

# 1A Snubber Damping Rectifier

## TP6050ASH

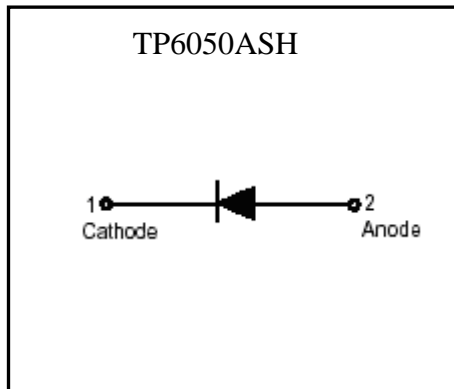
### Features

- High current capability
- Smoothly soft reverse recovery time (trr)
- Low profile surface mounted package in order to minimize board space
- Pb-free lead plating and halogen-free package

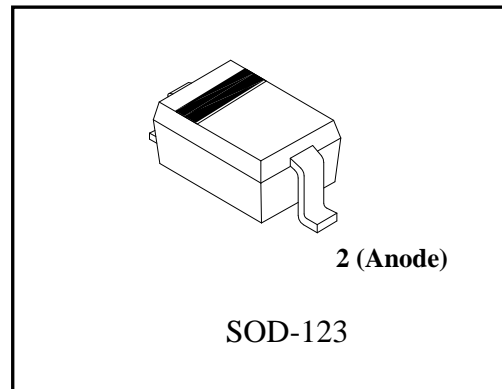
### Mechanical data

- Case : Molded plastic, JEDEC SOD-123.
- Epoxy : UL94-V0 rated flame retardant
- Terminals : Plated terminals, solderable per MIL-STD-202 method 208
- Polarity : Indicated by cathode band
- Mounting position : Any
- Weight : approx. 0.04 gram

### Symbol

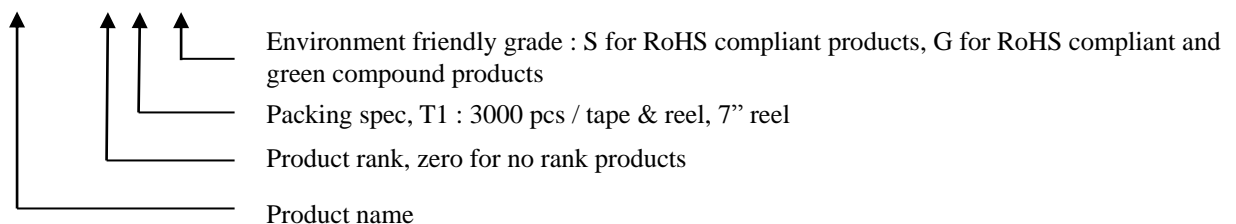


### Outline



### Ordering Information

Device	Package	Shipping
TP6050ASH-0-T1-G	SOD-123 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel





**Absolute Maximum Ratings** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameters	Conditions	Symbol	Value	Units
Repetitive peak reverse voltage		$V_{RRM}$	600	V
RMS voltage		$V_{RMS}$	420	V
Continuous reverse voltage		$V_R$	600	V
Forward rectified current	Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$	$I_{F(AV)}$	1	A
Repetitive Peak Forward Current	Single phase half wave, 60Hz @ $T_J=25^{\circ}\text{C}$	$I_{FRM}$	1.57	A
Forward surge current	8.3ms single half sine-wave superimposed on rated load (JEDEC method)	$I_{FSM}$	9	A
Maximum reverse recovery time	$I_F=0.5\text{A}$ , $I_R=1.0\text{A}$ , $I_{RR}=0.25\text{A}$	trr	300	ns
Storage temperature range		$T_{stg}$	-55~+150	$^{\circ}\text{C}$
Operating junction temperature range		$T_j$	-55~+150	$^{\circ}\text{C}$

**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	50	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-ambient, max (Note )	$R_{th,j-a}$	250	

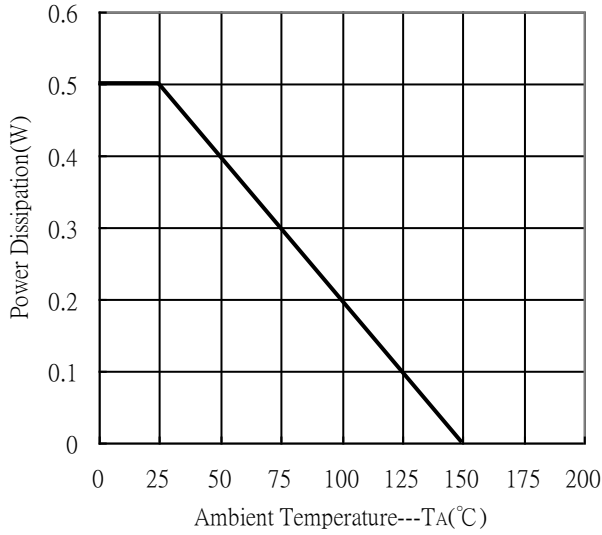
Note: When mounted on FR-4 PCB with area measuring  $10 \times 10$  mm

**Characteristics** ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

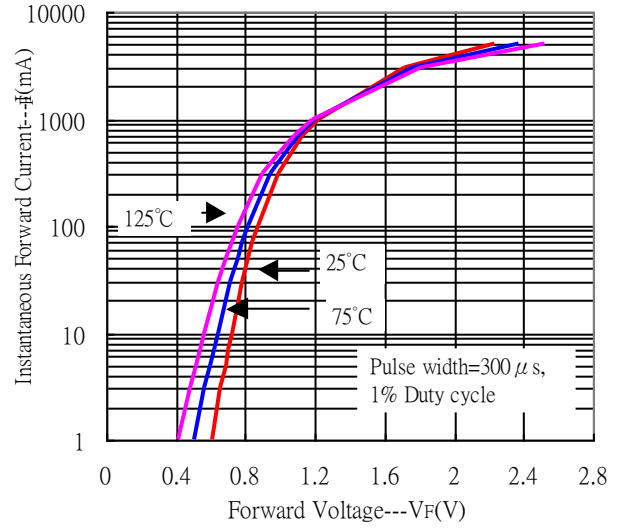
Characteristic	Symbol	Condition	Min.	Typ	Max.	Unit
	$V_R$	$I_R=100\mu\text{A}$	600	-	-	V
Forward Voltage	$V_F 1$	$I_F=100\text{mA}$	-	-	0.95	V
	$V_F 2$	$I_F=500\text{mA}$	-	-	1.2	
Reverse Leakage Current	$I_R$	$V_R=540\text{V}$	-	-	100	nA
	$I_R$	$V_R=540\text{V}$ , $T_A=125^{\circ}\text{C}$	-	-	10	$\mu\text{A}$
Junction Capacitance	$C_J$	$V_R=1\text{V}$ , $f=1\text{MHz}$	-	11.6	-	pF

## Typical Characteristics

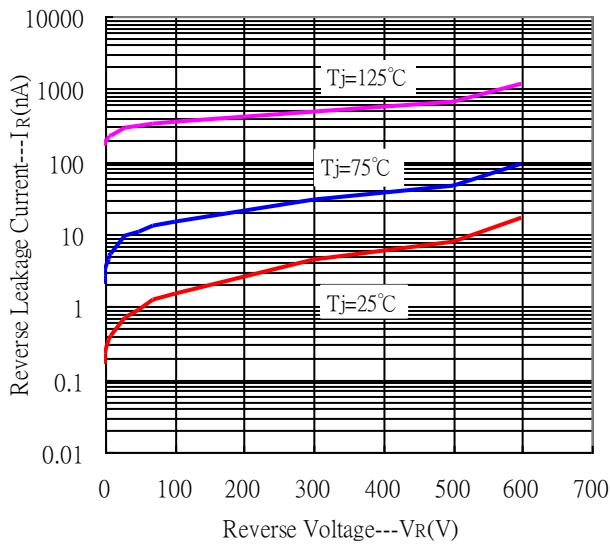
Power Derating Curve



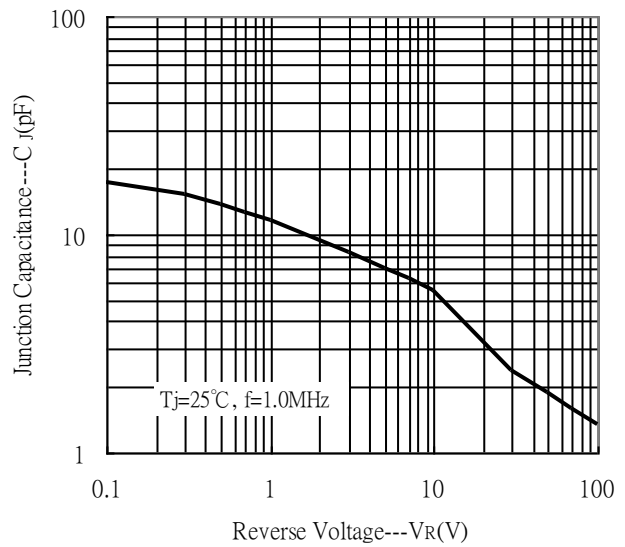
Forward Current vs Forward Voltage



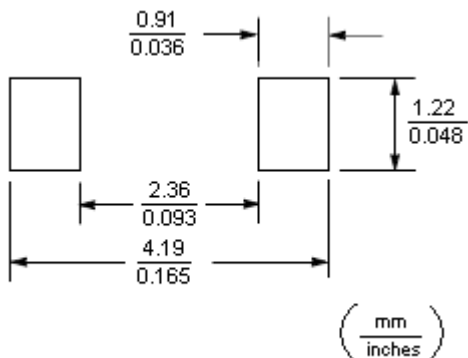
Reverse Leakage Current vs Reverse Voltage



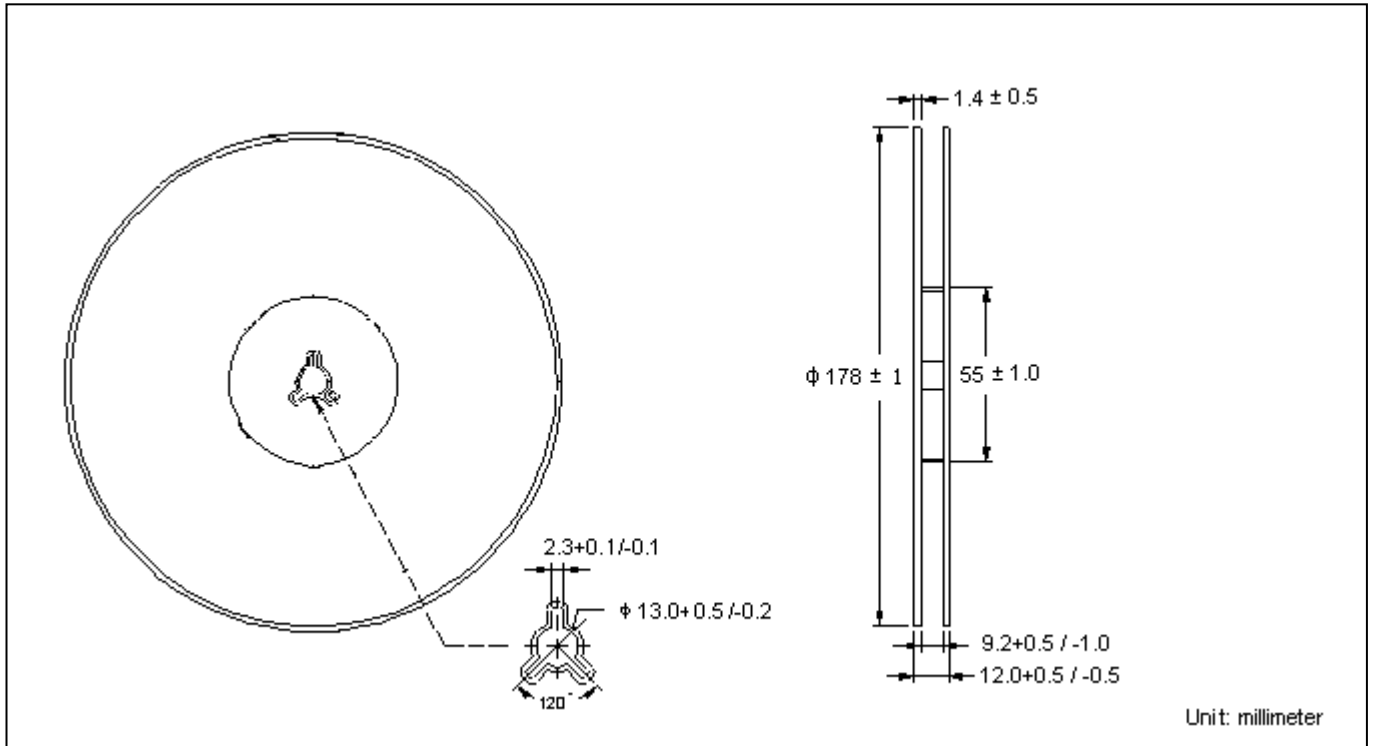
Junction Capacitance vs Reverse Voltage



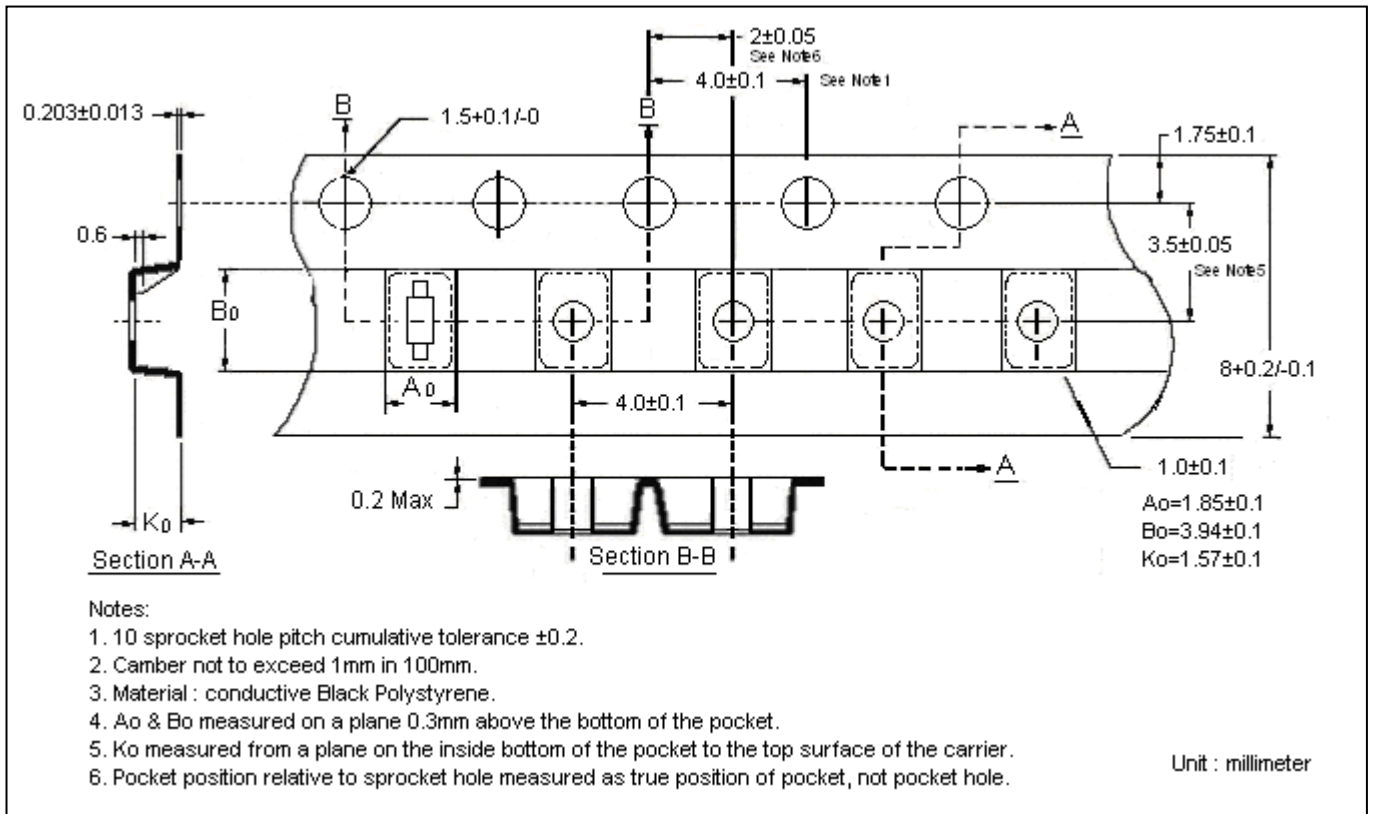
## Recommended Soldering Footprint



### Reel Dimension



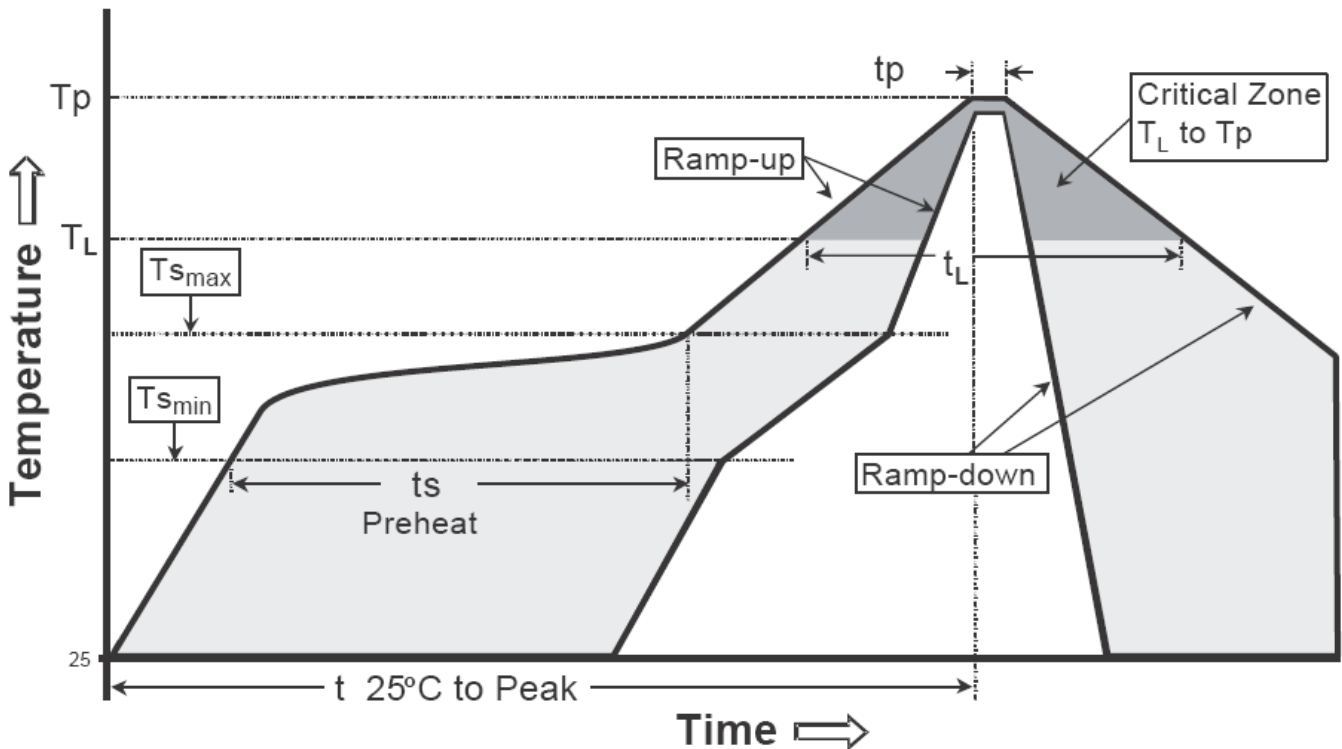
### Carrier Tape Dimension



**Recommended wave soldering condition**

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

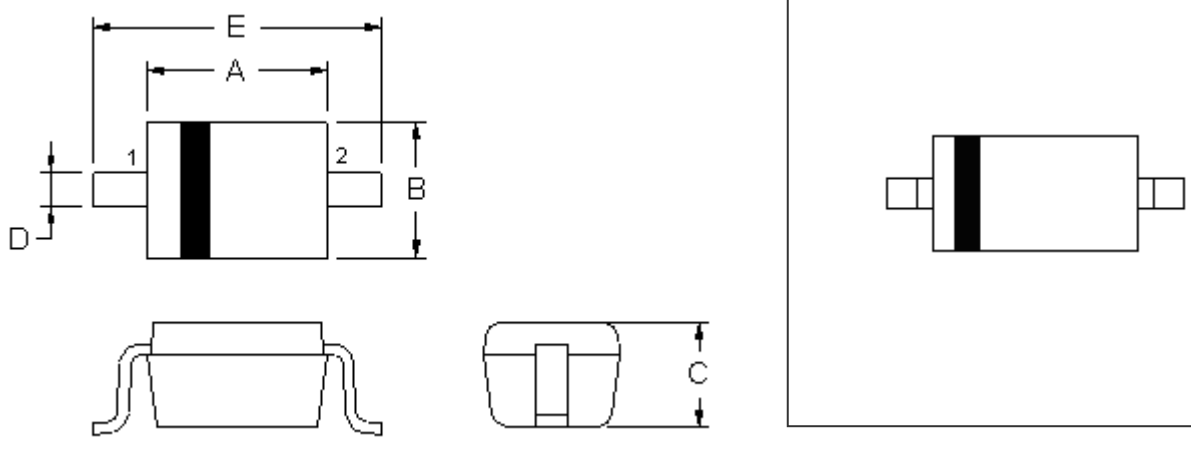
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tl)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

**SOD-123 Dimension**



2-Lead SOD-123 Plastic  
 Surface Mounted Package  
 CYStek Package Code: SH

Style: Pin 1.Cathode 2.Anode

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.102	0.110	2.600	2.800	D	0.018	0.026	0.450	0.650
B	0.059	0.067	1.500	1.700	E	0.140	0.152	3.550	3.850
C	0.041	0.049	1.050	1.250					

Notes: 1.Controlling dimension : millimeters.  
 2.Lead thickness specified per L/F drawing with solder plating.  
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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