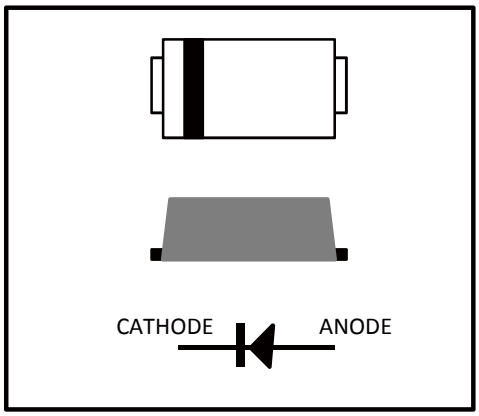
Schottky Barrier Rectifiers

Reverse Voltage 20 to 200V Forward Current 1.0A

Pb Lead(Pb)-Free

FEATURES

* Plastic package has Underwriters Laboratory Flammability Classification 94V-0
* Low power loss,high efficiency
* For use in low voltage high frequency inverters, free wheeling,and polarity protection applications
* Guardring for over voltage protection
* High temperature soldering guaranteed: 260°C/10 seconds at terminals



Mechanical Data

Case: SOD-123FL/MINI SMA molded plastic over sky die
Terminals: Tin Plated, solderable per MIL-STD-750, Method 2026
Polarity: Color band denotes cathode end
Mounting Position: Any
Weight: 0.0155g
Handling precautin:None

We declare that the material of product is Haloggen free (green epoxy compound)

1.Electrical Characteristic

Maximum & Thermal Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	B120F	B130F	B140F	B145F	B150F	B160F	B180F	B1100F	B1150F	B1200F	Unit
device marking code		12	13	14	145	15	16	18	110	115	120	
Maximum repetitive peak reverse voltage	V_{RRM}	20	30	40	45	50	60	80	100	150	200	V
Maximum RMS voltage	V_{RMS}	14	21	28	31.5	35	42	56	70	105	140	V
Maximum DC blocking voltage	V_{DC}	20	30	40	45	50	60	80	100	150	200	V
Maximum average forward rectified current at TC = 75°C	$I_{F(AV)}$	1.0										A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I_{FSM}	30										A
Typical thermal resistance (Note 1)	$R\theta J_A$ $R\theta J_C$	110 40										°C/W
Operating junction temperature range	T_J	–55 to +150										°C
storage temperature range	T_{STG}	–65 to +175										°C

Electrical Characteristics Ratings at 25°C ambient temperature unless otherwise specified.

Parameter Symbol	symbol	B120F	B130F	B140F	B145F	B150F	B160F	B180F	B1100F	B1150F	B1200F	Unit
Maximum instantaneous forward voltage at(IF = 0.1 A, TJ = 25°C) (IF = 0.7 A, TJ = 25°C) (IF = 1.0 A, TJ = 25°C)	V_F	- - 0.5	0.35 0.45 0.50	- - 0.55		- - 0.7		- - 0.85		- - 0.90	- - 0.92	V
Maximum DC reverse current at rated DC blocking voltage TA = 25°C Tj = 125°C	I_R	0.5 10										mA
Typical junction capacitance at 4.0V, 1MHz	C_J	160										PF

NOTES:
1. 8.0mm2 (.013mm thick) land areas

2.Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Fig. 1 – Forward Current Derating Curve

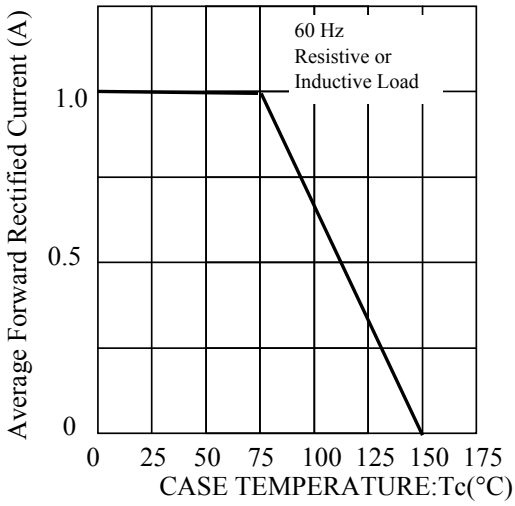


Fig. 2 – Maximum Non-repetitive Peak Forward Surge Current

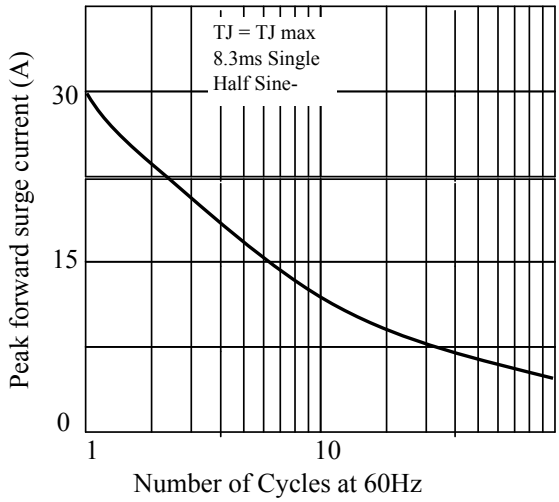


Fig 3. – Typical Instantaneous Forward Characteristics

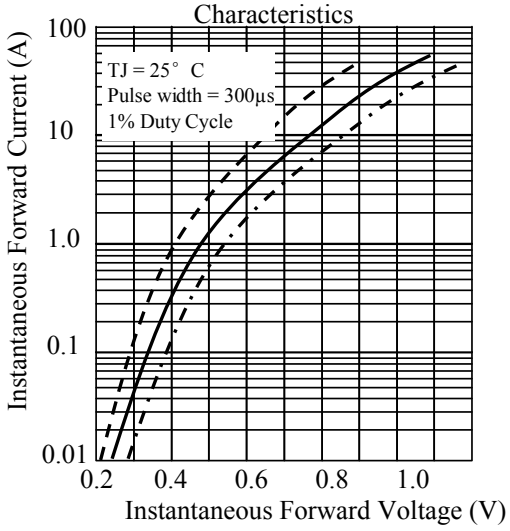


Fig 4. – Typical Reverse Characteristics

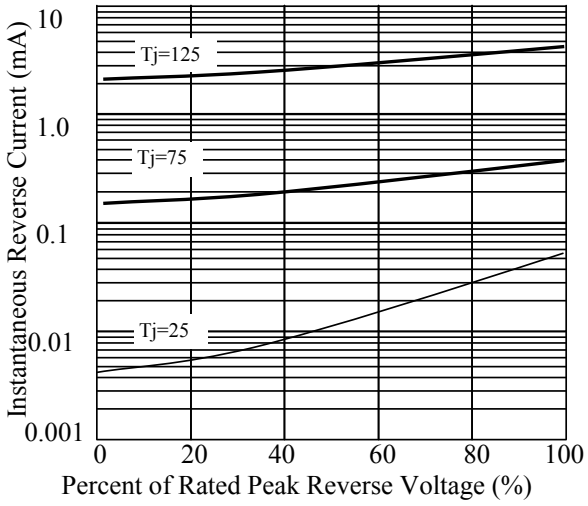


Fig 5. – typical transient thermal impedance

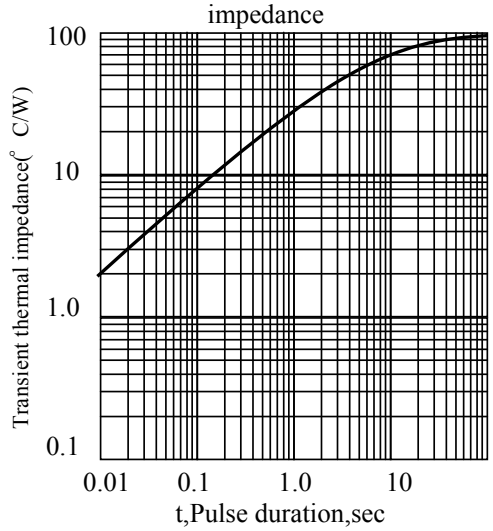
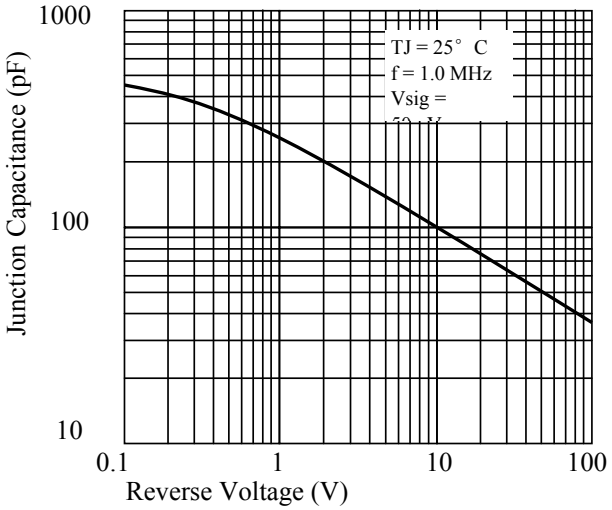
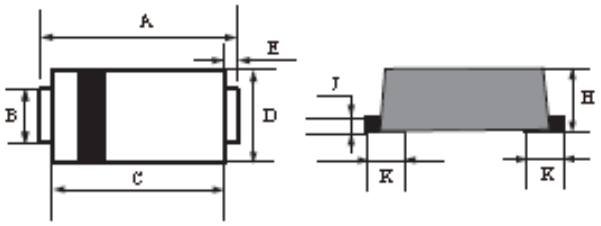


Fig 6. – Typical Junction Capacitance



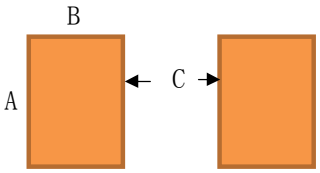
3. dimension:

SOD-123FL



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	3.5	3.9	0.138	0.159
B	0.75	0.95	0.029	0.037
C	2.6	3.0	0.103	0.119
D	1.6	2.0	0.063	0.079
E	0.45Typ		0.018Typ	
H	0.9	1.2	0.036	0.047
J	0.12	0.22	0.005	0.009
K	0.8Typ		0.032Typ	

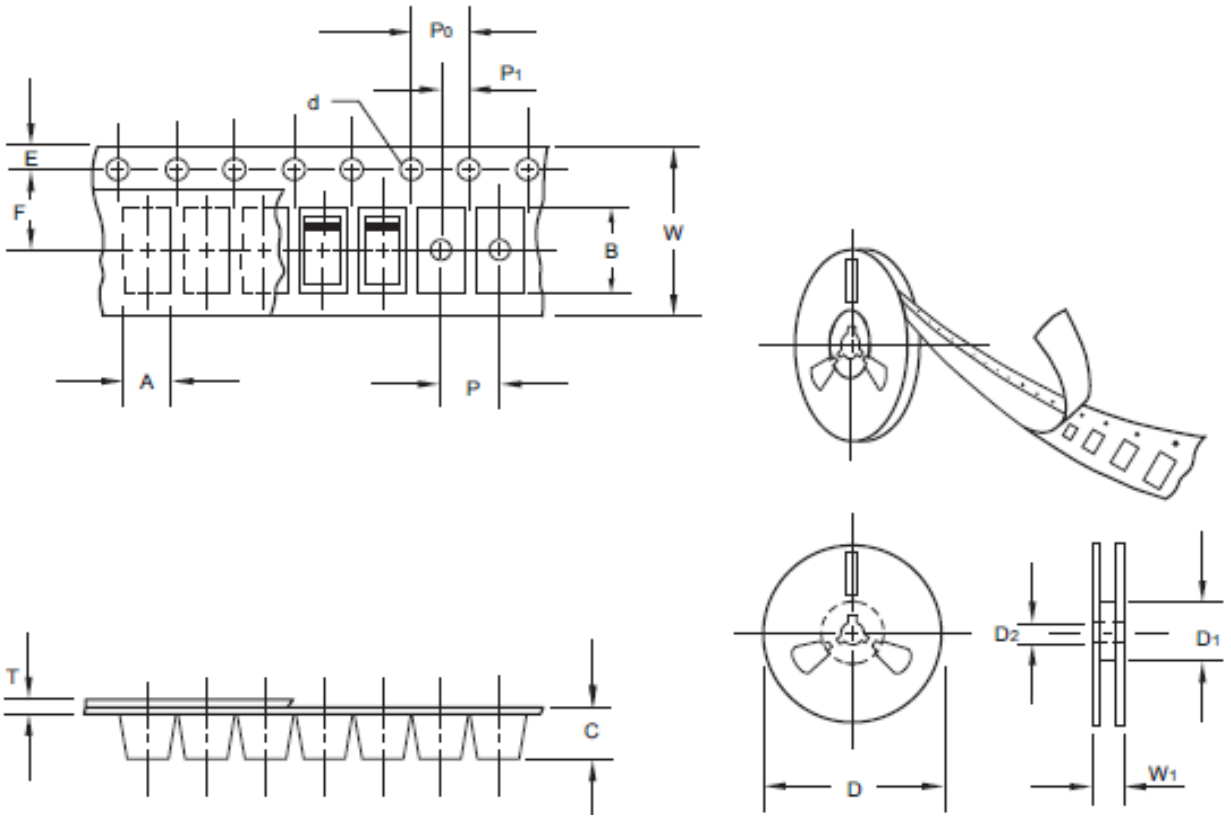
Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123FL	0.044(1.10)	0.040(1.00)	0.079(2.00)

4.Packing information



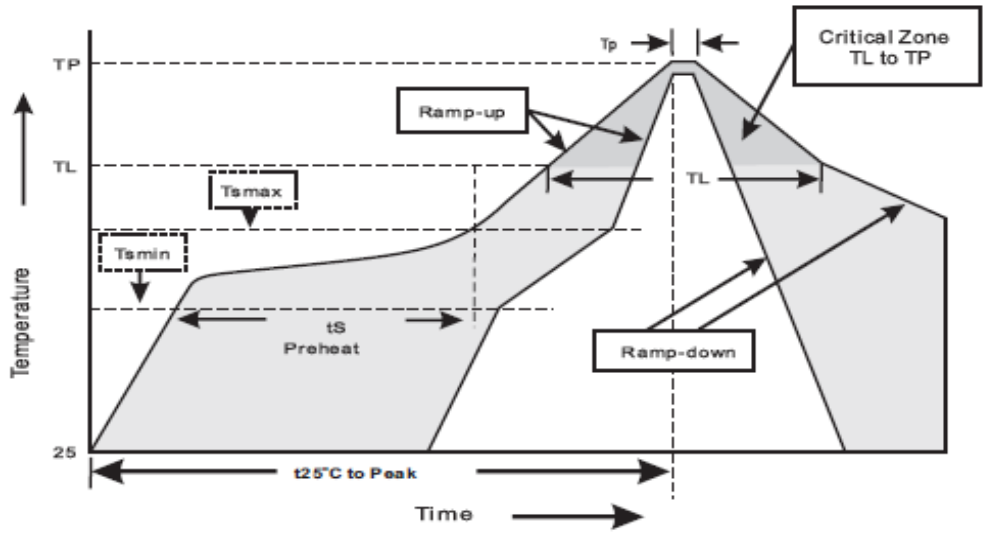
Unit : mm

Item	Symbol	tolerance	SOD-123FL
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
Spocket 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

5.Suggested thermal profile for soldering process

1. Storage environment：Temperature=5~40℃ Humidity=55±25%

2. Reflow soldering of surface-mount device



3. Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3℃/sec
Preheat - Temperature Min(Tsmin) - Temperature Max(Tsmax) - Time(min to max)(t_s)	 150℃ 200℃ 60~120sec
Tsmax to T_L - Ramp-up Rate	 <3sec
Time maintained above: - Temperature (T_L) - Time(t_L)	 217℃ 60-260sec
Peak Temperature(T_P)	255 -0/+5℃
Time within 5℃ of actual Peak Temperature(T_P)	10~30sec
Ramp-down Rate	<6℃/sec
Time 25℃ to Peak Temperature	<6minutes

6.High reliability test capabilities

Item Test	Condition	Reference
Solder Resistance	at 260±5℃ for 10±2sec immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031
Solderability	at 245±5℃ for 5 sec	MIL-STD-202F METHOD-208
High Temperature Reverse Bias	V_R=80% rate at T_j =150℃ for 168hr	MIL-STD-750D METHOD-1038
Forward Operation Life	Rated average rectifier current T_A=25℃ for 500hrs	MIL-STD-750D METHOD-1027
Intermittent Operation Life	T_A=25℃，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
Pressure Cooker	15P_{SIG} at T_A=121℃ for 4hrs	JESD22-A102
Temperature Cycling	-55℃ to +125℃ dwelled for 30 min. and transferred for 5min. Total 10 cycles	MIL-STD-750D METHOD-1051
Thermal Shock	0℃ for 5min. Rise to 100℃ for 5min. Total 10 cycles	MIL-STD-750D METHOD-1056
Forward Surge	8.3ms single half sine-wave superimposed on rated load,one surge	MIL-STD-750D METHOD-4066-2
Humidity	at T_A=85℃，R_H=85% for 1000hrs	MIL-STD-750D METHOD-1021
High Temperature Storage Life	at 175℃ for 1000hrs	MIL-STD-750D METHOD-1031