SL12-MH THRU SL14-MH

List

List.. 1

Package outline.. 2

Features.. 2

Mechanical data... 2

Maximum ratings and Electrical characteristics 2

Rating and characteristic curves... 3

Pinning information...4

Marking.. 4

Suggested solder pad layout... 4

Packing information... 5

Reel packing... 6

Suggested thermal profiles for soldering processes............................ 6

High reliability test capabilities...7

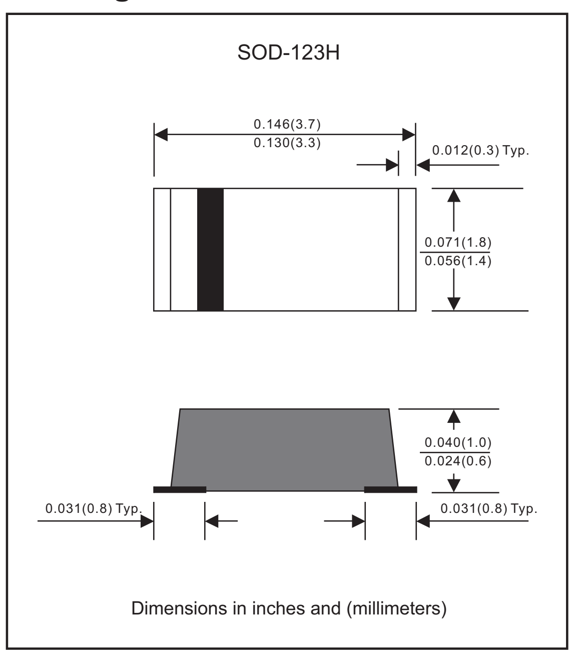
SL12-MH THRU SL14-MH

1.0A Low VF Surface Mount Schottky Barrier Rectifiers 20-40V

Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance
- Low profile surface mounted application in order to optimize board space
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- High surge capability
- Guardring for overvoltage protection
- Ultra high-speed switching
- Silicon epitaxial planar chip, metal silicon junction
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen free parts, ex. SL12-MH-H

Package outline



Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123H
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.011 gram

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

PARAMETER	SYMBOLS	SL12-MH	SL13-MH	SL14-MH	UNITS
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	40	Volts
Maximum RMS voltage	V_{RMS}	14	21	28	Volts
Maximum continuous reverse voltage	V_R	20	30	40	Volts
Maximum average forward rectified current	I_O	1.0			A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	30			A
Typical diode junction capacitance (Note 1)	C_J	130			pF
Operating junction temperature range	T_J	-55 to +100			°C
Storage temperature range	T_{STG}	-65 to +175			°C

Electrical characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	SL12-MH	SL13-MH	SL14-MH	UNITS
Maximum instantaneous forward voltage at I_F=1.0A	V_F	0.38	0.40	0.40	Volts
Maximum reverse leakage current at rated V_R — T_J=25°C	I_R	1.0			mA
Maximum reverse leakage current at rated V_R — T_J=75°C	I_R	20			mA

Thermal characteristics

PARAMETER	SYMBOLS	SL12-MH	SL13-MH	SL14-MH	UNITS
Typical thermal resistance junction to ambient (Note 2)	$R_{\theta JA}$	52			°C / W
Typical thermal resistance junction to case (Note 2)	$R_{\theta JC}$	42			°C / W

Notes 1: Measured at 1 MHz and applied reverse voltage of 4.0 VDC
2: Mounted on FR-4 PCB copper, minimum recommended pad layout

Rating and characteristic curves (SL12-MH THRU SL14-MH)

FIG.1-TYPICAL FORWARD CHARACTERISTICS

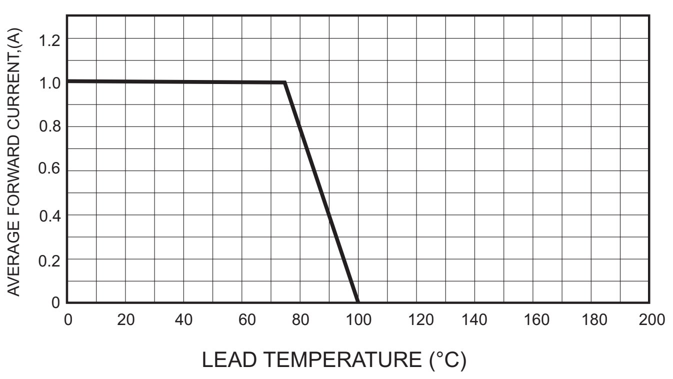
INSTANTANEOUS FORWARD CURRENT,(A)

50
10
3.0
1.0
0.1
.01

SL12-MH
SL13-MH / SL14-MH
T_J=25°C
Pulse Width 300us
1% Duty Cycle

.1 .3 .5 .7 .9 1.1 1.3 1.5

FORWARD VOLTAGE,(V)



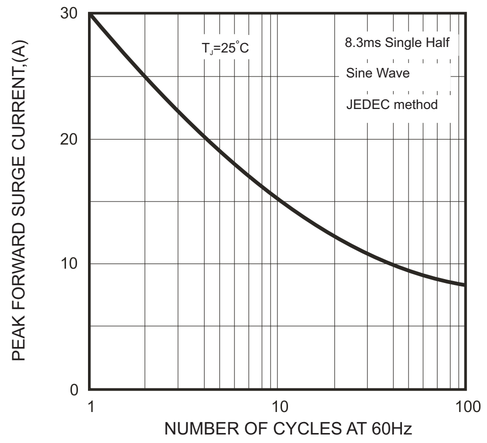


FIG.3 - TYPICAL REVERSE

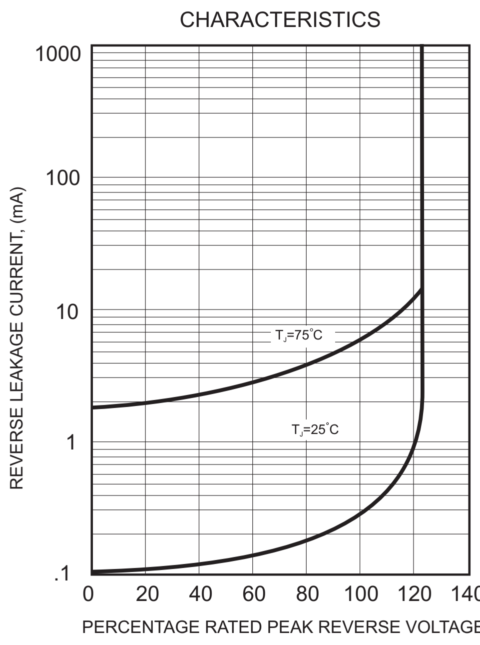
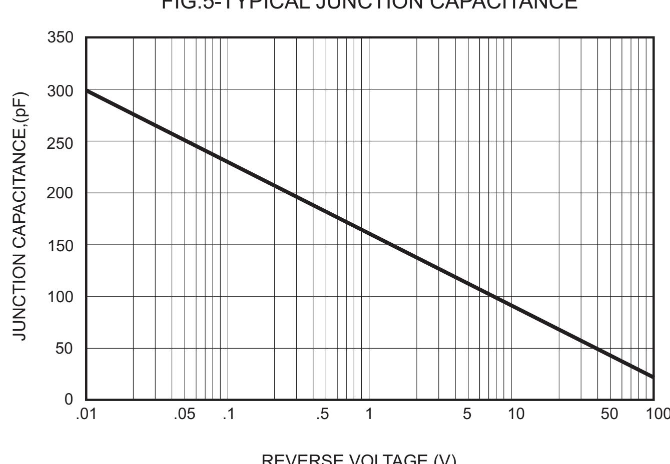


FIG.5-TYPICAL JUNCTION CAPACITANCE



Formosa MS
http://www.formosams.com/
TEL:886-2-22696661
FAX:886-2-22696141

Document ID	Issued Date	Revised Date	Revision	Page.
DS-121654	2008/02/10	2010/11/12	F	7

SL12-MH THRU SL14-MH

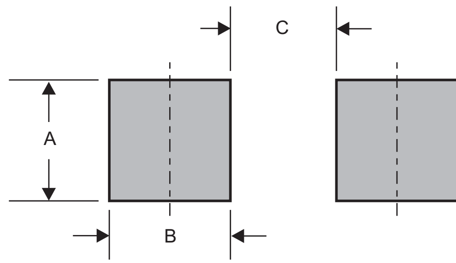
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode	1 2	1 2

Marking

Type number	Marking code
SL12-MH	L2
SL13-MH	L3
SL14-MH	L4

Suggested solder pad layout

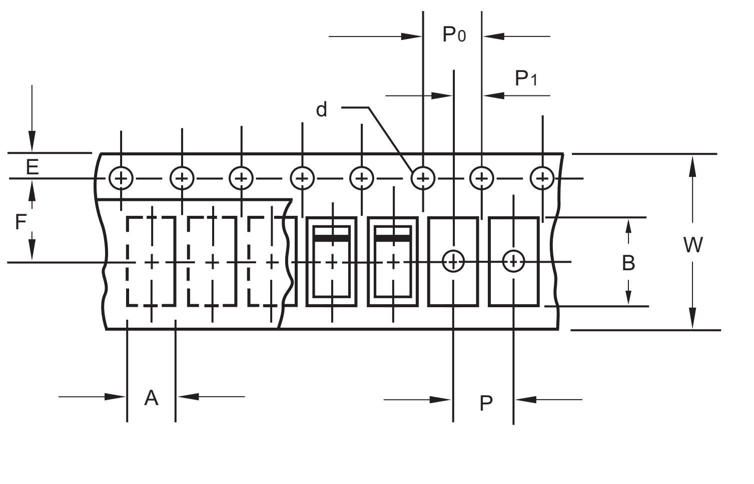


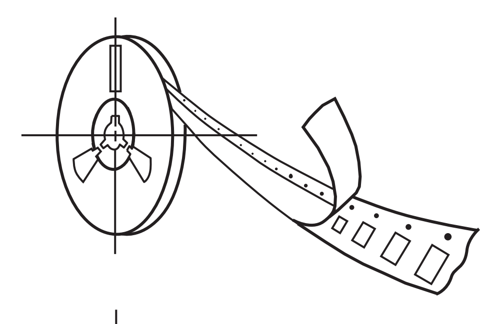
Dimensions in inches and (millimeters)

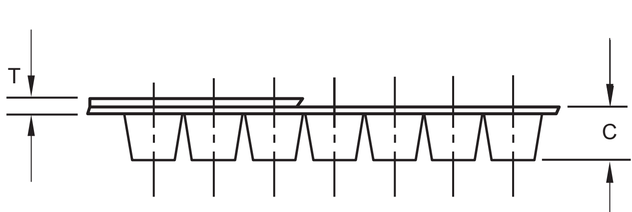
PACKAGE	A	B	C
SOD-123H	0.071 (1.80)	0.051 (1.30)	0.067 (1.70)

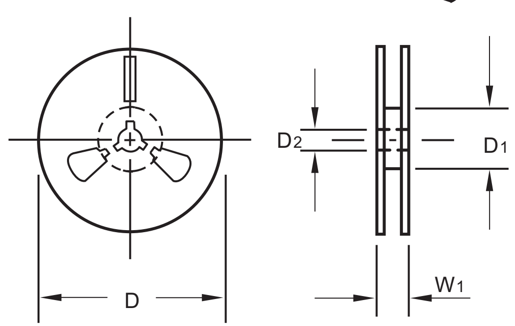
SL12-MH THRU SL14-MH

Packing information









unit:mm

Item	Symbol	Tolerance	SOD-123H
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

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

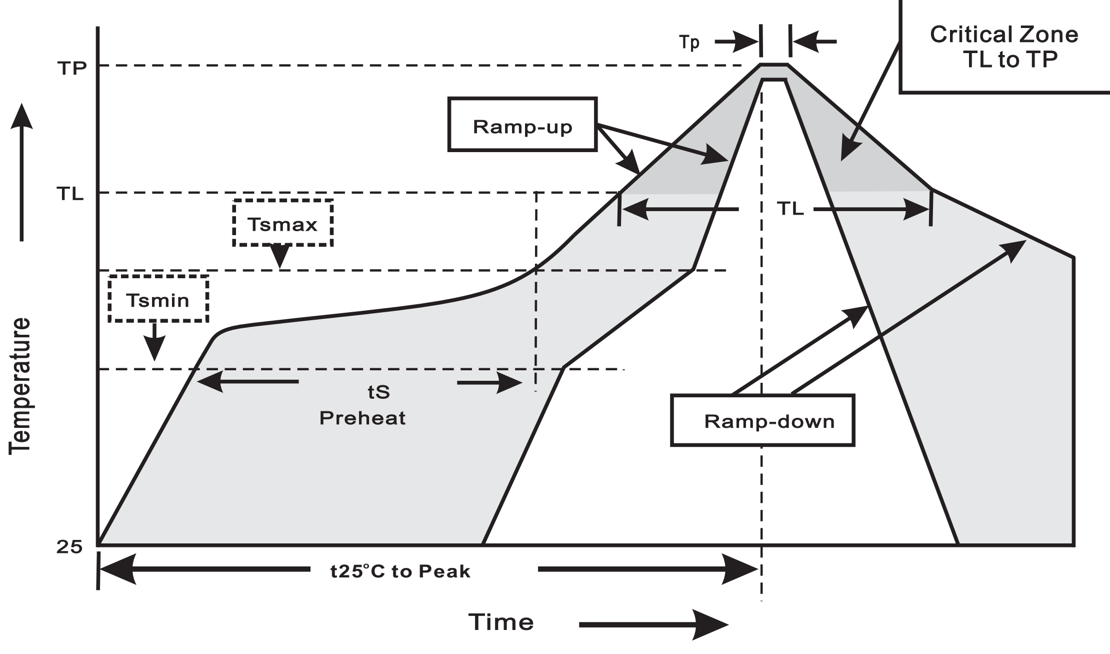
SL12-MH THRU SL14-MH

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)
SOD-123H	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.0

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

SL12-MH THRU SL14-MH

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	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=100°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