

MMBD4448HAQW-Q1 / MMBD4448HADW-Q1 MMBD4448HCDW-Q1 / MMBD4448HSDW-Q1 MMBD4448HTW-Q1

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200mW Surface Mount Switching Diode Array- 100V

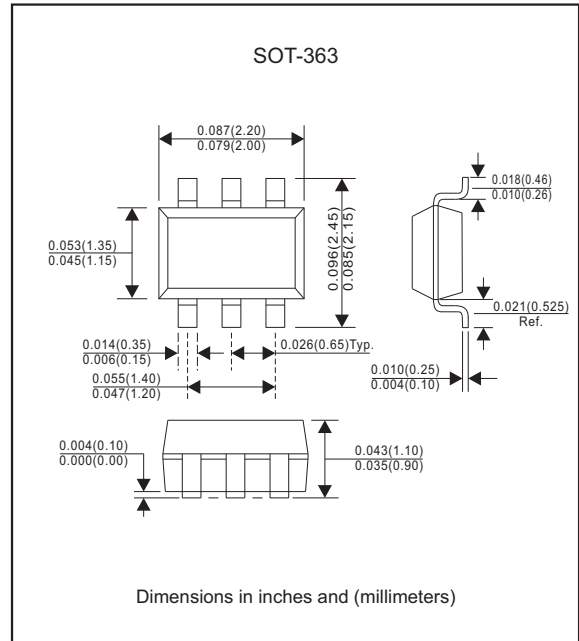
Features

- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip.
- Lead-free parts meet RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex.MMBD4448HAQW-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-363
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline



Maximum ratings (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Non-repetitive peak reverse voltage	V_{RM}	100	V
Peak repetitive reverse voltage Working peak reverse voltage DC blocking voltage	V_{RRM} V_{RWM} V_R	80	V
RMS reverse voltage	$V_R(RMS)$	56	V
Forward continuous current	I_{FM}	500	mA
Average rectified output current	I_O	250	mA
Non-repetitive peak forward surge current @ $t = 8.3\text{ms}$	I_{FSM}	2.0	A
Total device dissipation, note 1	P_D	200	mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	$I_R=100\mu\text{A}$	V_{BR}	80			V
Forward voltage	$I_F=5\text{mA}$	V_F	0.62		0.72	V
	$I_F=10\text{mA}$				0.855	
	$I_F=100\text{mA}$				1.0	
	$I_F=150\text{mA}$				1.25	
Reverse leakage current	$V_R=70\text{V}$	I_R			100	nA
	$V_R=20\text{V}$				25	nA
Capacitance between terminals	$V_R = 0\text{V}$, $f = 1.0\text{MHz}$	C_T			3.5	pF
Reverse recovery time	$I_F = I_R = 10\text{mA}$, $I_{rr} = 0.1 \times I_R$, $R_L = 100\Omega$	t_{rr}			4.0	ns

Note 1: Parts Mounted on FR-4 PC Board with recommended pad layout.

**Rating and characteristic curves for each diode
(MMBD4448HAQW-Q1 / MMBD4448HADW-Q1 / MMBD4448HCDW-Q1 /
MMBD4448HSDW-Q1 / MMBD4448HTW-Q1)**

FIG.1 Forward Characteristics

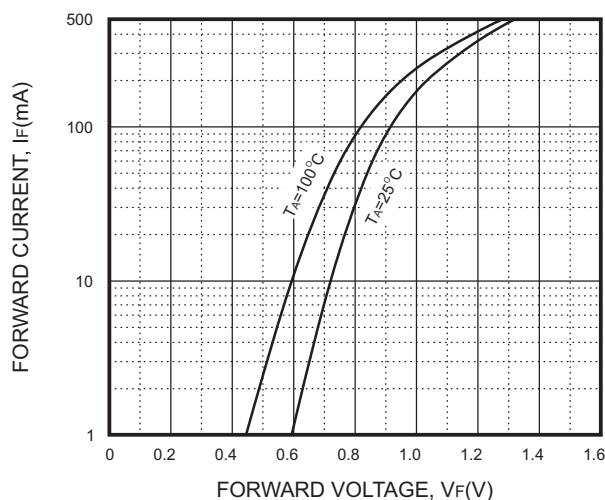


FIG.2 Reverse Characteristics

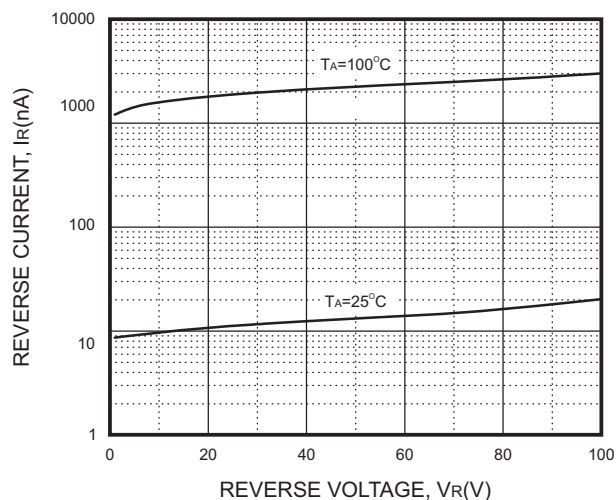


FIG.3 Capacitance Characteristics

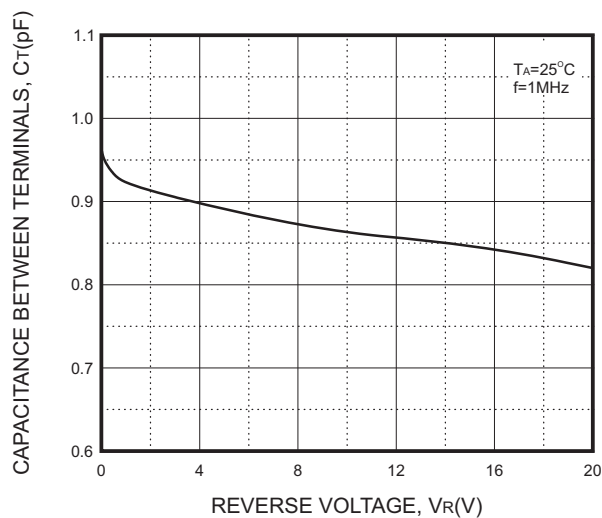
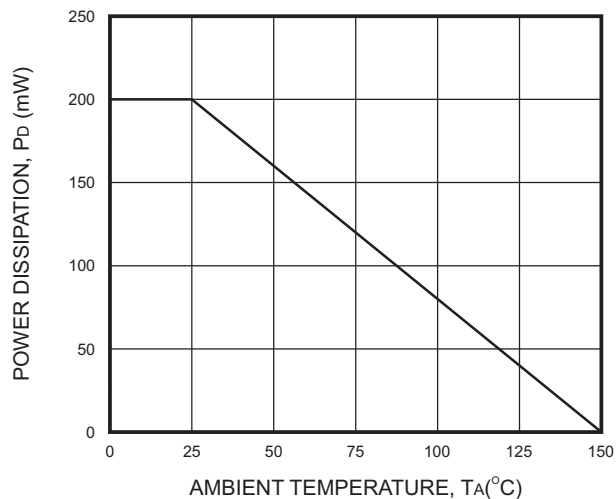
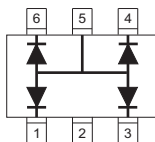
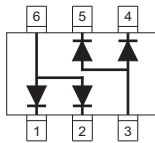
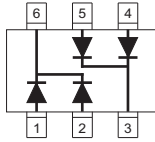
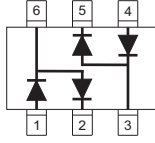
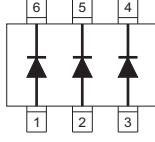


FIG.4 Power Derating Curve



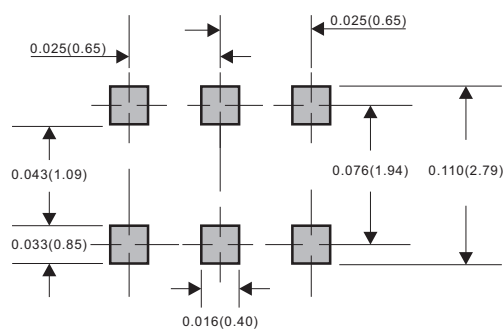
MMBD4448HAQW-Q1 / MMBD4448HADW-Q1 MMBD4448HCDW-Q1 / MMBD4448HSDW-Q1 MMBD4448HTW-Q1

Pinning information

Type number	Marking Code	Circuit Diagram
MMBD4448HAQW-Q1		
MMBD4448HADW-Q1		
MMBD4448HCDW-Q1		
MMBD4448HSDW-Q1		
MMBD4448HTW-Q1		

Suggested solder pad layout

SOT-363



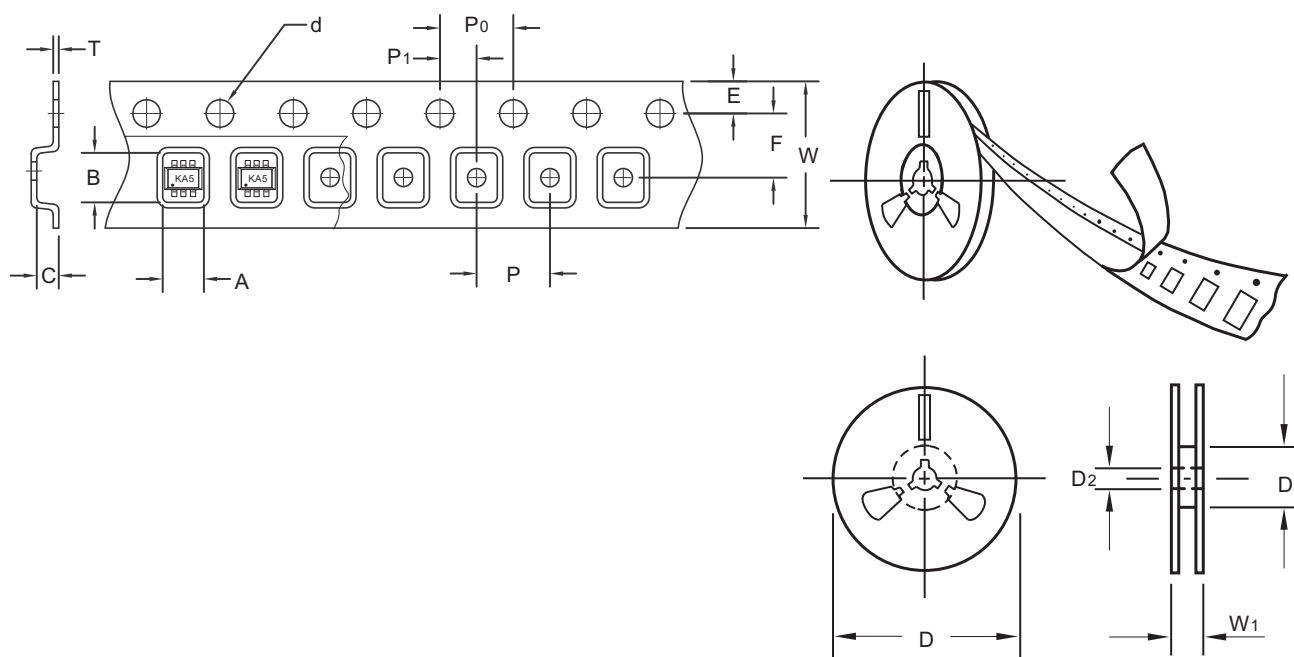
Dimensions in inches and (millimeters)

MMBD4448HAQW-Q1 / MMBD4448HADW-Q1

MMBD4448HCDW-Q1 / MMBD4448HSDW-Q1

MMBD4448HTW-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-363
Carrier width	A	0.1	2.25
Carrier length	B	0.1	2.55
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.3

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

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MMBD4448HCDW-Q1 / MMBD4448HSDW-Q1

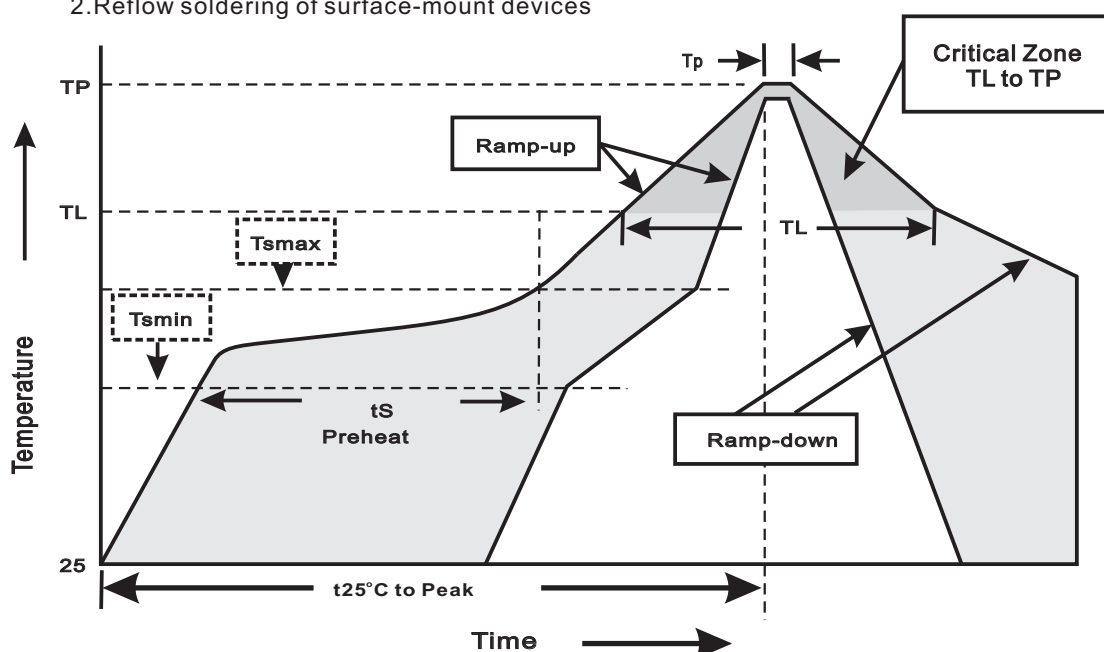
MMBD4448HTW-Q1

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-363	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.50

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _p)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25°C, Rated Current (Io=Io max.) Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tj max.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=125°C Test Duration: 1000hrs	JESD22-A-103
5. Temperature Cycle	-55°C (15min) to 150°C (15min)Test Cycles: 1000cycles	JESD22-A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22-A-102
7. Intermittent Operational Life	Ta=25°C,On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101