

1. Synopsis

1-1. General Description

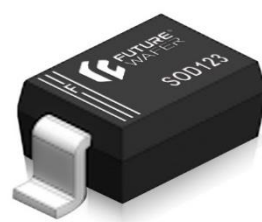
These Schottky Barrier Diodes are Designed for High Speed Switching Applications, Circuit Protection, And Voltage Clamping. Extremely Low Forward Voltage Reduces Conduction Loss. Miniature Surface Mount Package is Excellent For Handheld And Portable Applications Where Space is Limited.

1-2. Feature List

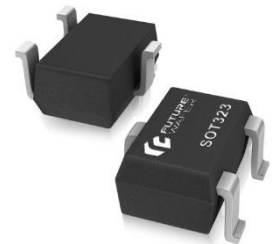
- Low Turn-on Voltage
- Extremely Fast Switching Speed
- PN Junction Guard Ring for Transient and ESD Protection
- Totally Lead-Free & Fully RoHS Compliant
- Halogen and Antimony Free. "Green" Device

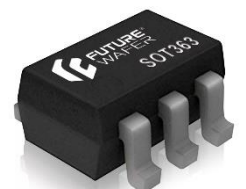
1-3. Mechanical Characteristics

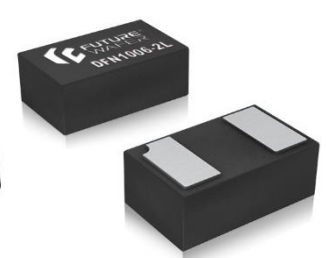
- Molded JEDEC Package:
 - SOT23 / - SOT323
 - SOT363 / - SOD123
 - SOD323 / - SOD323FL
 - SOD523FL / - DFN1006-2L
- Packing: Tape and Reel
- Flammability rating UL 94V-0
- Halogen Free
- JEDEC MSL Classification: Level 1


 BAT54T
 SOD123

 BAT54
 SOT23

 BAT54H
 SOD323

 BAT54CW
 SOT323

 BAT54WS
 SOD323FL

 BAT54BRW
 SOT363

 BAT54K
 SOD523FL

 BAT54L
 DFN1006-2L


1-3. Device Characteristics

Maximum Ratings@25°C Unless Otherwise Specified

Parameter	Symbol	Values	Units
Peak Repetitive Reverse Voltage	V_{RRM}	30	V
Working Peak Reverse Voltage	V_{RWM}		
DC Reverse Voltage	V_R		
Average Forward Current	I_F	200	mA
Non-repetitive Peak Forward Surge Current	I_{FSM}	600	
Power Dissipation	P_D	200	mW
Operating and Storage Temperature	T_J	-65 ~ +150	°C
	T_{STG}		

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3. Electrical Property

3-1. Electrical Characteristics

Parameter	Symbol	Condition	Min.	Max.	Units
Reverse Breakdown Voltage	V_{BR}	$I_R = 100\mu A$ $T_A = 25^\circ C$	-	30	V
Forward Voltage	V_F	$I_F = 0.1mA$	-	240	mV
		$I_F = 1mA$	-	320	
		$I_F = 10mA$	-	400	
		$I_F = 30mA$	-	500	
		$I_F = 100mA$	-	800	
Reverse Recovery Time	t_{rr}	-	-	5.0	nS
Reverse Leakage Current	I_R	@ $V_R = 30V$ $T_A = 25^\circ C$	-	2.0	μA
Junction Capacitance	C_J	Pin Capacitance to GND. $V_{dc} = 0V, f = 1MHz$	-	10	pF

3-2. Thermal Characteristics

Parameter	Symbol	Package	Values	Units
Junction-Ambient	R_{thJA}	SOT23, SOD123, DFN1006-2L	500	$^\circ C/W$
		SOT323, SOT363, SOD323, SOD323FL	550	
		SOD523FL	600	

3-3. Ratings and Characteristics Curve ($T_A=25^\circ C$ Unless Otherwise Noted)-Fig 1~2

Fig 1. Power Derating Curve

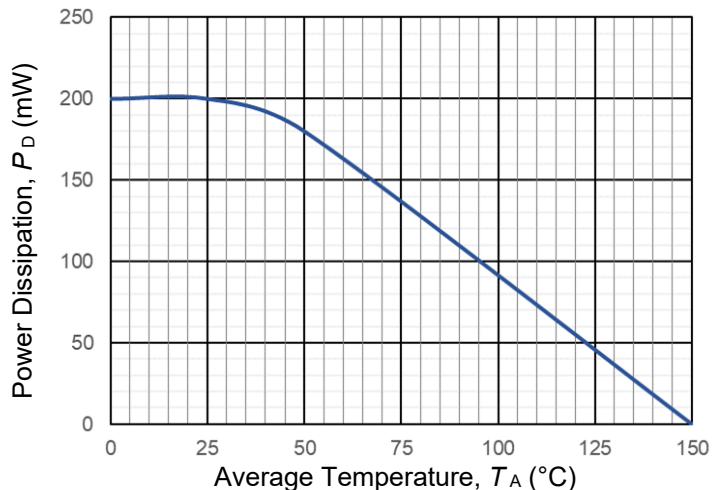
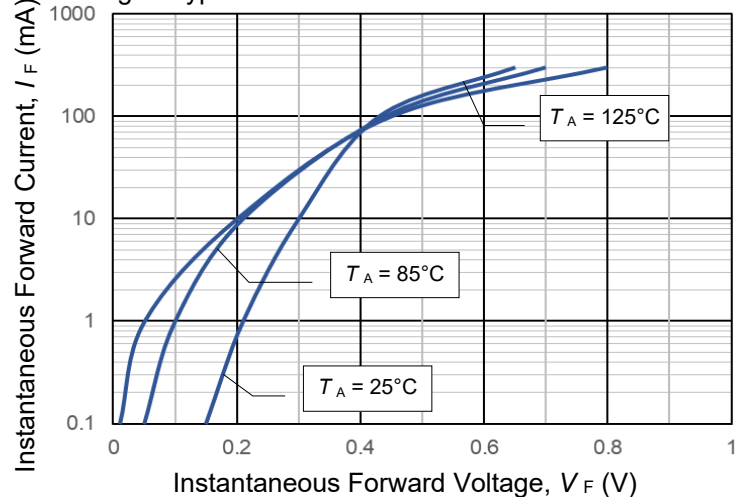
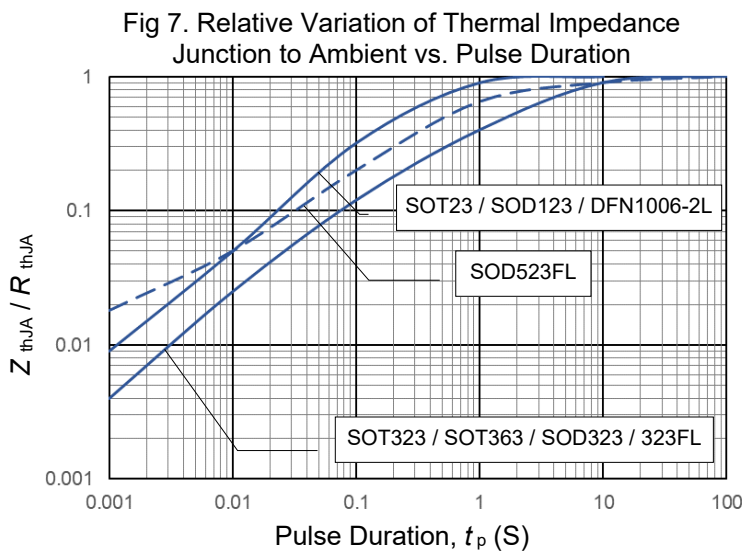
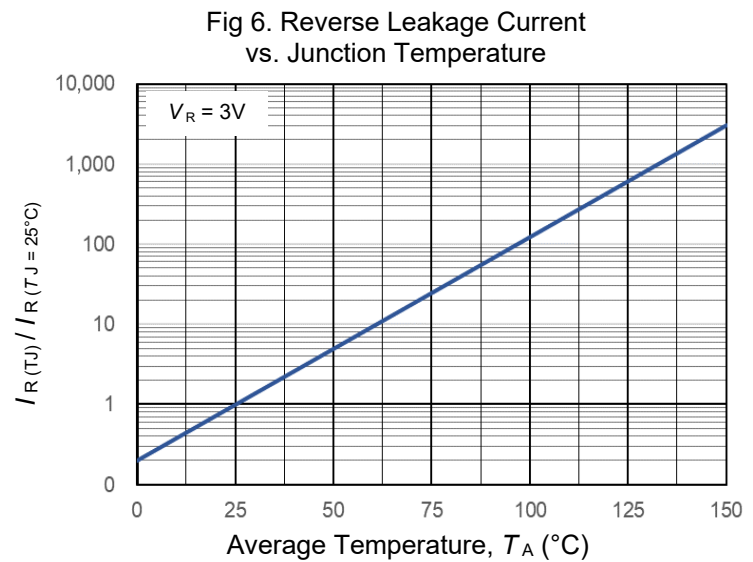
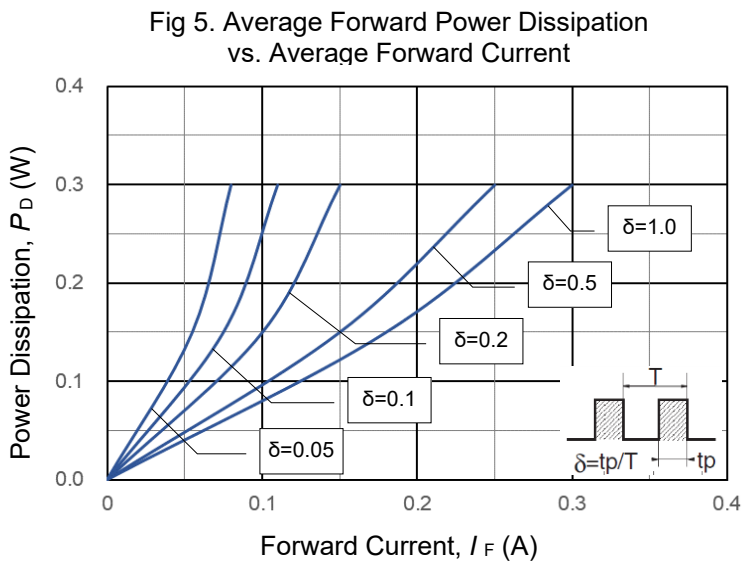
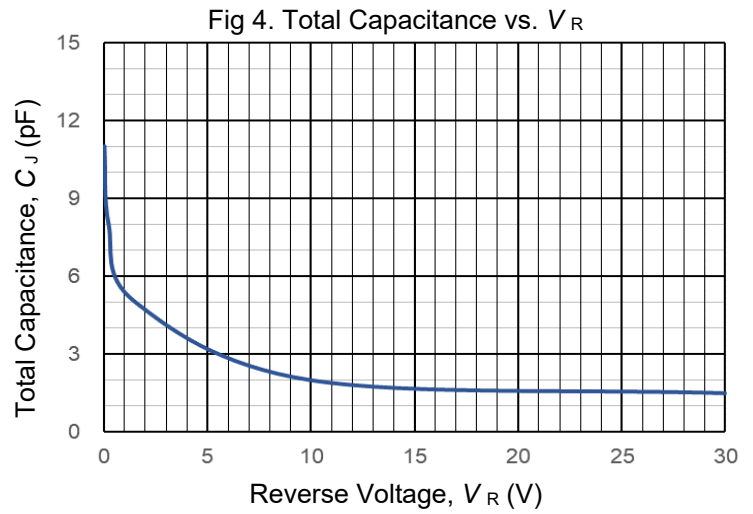
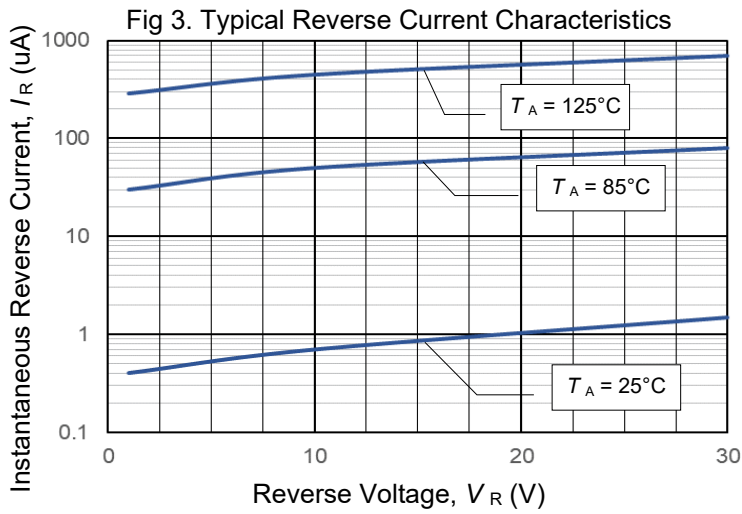


Fig 2. Typical Instantaneous Forward Characteristics



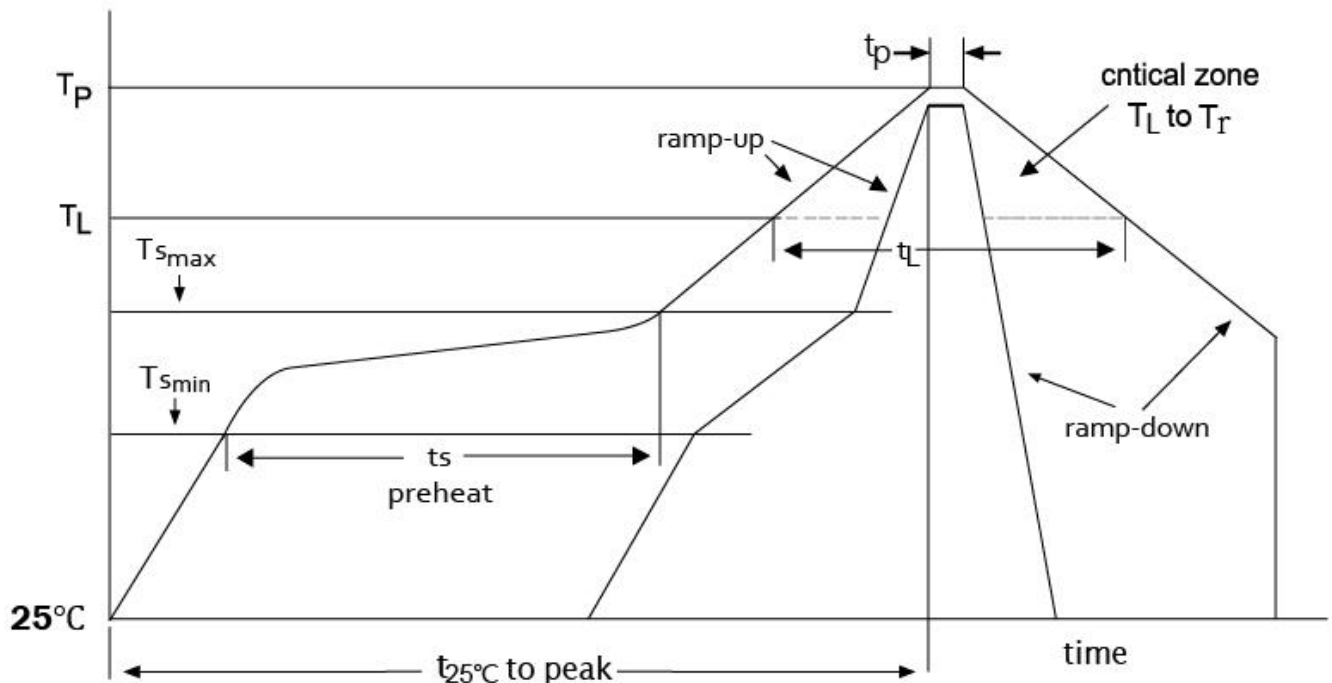
3-3. Ratings and Characteristics Curve ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)-Fig 3~7



4. Soldering Parameters

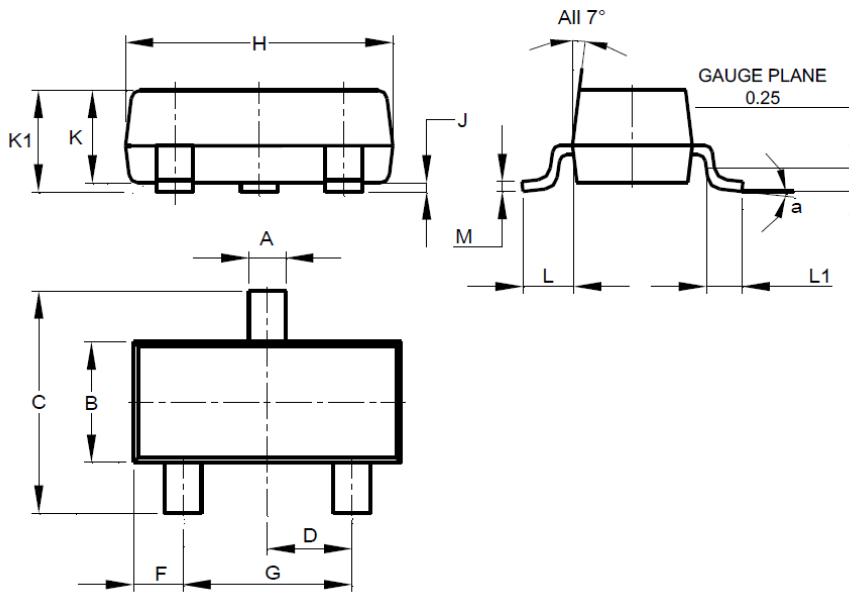
Profile Feature	SnPb eutectic assembly	Pb-free assembly
Average ramp-up rate (T _{smax} to T _p)	3 °C/s maximum	3 °C/s maximum
Preheat		
Temperature minimum (T _{smin})	100 °C	150 °C
Temperature maximum (T _{smax})	150 °C	200 °C
Time (t _{smin} to t _{smax})	60 s to 120 s	60 s to 180 s
Time maintained above		
Temperature (T _L)	183 °C	217 °C
Time (t _L)	60 s to 150 s	60 s to 150 s
Peak/classification temperature (T)	235 °C	260 °C
Number of allowed reflow cycles	3	3
Time within 5 °C of actual peak temperature (t _p)	10 s to 30 s	20 s to 40 s
Ramp-down rate	6 °C/s maximum	6 °C/s maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

temperature



5. Package Information

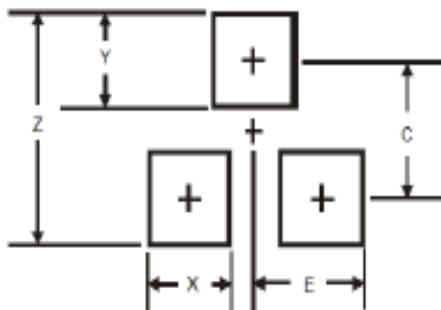
5-1. Dimension-SOT23



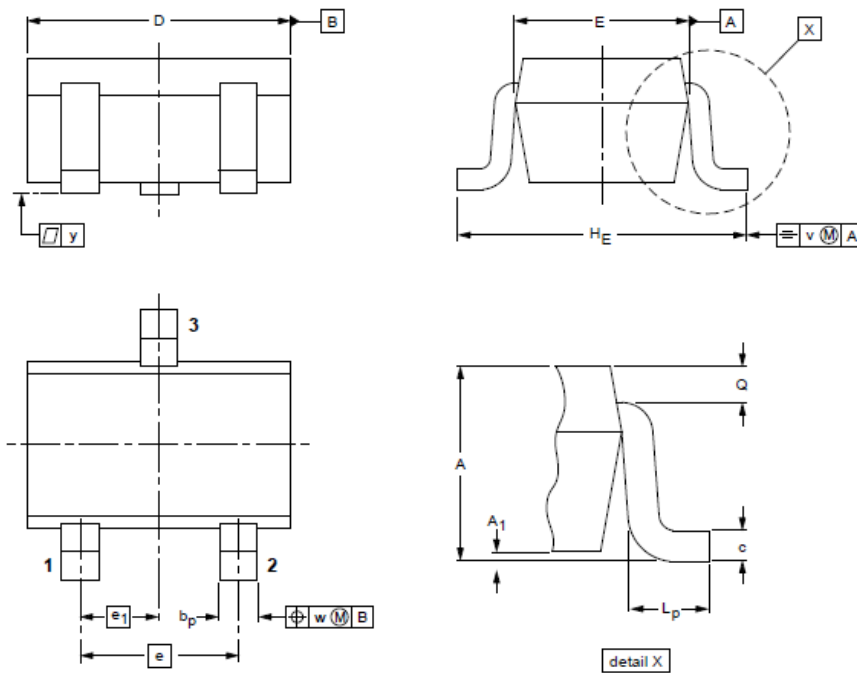
SOT23			
Dim	Min.	Max.	Typ.
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.05	0.975
K1	0.903	1.15	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		

Unit:mm

5-2. PCB Pad Layout Recommendation-SOT23

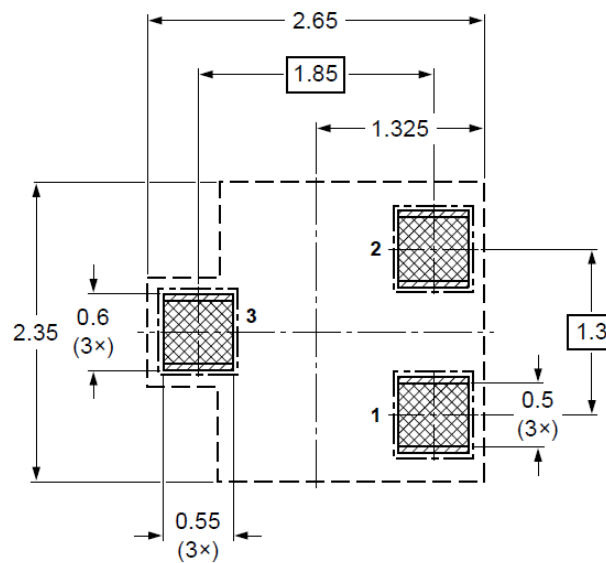


Dim	Millimeter
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

5-3. Dimension-SOT323

SOT323

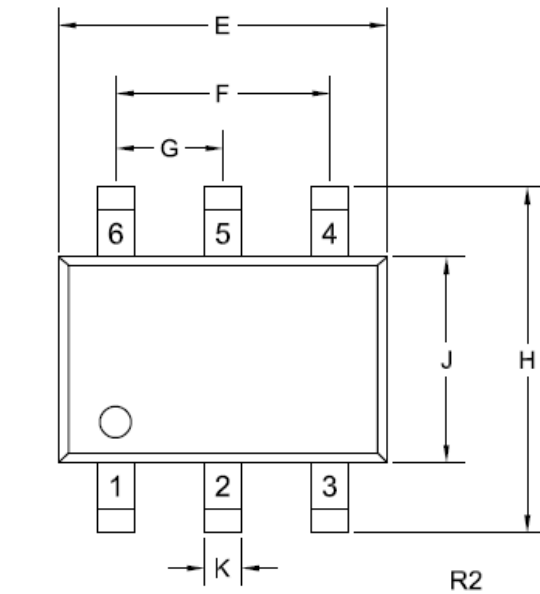
Dim	Min.	Max.	Typ.
A	0.8	1.1	-
A1	-	0.1	-
bp	0.3	0.4	-
c	0.10	0.25	-
D	1.8	2.2	-
E	1.15	1.35	-
e	-	-	1.3
e1	-	-	0.65
HE	2.0	2.2	-
Lp	0.15	0.45	-
Q	0.13	0.23	-
v	-	-	0.2
w	-	-	0.2

Unit:mm

5-4. PCB Pad Layout Recommendation-SOT323


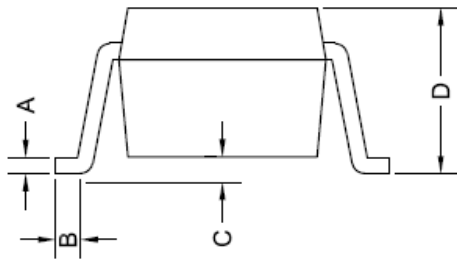
Unit:mm

5-5. Dimension-SOT363

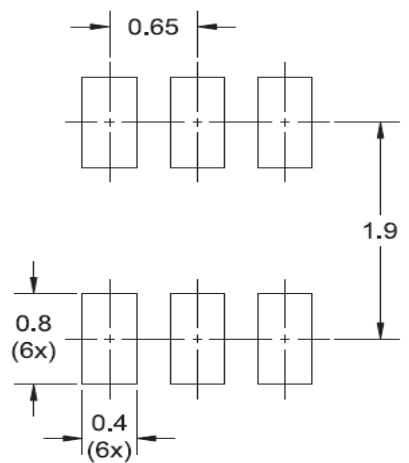


SOT363		
Symbol	Min.	Max.
A	0.10	0.25
B	0.12	
C	0.00	0.10
D	0.80	1.10
E	1.80	2.20
F	1.30	
G	0.65	
H	1.90	2.30
J	1.10	1.40
K	0.15	0.30

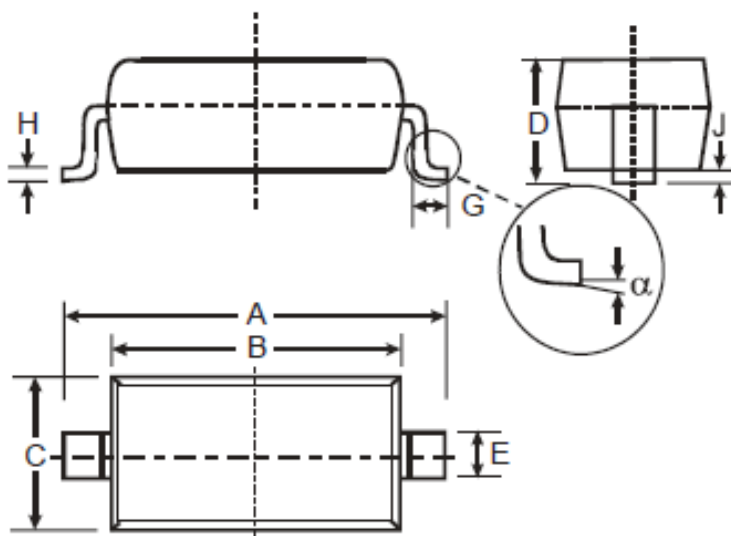
Unit:mm



5-6. PCB Pad Layout Recommendation-SOT363

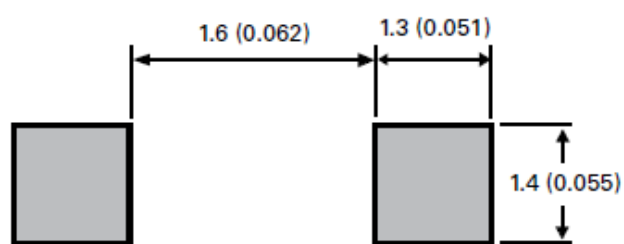


Unit:mm

5-7. Dimension-SOD123


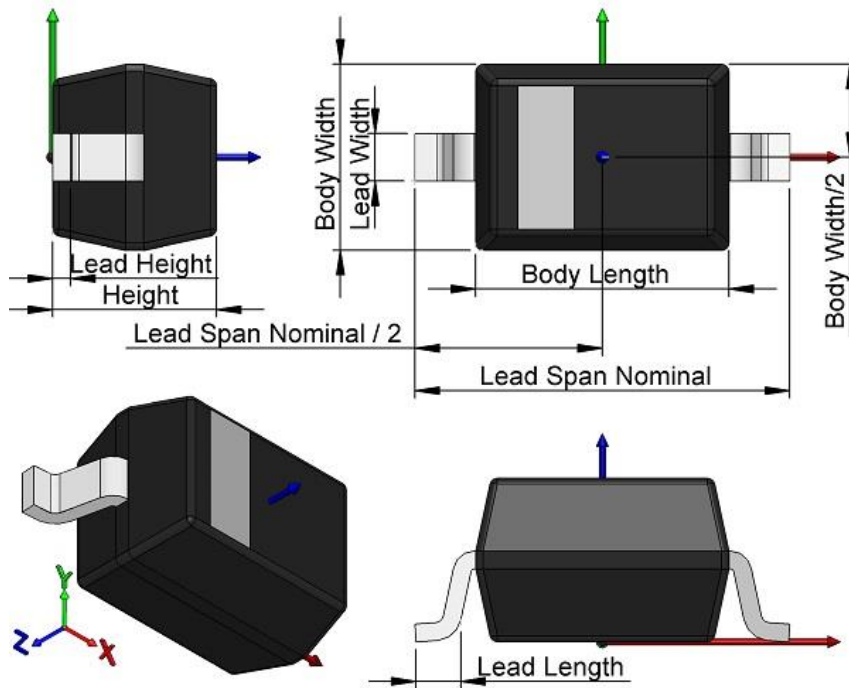
SOD-123		
Dim	Min.	Max.
A	3.55	3.85
B	2.55	2.85
C	1.40	1.80
D	-	1.35
E	0.45	0.65
G	0.25	-
H	-	0.25
J	0.30	0.75
α	0°	8°

Unit:mm

5-8. PCB Pad Layout Recommendation-SOD123


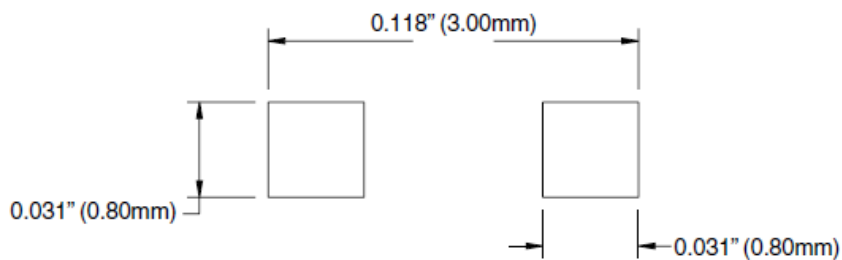
Unit: mm(inch)

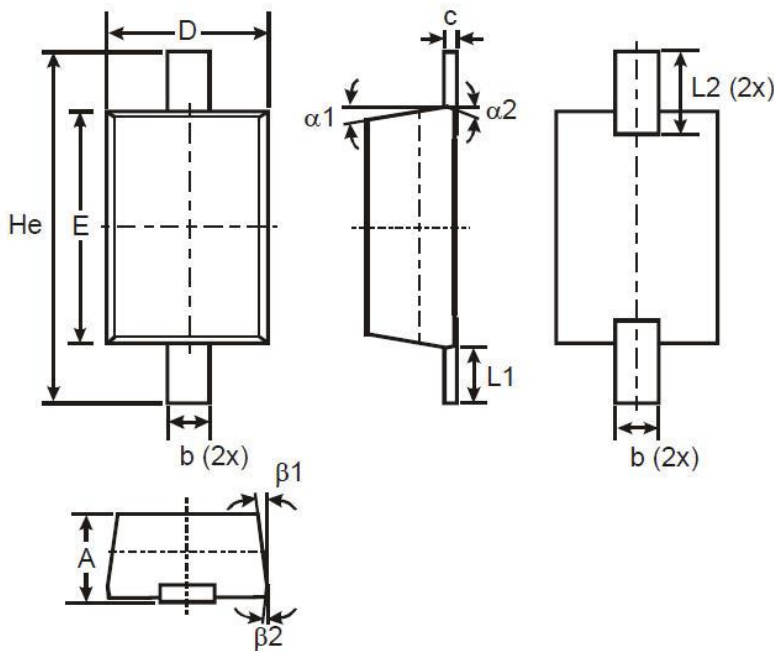
5-9. Dimension-SOD323



SOD323		
DIM	Millimeters	
	Min.	Max.
Body Length	1.60	1.90
Body Width	1.15	1.45
Lead Span Nominal	2.39	2.70
Height	0.80	1.10
Lead Width	0.25	0.40
Lead Height	0.10	0.20
Lead Length	0.20	0.40

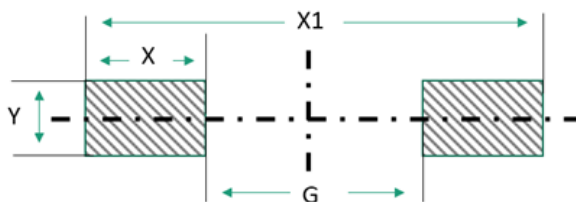
5-10. PCB Pad Layout Recommendation-SOD323



5-11. Dimension-SOD323FL


SOD-323FL		
Dim	Min.	Max.
A	0.80	1.10
b	0.25	0.40
c	0.10	0.15
D	1.15	1.35
E	1.60	1.80
He	2.30	2.80
L1	0.70	1.00
L2	0.80	1.20
$\alpha1$	-	7°
$\alpha2$	-	3°
$\beta1$	-	7°
$\beta2$	-	3°

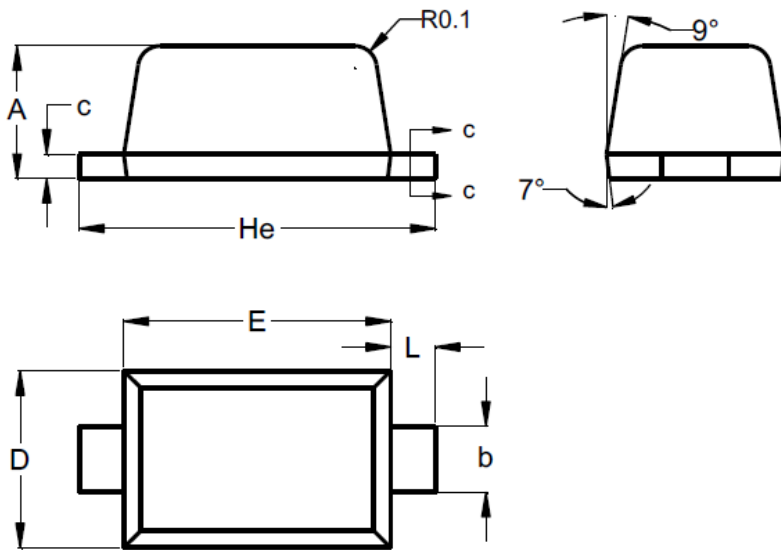
Unit:mm

5-12. PCB Pad Layout Recommendation-SOD323FL


Dim	Values
G	2.0
X	1.4
X1	3.0
Y	0.5

Unit:mm

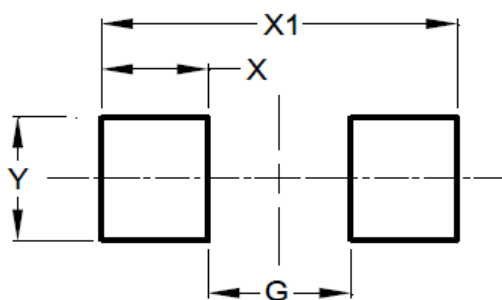
5-13. Dimension-SOD523FL



SOD523FL		
Symbol	Min.	Max.
A	0.55	0.65
b	0.26	0.34
c	0.11	0.17
D	0.75	0.85
E	1.15	1.25
He	1.55	1.65
L	0.10	0.30

Unit:mm

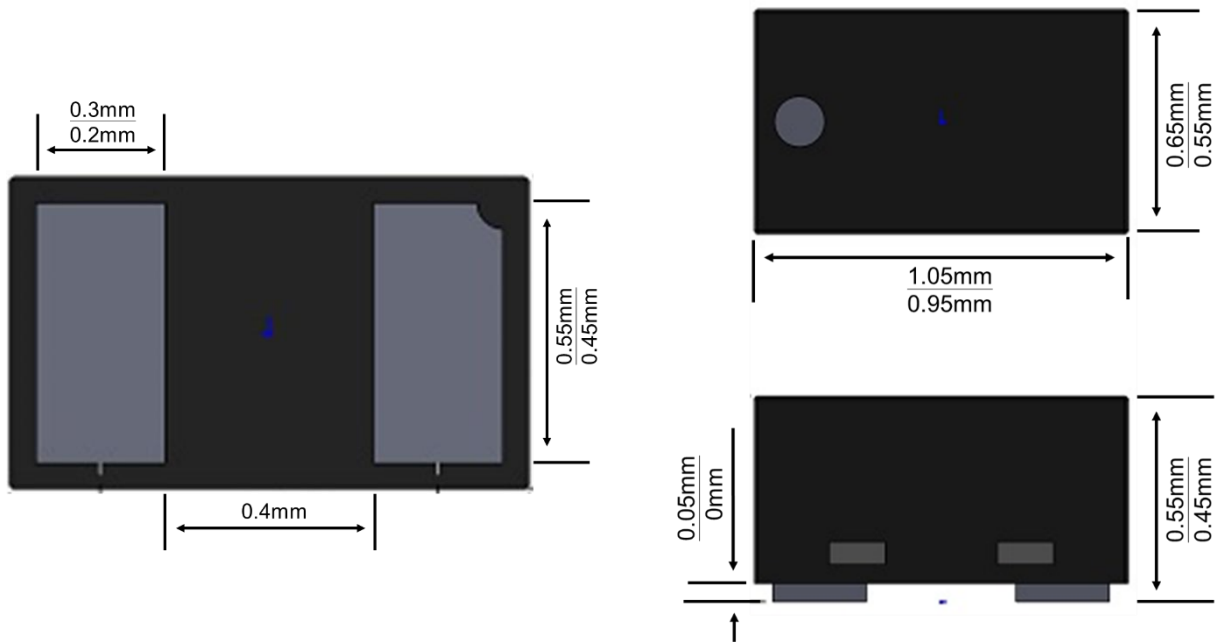
5-14. PCB Pad Layout Recommendation-SOD523FL



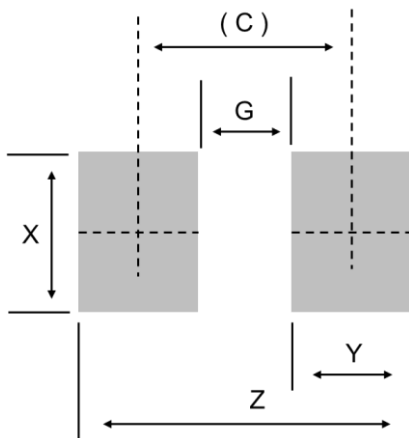
SOD-523FL	
Dim	Values
G	0.8
X	0.6
X1	2.0
Y	0.7

Unit:mm

5-15. Dimension-DFN1006-2L

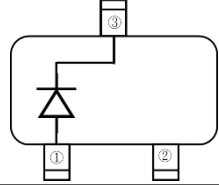
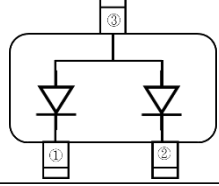
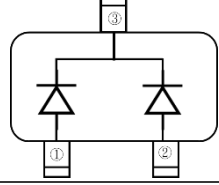
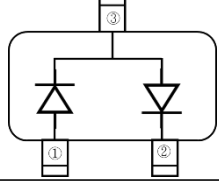
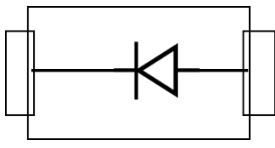
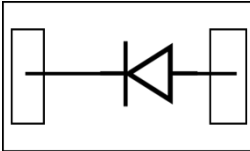
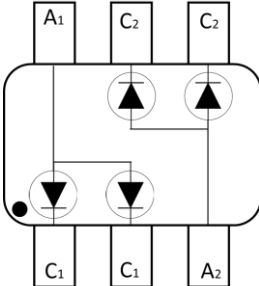


5-16. PCB Pad Layout Recommendation-DFN1006-2L



Dimensions		
Symbol	Inches	Millimeters
(C)	.033	0.85
G	.012	0.30
X	.024	0.60
Y	.022	0.55
Z	.055	1.40

6. Ordering Information

Part Number	Schematic	Marking Code	Component Package	Quantity	Packaging Option
BAT54		L4	SOT23	3,000 PCS	Tape & Reel - 8mm tape & 7"reel
BAT54W			SOT323		
BAT54A		L42	SOT23	3,000 PCS	
BAT54AW			SOT323		
BAT54C		L43	SOT23	3,000 PCS	
BAT54CW			SOT323		
BAT54S		L44	SOT23	3,000 PCS	
BAT54SW			SOT323		
BAT54T		MB / L9	SOD123	8,000 PCS	
BAT54H		BS3	SOD323		
BAT54WS		S1	SOD323FL		
BAT54K		BS3	SOD523FL		
BAT54L		BS3	DFN1006-2L	10,000 PCS	
BAT54BRW		KLB	SOT363	3,000 PCS	

7. Version

7-1. History

Version	Date	File No.	Recording	Basis
A	07-Feb-2018	F41806F	New Create	Market
B	05-May-2019		Update Company Info.	System
2.0	10-Oct-2021		Update Version	System
2.1	07-Dec-2021		Update Version	System