Lead-free Green

MMBD5004A/C/S

HIGH VOLTAGE DUAL SWITCHING DIODE

Features

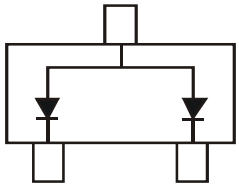
- Fast Switching Speed: 50ns
- High Reverse Breakdown Voltage Rating: 400V
- Low Leakage Current
- Surface Mount Package Ideally Suited for Automated Insertion
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

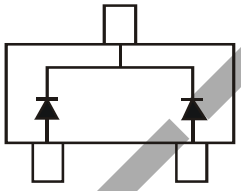
- Case: SOT23
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

SOT23

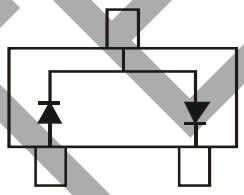
Top View



MMBD5004A



MMBD5004C



MMBD5004S

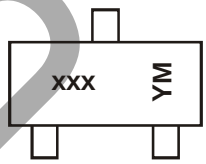
Please help update the datasheet to status 4.

Ordering Information (Note 4)

Part Number	Case	Packaging
MMBD5004S-7	SOT23	3,000/Tape & Reel
MMBD5004C-7	SOT23	3,000/Tape & Reel
MMBD5004A-7	SOT23	3,000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) 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 http://www.diodes.com/products/packages.html.

Marking Information



xxx = Product Type Marking Code
ex. KJB = MMBD5004S
CJK = MMBD5004C
AJK = MMBD5004A
YM = Date Code Marking
Y = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

Year	2010	2011	…	2016	2017	2018	2019	2020
Code	X	Y	…	D	E	F	G	H

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}	400	V
Working Peak Reverse Voltage DC Blocking Voltage	V_{RWM} V_R	350	V
RMS Reverse Voltage	$V_{R(RMS)}$	247	V
Forward Continuous Current (Note 5)	I_F	300	mA
Peak Repetitive Forward Current (Note 5)	I_{FRM}	625	mA
Non-Repetitive Peak Forward Surge Current @ t = 1.0µs @ t = 1.0ms	I_{FSM}	5 3	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) (See Figure 1)	P_D	350	mW
Thermal Resistance Junction to Ambient Air (Note 5)	$R_{\theta JA}$	357	°C/W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	400	—	—	V	I_R = 150µA
Forward Voltage	V_F	—	— — —	0.93 1.10 1.29	V	I_F = 20mA I_F = 100mA I_F = 200mA
Reverse Current (Note 6)	I_R	—	— —	150 5	nA µA	V_R = 240V V_R = 360V
Total Capacitance	C_T	—	0.65	2.0	pF	V_R = 0V, 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, 1" x 1" 2oz cu pad layout.
6. Short duration pulse test used to minimize self-heating effect.

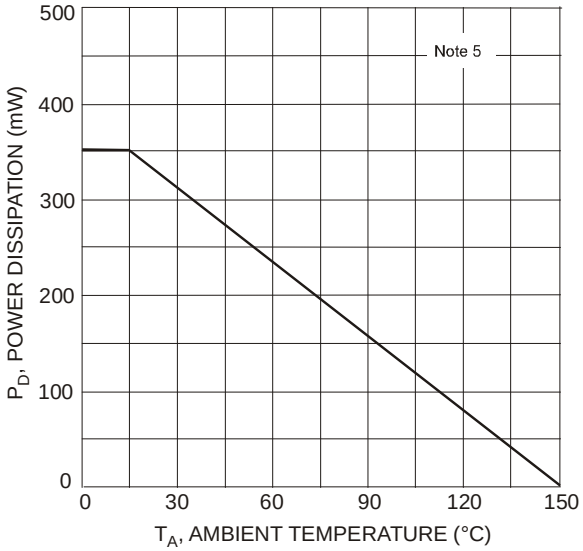


Fig. 1 Power Derating Curve, Total Package

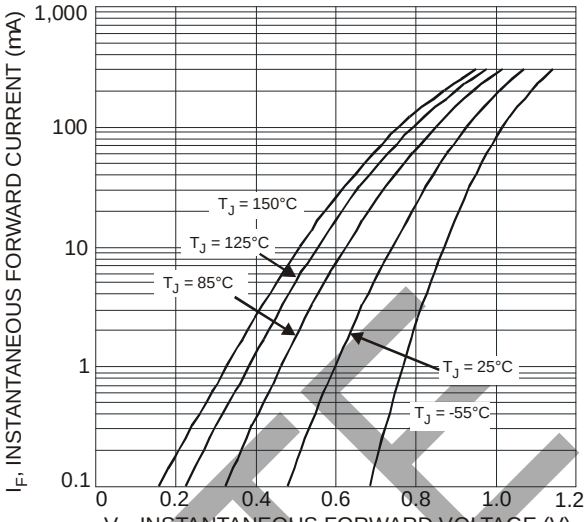


Fig. 2 Typical Forward Characteristics, Per Element

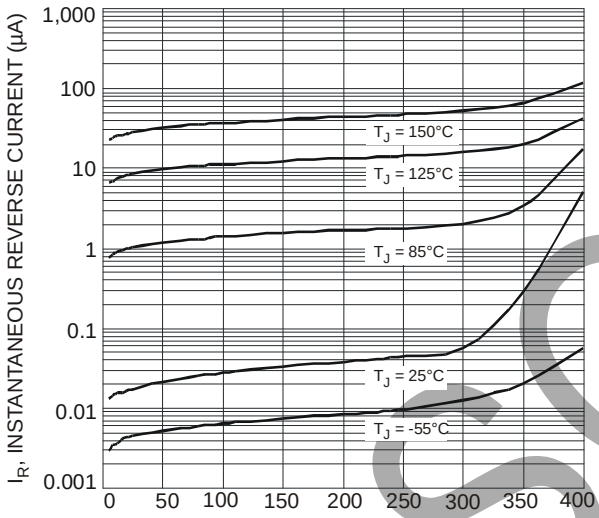


Fig. 3 Typical Reverse Characteristics, Per Element

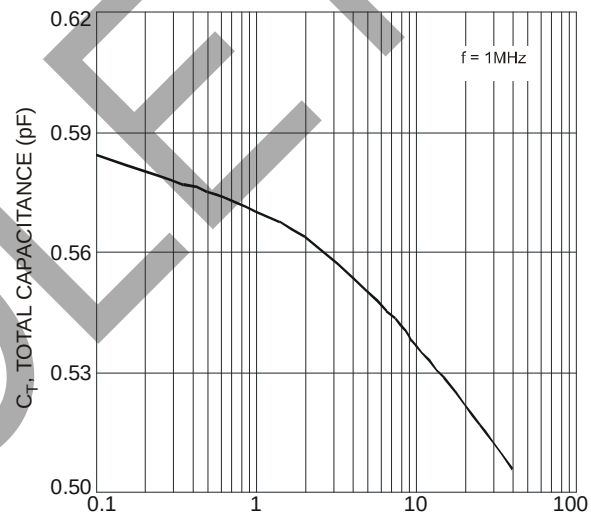
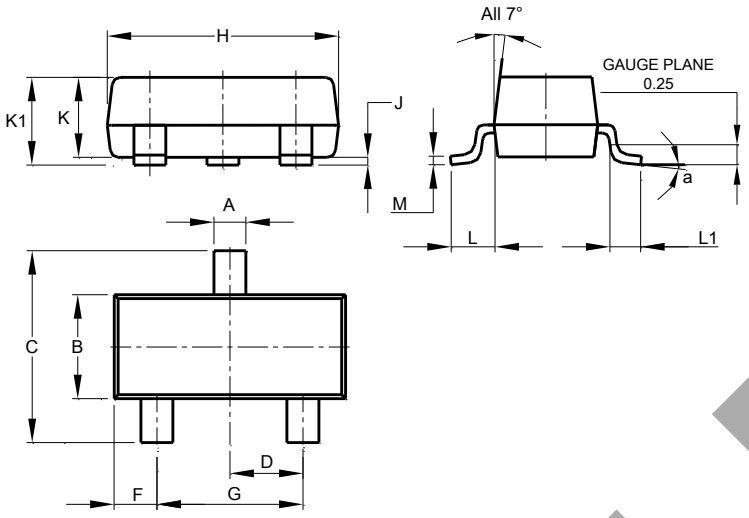


Fig. 4 Total Capacitance
vs. Reverse Voltage, Per Element

Package Outline Dimensions

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

SOT23

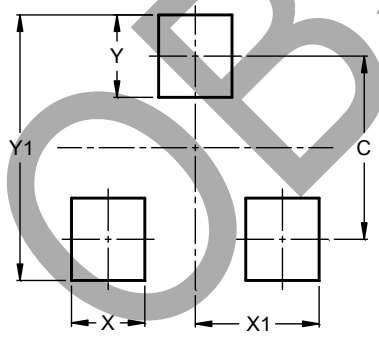


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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