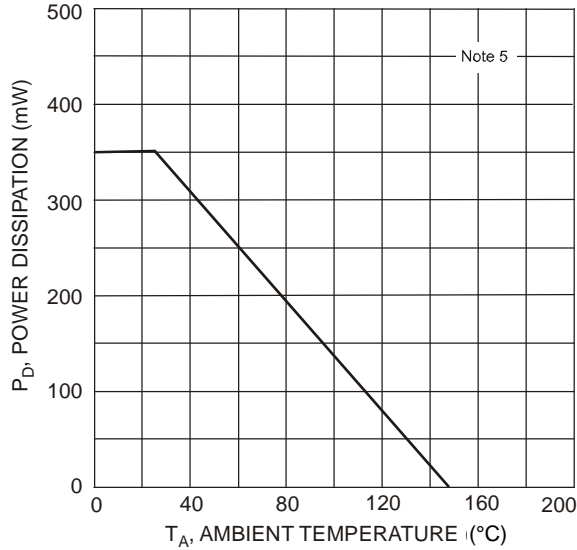


Figure 1 Power Derating Curve, Total Package

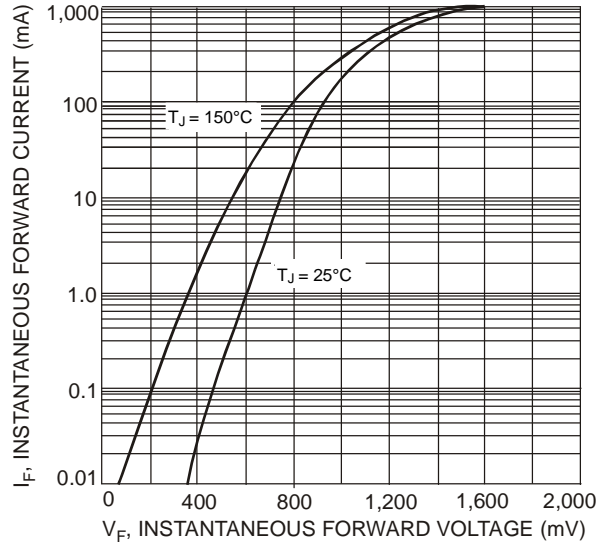


Figure 2 Typical Forward Characteristics, Per Element

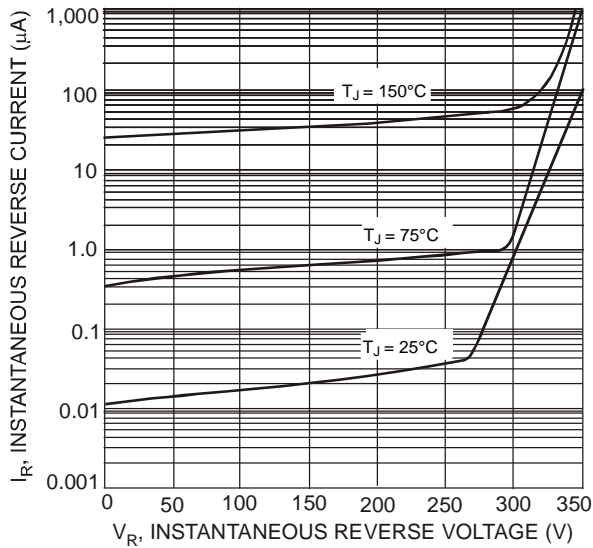


Figure 3 Typical Reverse Characteristics, Per Element

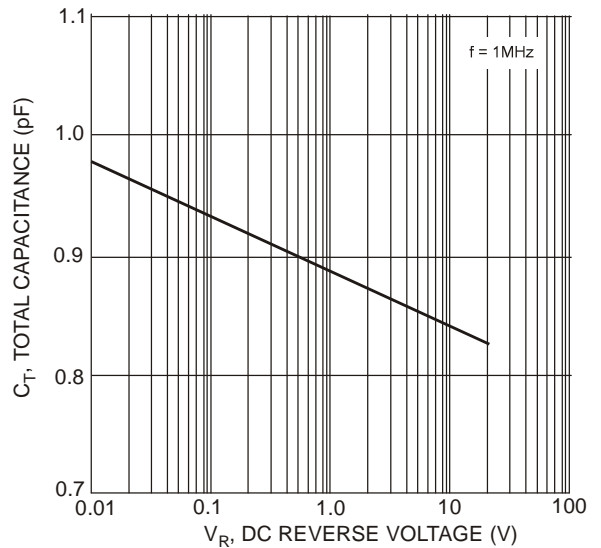
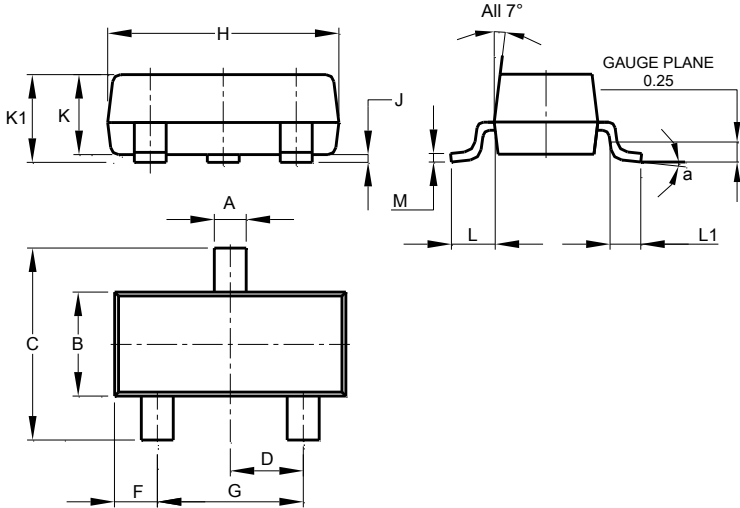


Figure 4 Total Capacitance vs. Reverse Voltage Per Element

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

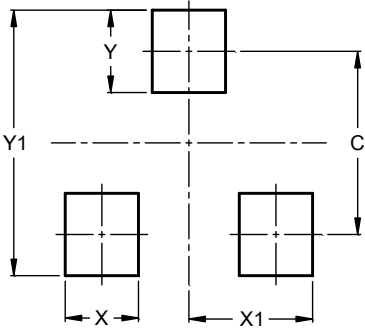


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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