MB05S THRU MB10S

0.8A Miniature Glass Passivated Single-Phase Surface Mount Bridge Rectifiers-50-1000V

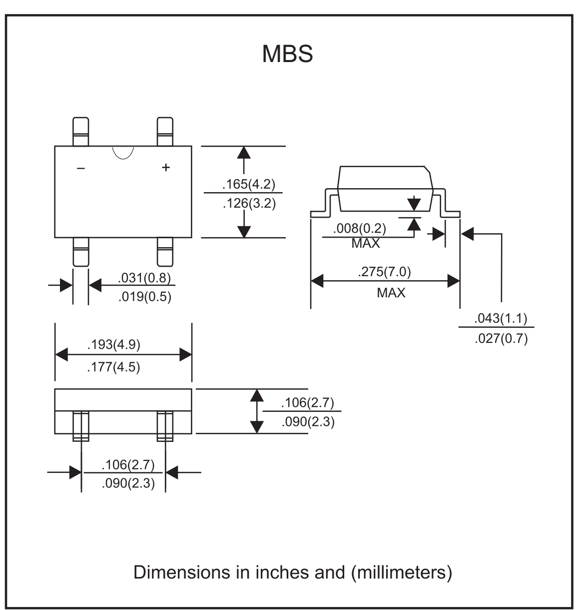
Features

- Surge overload ratings to 30 amperes peak.
- Save space on printed circuit board.
- Ideal for automated replacement.
- Reliable low cost construction utilizing molded plastic technology results in inexpensive product.
- Glass passivated chip junctions.
- Lead-free parts meet RoHS requirments.
- Suffix "-H" indicates Halogen free part, ex. MB05S-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, MBS
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : marked on body
- Mounting Position : Any

Package outline



Dimensions in inches and (millimeters)

Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

CHARACTERISTICS	SYMBOL	MB05S	MB1S	MB2S	MB4S	MB6S	MB8S	MB10S	UNIT
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS Voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC Blocking Voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum Average Forward Rectified Current @T_J=25℃	$I_{(AV)}$	0.8							A
Peak Forward Surge Current 8.3ms Single Half Sine-Wave Super Imposed on Rated Load (JEDEC Method)	I_{FSM}	30							A
Maximum Forward Voltage at 0.8A DC	V_F	1.1							V
Maximum DC Reverse Current @T_J=25℃ at Rated DC Bolcking Voltage @T_J=125℃	I_R	10 500							μA
I^2t Rating for Fusing(t<8.3ms)	I^2t	3.74							A^2s
Typical Junction Capacitance Per Element(Note1)	C_J	15							pF
Typical Thermal Resistance (Note2)	$R_{\theta JA}$	85							℃/W
Operating Temperature Range	T_J	-55 to +150							℃
Storage Temperature Range	T_{STG}	-55 to +150							℃

Note:1.Measured at 1.0MHz and applied reverse voltage of 4.0V DC

2.Thermal resistance from junction to ambient mounted on P.C.B with 0.5*0.5"(13*13mm)copper pads.

Rating and characteristic curves

$I_{(AV)}$, AVERAGE FORWARD RECTIFIED CURRENT (A)

0.8 0.6 0.4 0.2 0

Al. Substrate PC Board

Glass Epoxy PC Board

Resistive or Inductive Load

0 40 80 120 160

T_A, AMBIENT TEMPERATURE (°C)

Fig. 1 Output Current Derating Curve

I_F, INSTANTANEOUS FORWARD CURRENT (A)

10 1.0 0.1 0.01

T_j = 25°C
Pulse Width = 300µs

0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6

V_F, INSTANTANEOUS FORWARD VOLTAGE (V)

Fig. 2 Typical Forward Characteristics (per leg)

I_{FSM}, PEAK FORWARD SURGE CURRENT (A)

35 30 20 10 0

T_A = 25°C
Single Half Sine-Wave
Pulse Width = 5.3ms
(JEDEC Method)

1.0 10

NUMBER OF CYCLES AT 60 Hz

Fig. 3 Maximum Peak Forward Surge Current (per leg)

C_j, JUNCTION CAPACITANCE (pF)

100 10 1

T_j = 25°C
f = 1.0MHz

1 10 100

V_R, REVERSE VOLTAGE (V)

Fig. 4 Typical Junction Capacitance

I_R, INSTANTANEOUS REVERSE CURRENT (µA)

100 10 1.0 0.1 0.01

T_j = 125°C

T_j = 25°C

0 20 40 60 80 100 120 140

PERCENT OF RATED PEAK REVERSE VOLTAGE (%)

Fig. 5 Typical Reverse Characteristics (per element)

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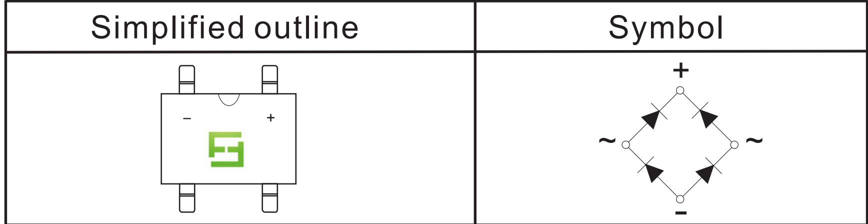
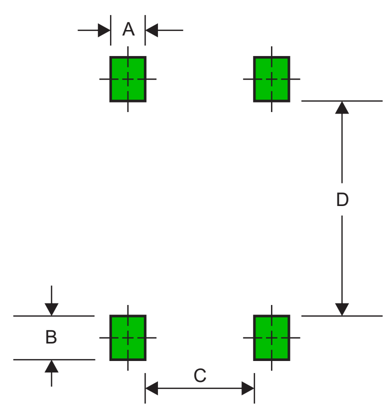
Pinning information



Marking

Type number	Marking code	Example	
MB05S MB1S MB2S MB4S MB6S MB8S MB10S	MB05S MB1S MB2S MB4S MB6S MB8S MB10S	1 . For Halogen Device – + MB8S	2 . For Halogen-free Device – H + MB8S

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D
MBS	0.023 (0.58)	0.030 (0.76)	0.070 (1.78)	0.226 (5.75)

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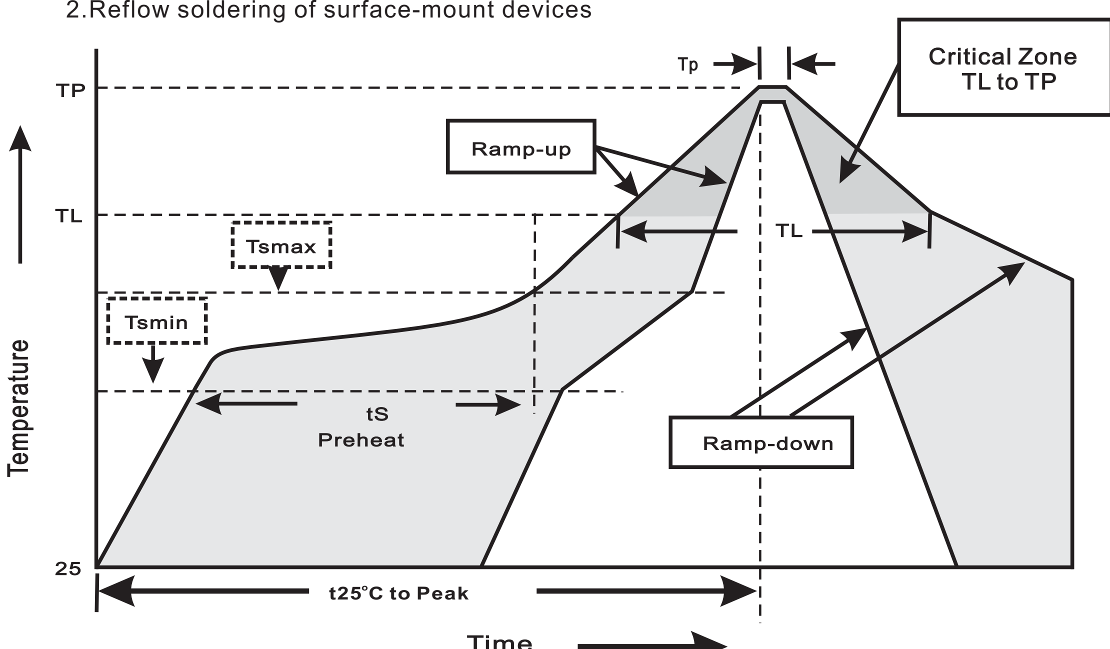
Suggested thermal profiles for soldering processes

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	150°C 200°C 60~120sec
Tsmax 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