

LDBS5005 THRU LDBS510

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LDBS5005 THRU LDBS510

5.0A Glass Passivated Single Phase Surface Mount Bridge Rectifiers 50-1000V

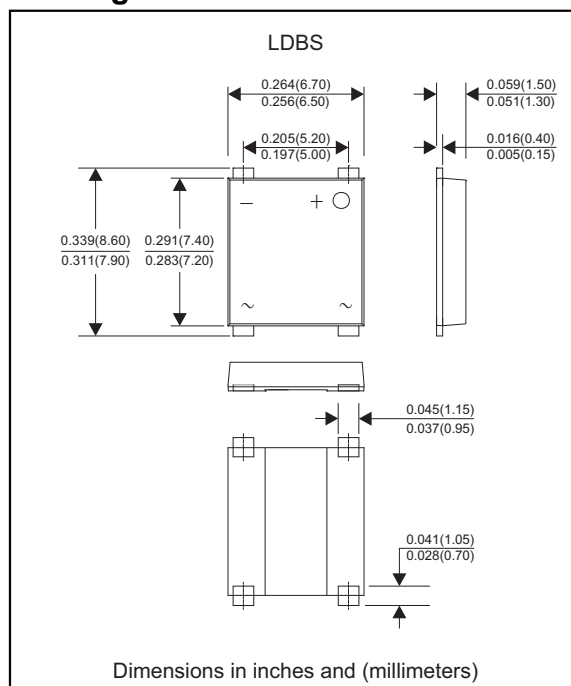
Features

- Glass passivated chip junction.
- High surge current capability.
- Designed for surface mount application.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.LDBS5005-H.

Mechanical data

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

Package outline



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

PARAMETER	SYMBOLS	LDBS5005	LDBS501	LDBS502	LDBS504	LDBS506	LDBS508	LDBS510	UNITS
Maximum repetitive 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	I_o	5.0							A
Peak forward surge current 8.3ms single half sine-wave (JEDEC Method)	I_{FSM}	150.0							A
Rating for fusing $t < 8.3$ ms	I^2t	93.3							A^2s
Typical junction capacitance (Note 1)	C_J	48.0							pF
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	SYMBOLS	LDBS5005	LDBS501	LDBS502	LDBS504	LDBS506	LDBS508	LDBS510	UNITS
Maximum instantaneous forward voltage at $I_F = 5A$	V_F	1.0							V
Maximum DC reverse current at rated DC blocking voltage per diode	I_R	5.0 500							μA

Thermal characteristics

PARAMETER	SYMBOLS	LDBS5005	LDBS501	LDBS502	LDBS504	LDBS506	LDBS508	LDBS510	UNITS
Typical thermal resistance junction to ambient	$R_{\theta JA}$	55							$^{\circ}\text{C/W}$

Note:

1. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

Rating and characteristic curves (LDBS5005 THRU LDBS510)

Fig.1 - Forward Current Derating Curve

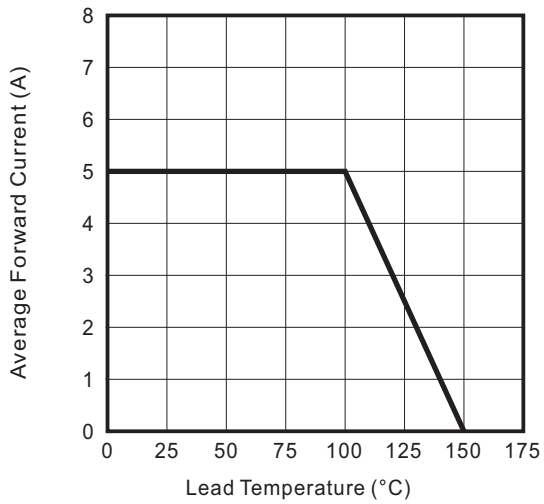


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

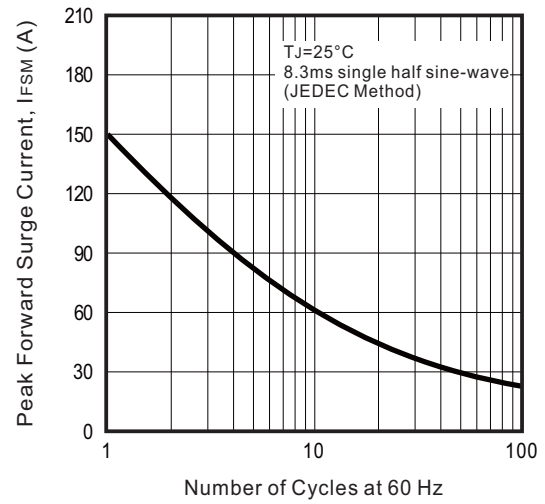


Fig. 3 - Typical Instantaneous Forward Characteristics

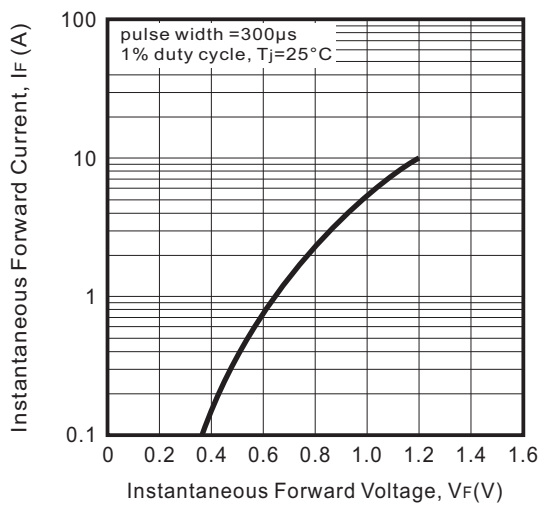
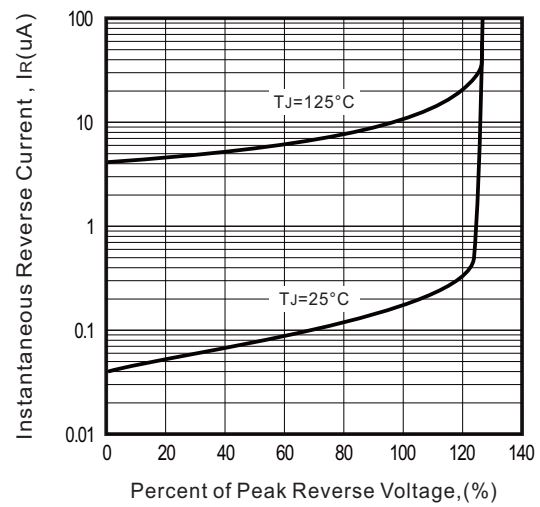
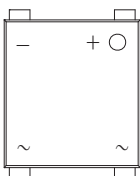
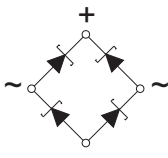


Fig. 4 - Typical Reverse Leakage Characteristics

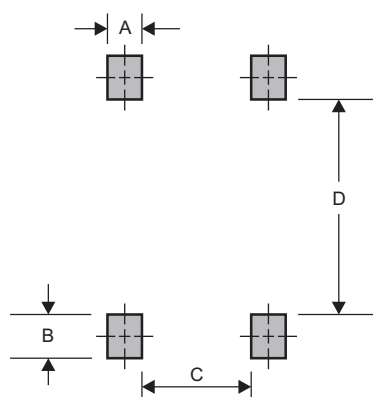


LDBS5005 THRU LDBS510**Pinning information**

Simplified outline	Symbol
	

Marking

Type number	Marking code
LDBS5005	MSB501
LDBS501	MSB502
LDBS502	MSB503
LDBS504	MSB504
LDBS506	MSB505
LDBS508	MSB506
LDBS510	MSB507

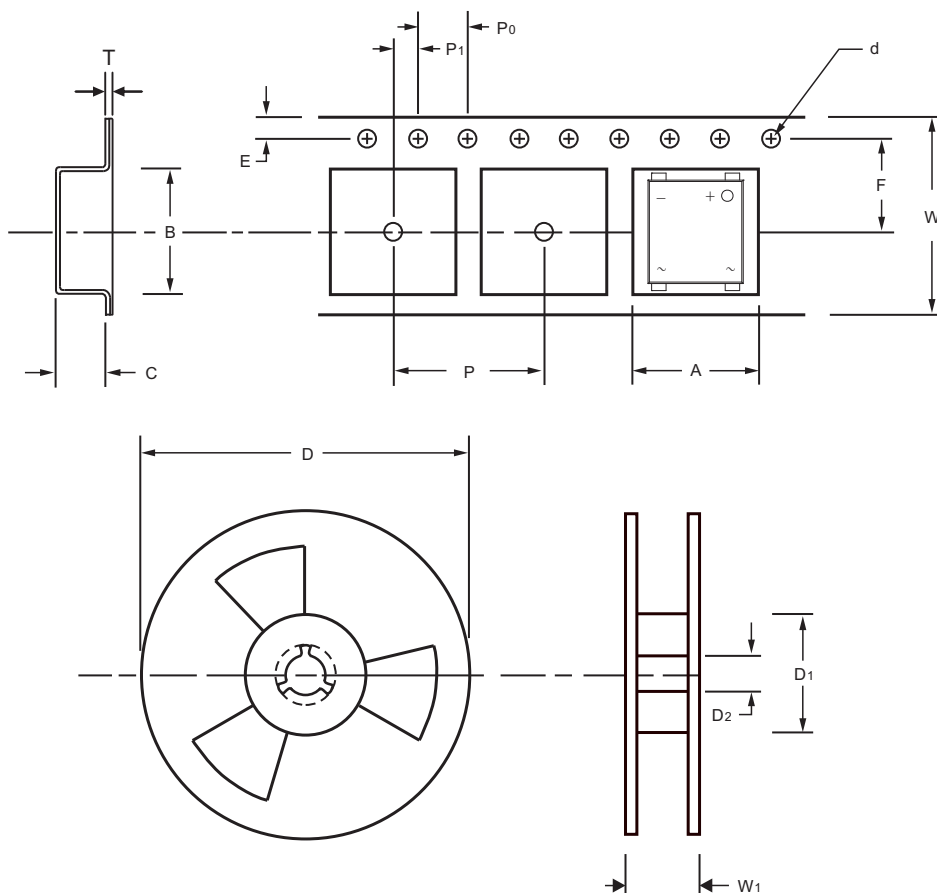
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D
LDBS	0.078 (2.00)	0.071 (1.8)	0.126 (3.20)	0.216 (5.50)

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Packing information



unit:mm

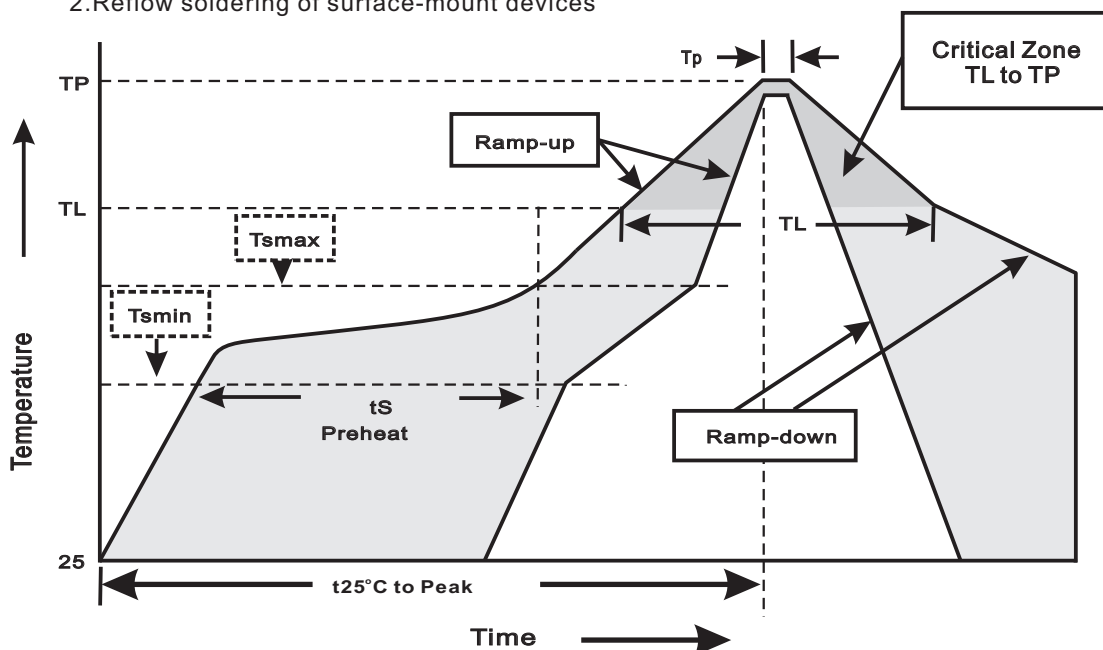
Item	Symbol	Tolerance	LDBS
Carrier width	A	0.1	6.90
Carrier length	B	0.1	8.60
Carrier depth	C	0.1	1.65
Sprocket hole	d	0.1	1.75
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	50.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D1	min	-
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	7.50
Punch hole pitch	P	0.1	12.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	16.00
Reel width	W1	1.0	18.00

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

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)
LDBS	13"	3,000	8.0	6,000	338*338*38	330	365*365*360	48,000

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



Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{min}) -Temperature Max(T_{max}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{max} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

LDBS5005 THRU LDBS510**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for $10 \pm 2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031