MDS12 THRU MDS110

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MDS12 THRU MDS110

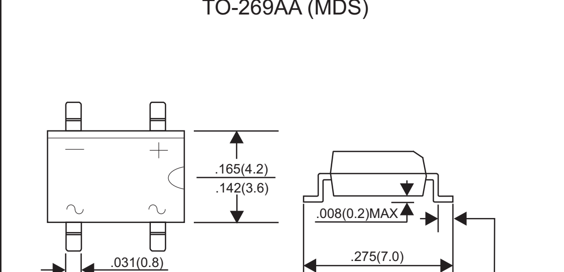
1.0A Surface Mount Schottky Barrier Single-Phase Bridge Rectifiers-20-100V

Features

- Surge overload ratings to 30 amperes peak.
- 1.0A rating in l ow profile surface mount mini-dip bridge save space on printed circuit board.
- Ideal for automated replacement.
- Reliable low cost construction utilizing molded plastic technology results in inexpensive product.
- Silicon eplana epitaxial chip, metal silicon junction.
- Lead-free parts meet RoHS requirments.
- Suffix "-H" indicates Halogen-free part, ex.MDS12-H.

Package outline

TO-269AA (MDS)



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, TO-269AA (MDS)
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : marked on body
- Mounting Position : Any
- Weight : Approximated 0.11gram

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Average Forward rectified current	2.0x2.0"(5.0x5.0mm) copper pad, See Fig.1	$I_{F(AV)}$			1.0	A
Peak Forward surge current	8.3ms single half sine-wave (JEDEC methode)	I_{FSM}			30	A
Reverse current	V_R = V_{RRM} T_J = 25°C	I_R			0.5	mA
	V_R = V_{RRM} T_J = 100°C				20	
Thermal resistance	Junction to ambient	$R_{\theta JA}$		88		°C/W
	Junction to lead	$R_{\theta JL}$		28		
Diode junction capacitance	f=1MHz and applied 4V DC reverse voltage	C_J		250		pF
Storage temperature		T_{STG}	-65		+175	°C

SYMBOLS	V_{RRM} *1 (V)	V_{RMS} *2 (V)	V_R *3 (V)	V_F *4 (V)	Operating temperature T_J, (°C)
MDS12	20	14	20	0.50	-55 to +125
MDS14	40	28	40	0.55	
MDS16	60	42	60	0.70	-55 to +150
MDS18	80	56	80	0.80	
MDS110	100	70	100		

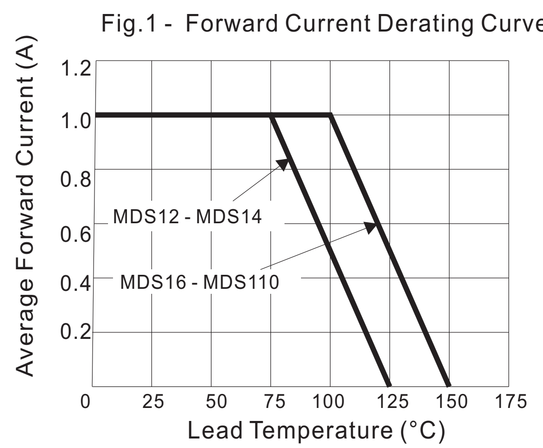
*1 Repetitive peak reverse voltage

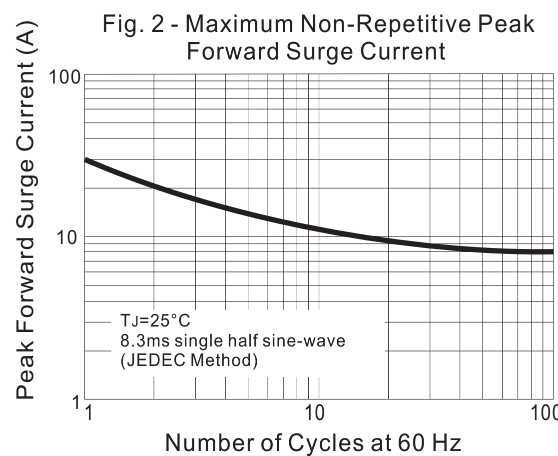
*2 RMS voltage

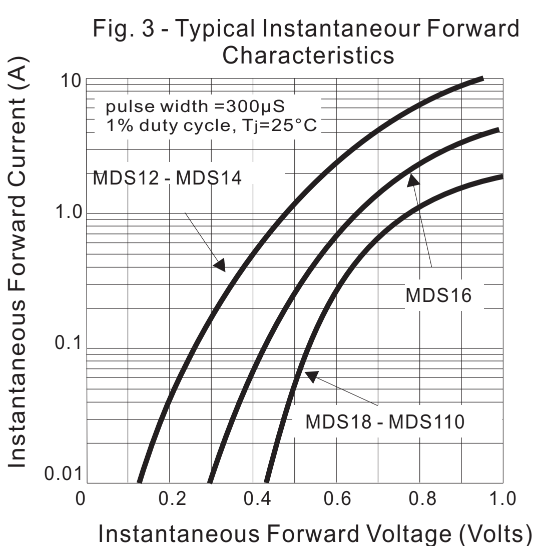
*3 Continuous reverse voltage

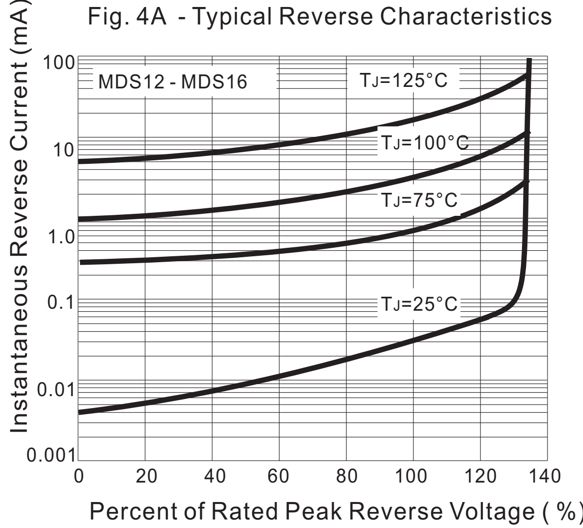
*4 Maximum forward voltage per element at 1.0A peak

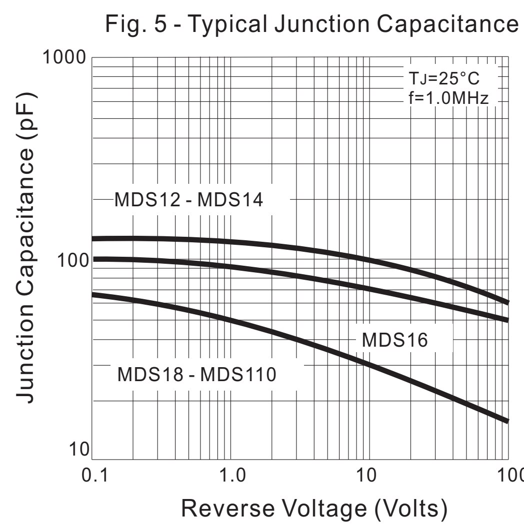
Rating and characteristic curves (MDS12 THRU MDS110)

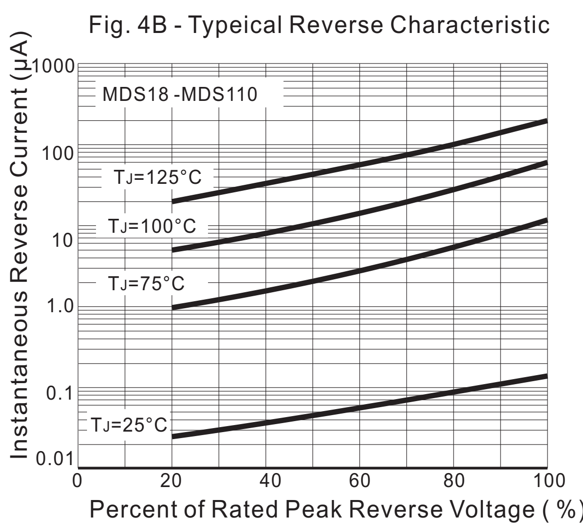












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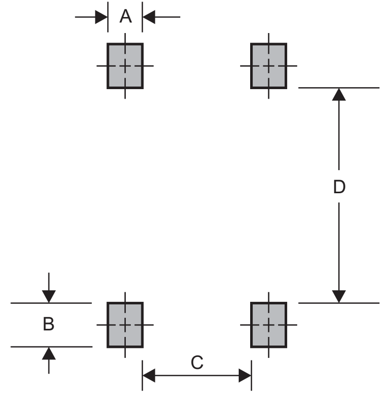
Pinning information

Simplified outline	Symbol
− + ∿ ∿	+ ~ ~ -

Marking

Type number	Marking code
MDS12	MDS12
MDS14	MDS14
MDS16	MDS16
MDS18	MDS18
MDS110	MDS110

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C	D
TO-269AA (MDS)	0.023 (0.58)	0.030 (0.76)	0.070 (1.78)	0.226 (5.75)

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Document ID	Issued Date	Revised Date	Revision	Page.
DS-241659	2009/08/10	2014/04/10	C	7

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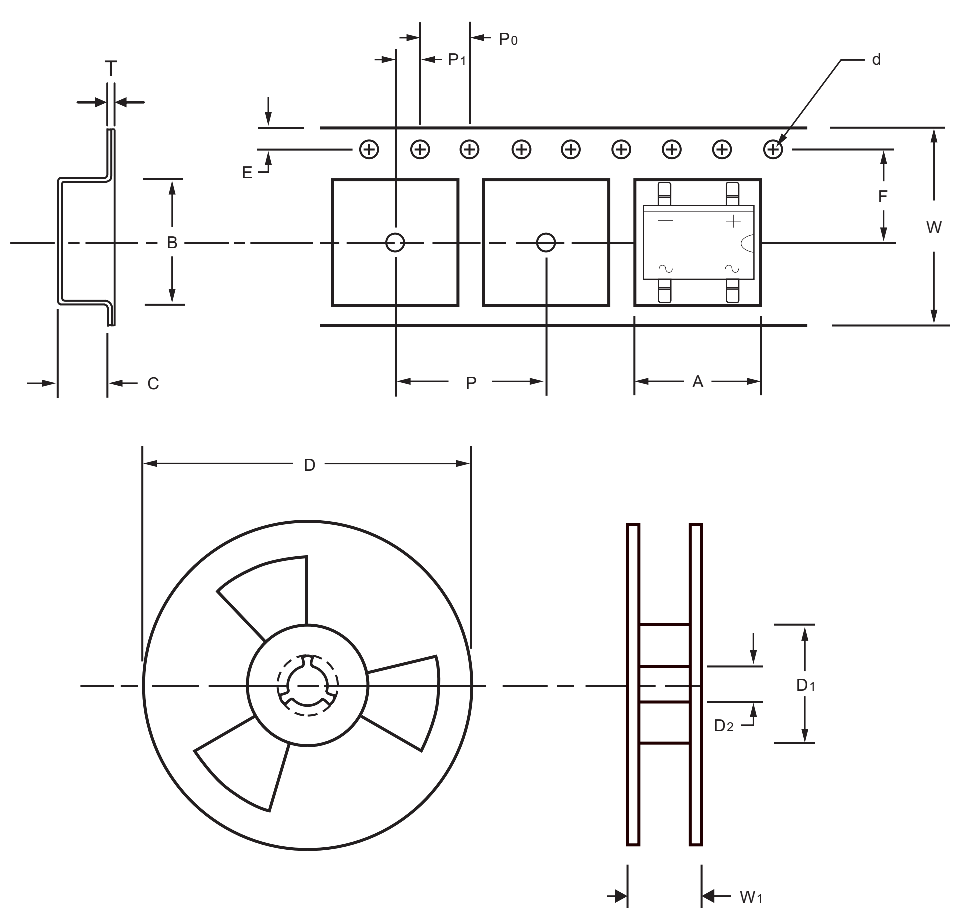
Packing information



unit:mm

Item	Symbol	Tolerance	TO-269AA (MDS)
Carrier width	A	0.1	5.00
Carrier length	B	0.1	7.24
Carrier depth	C	0.1	3.33
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	50.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D_1	min	-
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W_1	1.0	18.00

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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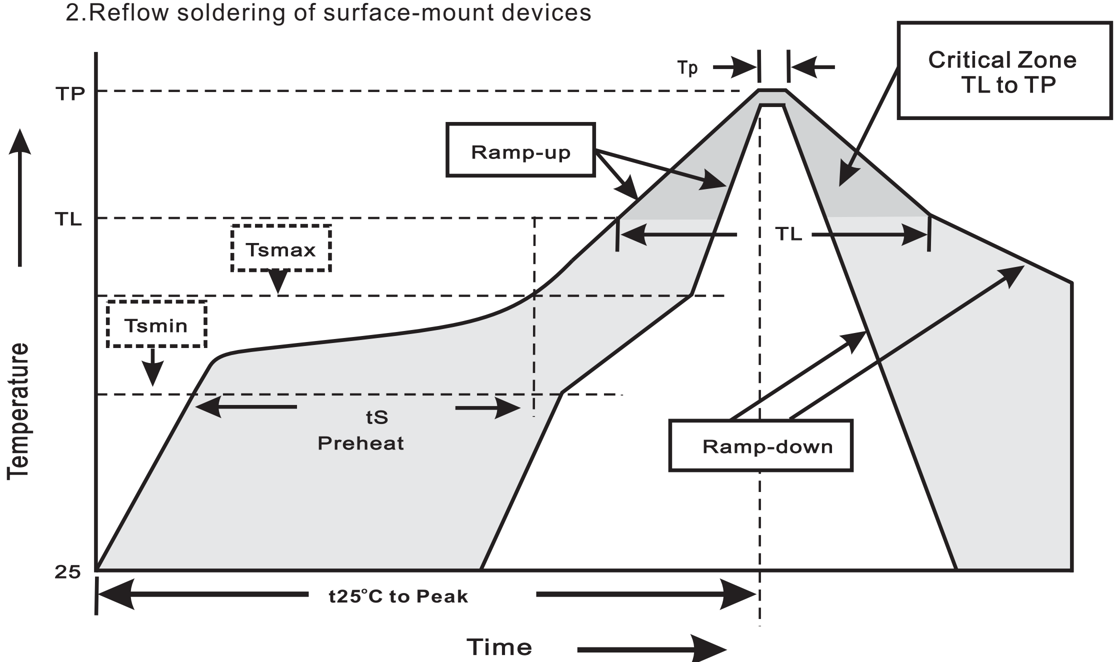
Reel packing

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)
TO-269AA (MDS)	13"	2,500	8.0	5,000	337*337*37	330	350*330*360	40,000	11.8

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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=125°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°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°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031