Features

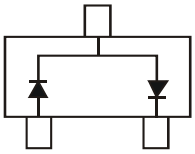
- Fast Switching Speed: Maximum of 50ns
- High Reverse Breakdown Voltage Rating: 350V
- Low Reverse Current: Maximum of 100nA when V_R = 240V at Room Temperature
- Surface Mount Package Ideally Suited for Automated Insertion
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

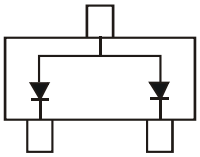
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 e3
- Polarity: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

SOT23

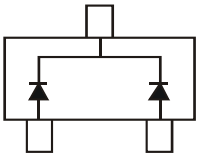
Top View



MMBD3004S Marking: KAE



MMBD3004A Marking: KAD



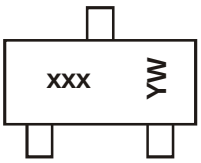
MMBD3004C Marking: KAC

Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
MMBD3004S-7-F	AEC-Q101	SOT23	3,000/Tape & Reel
MMBD3004SQ-7-F	Automotive	SOT23	3,000/Tape & Reel
MMBD3004SQ-13-F	Automotive	SOT23	10,000/Tape & Reel
MMBD3004S-13-F	AEC-Q101	SOT23	10,000/Tape & Reel
MMBD3004A-7-F	AEC-Q101	SOT23	3,000/Tape & Reel
MMBD3004C-7-F	AEC-Q101	SOT23	3,000/Tape & Reel
MMBD3004CQ-7-F	Automotive	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 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. Automotive products are AEC-Q10x qualified and are PPAP capable. Automotive, AEC-Q10x and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



xxx = Product Type Marking Code
KAE = MMBD3004S
KAD = MMBD3004A
KAC = MMBD3004C
YM = Date Code Marking
Y = Year (ex: Z = 2012)
M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	…	2016	2017	2018	2019	2020	2021	2022
Code	T	U	V	W	…	D	E	F	G	H	I	J

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}	350	V
Working Peak Reverse Voltage DC Blocking Voltage	V_{RWM} V_R	300	V
RMS Reverse Voltage	$V_{R(RMS)}$	212	V
Forward Continuous Current (Note 6)	I_F	225	mA
Peak Repetitive Forward Current (Note 6)	I_{FRM}	625	mA
Non-Repetitive Peak Forward Surge Current @ t = 1.0µs @ t = 1.0s	I_{FSM}	4.0 1.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	350	mW
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{\theta JA}$	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	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	350	—	—	V	I_R = 150µA
Forward Voltage	V_F	—	0.78 0.93 1.03	0.87 1.0 1.25	V	I_F = 20mA I_F = 100mA I_F = 200mA
Reverse Current (Note 7)	I_R	—	30 35	100 100	nA µA	V_R = 240V V_R = 240V, T_J = +150°C
Total Capacitance	C_T	—	1.0	5.0	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: 6. Part mounted on FR-4 substrate with pad dimensions 1 inch x 1 inch, 2oz, copper, single-sided, PC board.
7. Short duration pulse test used to minimize self-heating effect.

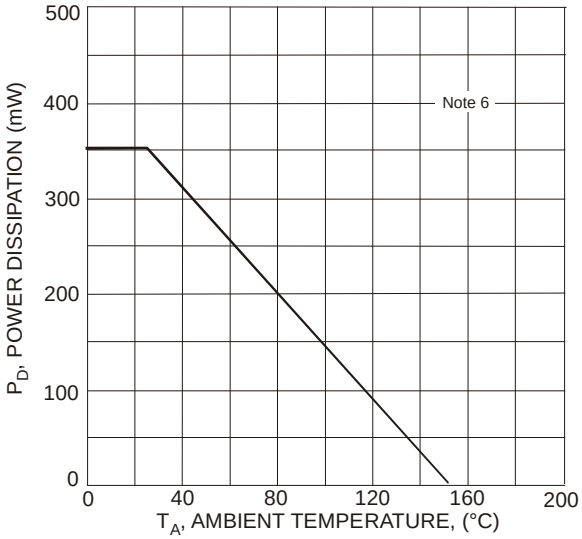


Figure 1 Power Derating Curve, Total Package

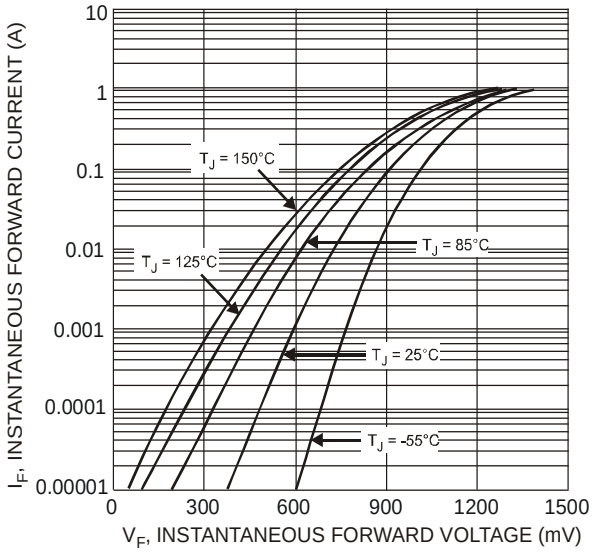


Figure 2 Typical Forward Characteristics, Per Element

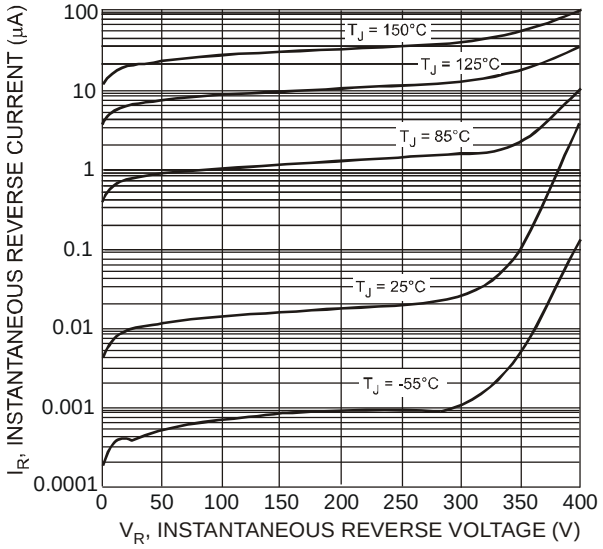


Figure 3 Typical Reverse Characteristics, Per Element

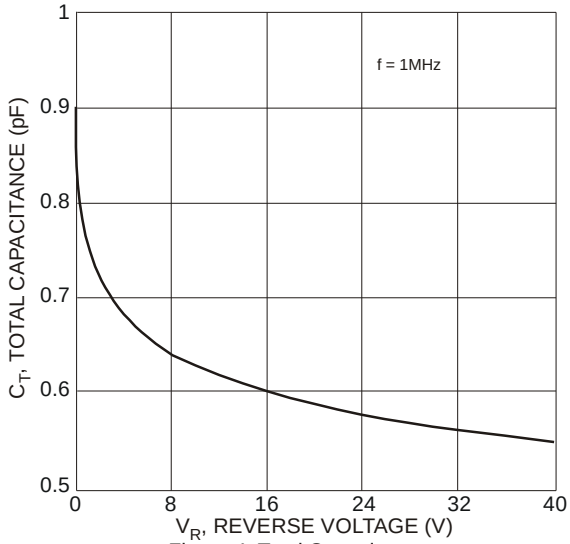
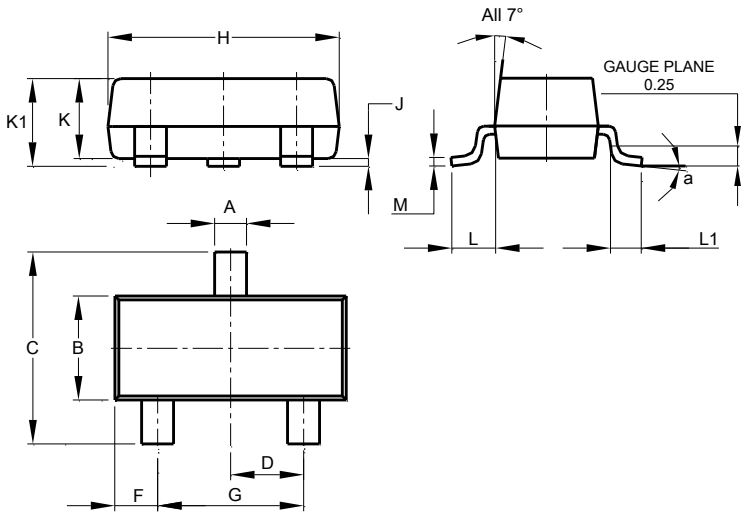


Figure 4 Total Capacitance vs. Reverse Voltage, Per Element

Package Outline Dimensions

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

SOT23

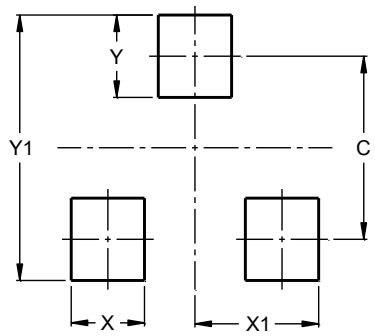


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	–
All Dimensions in mm			

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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