

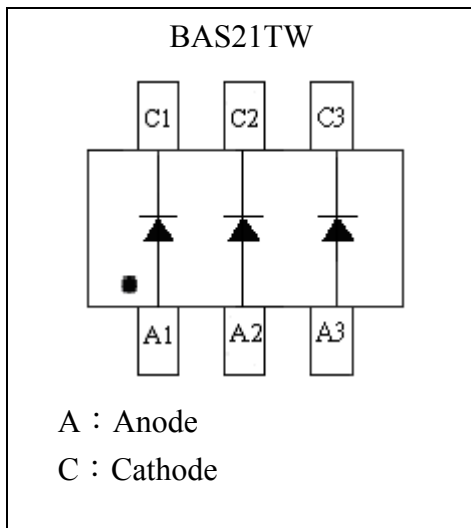
**Switching Diode**

# BAS21TW

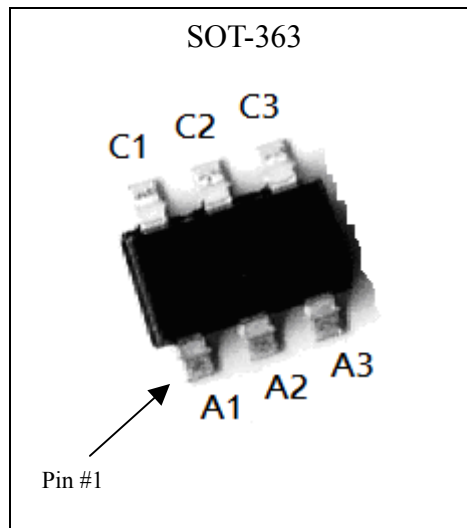
**Features**

- Fast switching speed.
- Ultra small surface mount package
- High conductance
- Pb-free lead plating and halogen-free package

**Equivalent Circuit**



**Outline**

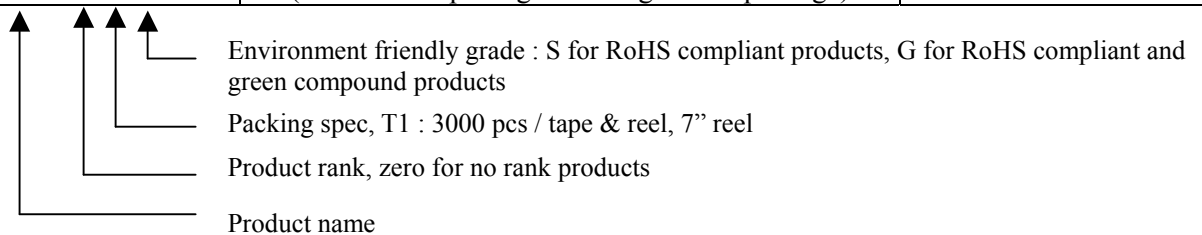


**Applications**

- For general purpose switching applications.

**Ordering Information**

| Device         | Package  | Shipping               |
|----------------|--|------------------------|
| BAS21TW-0-T1-G | SOD-363<br>(Pb-free lead plating and halogen-free package) | 3000 pcs / tape & reel |





**Absolute Maximum Ratings @TA=25°C**

| Parameters  | Symbol    | Min | Max  | Unit |
|---|-----------|-----|------|------|
| Repetitive peak reverse voltage   | $V_{RRM}$ | -   | 250  | V    |
| Continuous reverse voltage  | $V_R$     | -   | 250  | V    |
| Average Rectified Forward Current (single)  | $I_O$     | -   | 200  | mA   |
| Repetitive peak forward current   | $I_{FM}$  |     | 400  | mA   |
| Non-repetitive peak forward current<br>@square wave, $T_j=125^\circ\text{C}$ prior to surge $t=1\text{ms}$<br>$t=1\text{s}$ | $I_{FSM}$ | -   | 2.5  | A    |
|   |           | -   | 0.5  | A    |
| Total power dissipation(Note 1)   | $P_{tot}$ |     | 200  | mW   |
| Operating Junction Temperature Range  | $T_j$     | -55 | +150 | °C   |
| Storage Temperature Range   | $T_{stg}$ | -65 | +150 | °C   |

Note 1: Device mounted on an FR-4 PCB.

**Electrical Characteristics @ Tj=25°C unless otherwise specified**

| Parameters                | Symbol      | Conditions   | Min | Typ. | Max       | Unit |
|---------------------------|-------------|--|-----|------|-----------|------|
| Reverse Breakdown Voltage | $V_{R(BR)}$ | $I_R=100\mu\text{A}$   | 250 | -    | -         | V    |
| Forward voltage           | $V_F$       | $I_F=100\text{mA}$<br>$I_F=200\text{mA}$                             | -   | -    | 1<br>1.25 | V    |
| Reverse current           | $I_R$       | $V_R=200\text{V}$  | -   | -    | 100       | nA   |
| Diode capacitance         | $C_d$       | $V_R=0\text{V}$ , $f=1\text{MHz}$                                    | -   | -    | 5         | pF   |
| Reverse recovery time     | $t_{rr}$    | $I_F=I_R=30\text{mA}$ , $I_{rr}=0.1 \times I_R$ ,<br>$R_L=100\Omega$ | -   | -    | 50        | ns   |

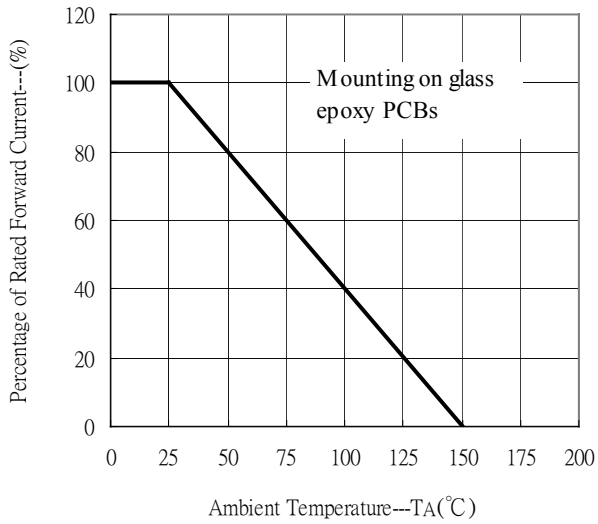
**Thermal Characteristics**

| Symbol        | Parameter                                   | Conditions | Value | Unit |
|---------------|---|------------|-------|------|
| $R_{th, j-a}$ | thermal resistance from junction to ambient | Note 1     | 625   | °C/W |

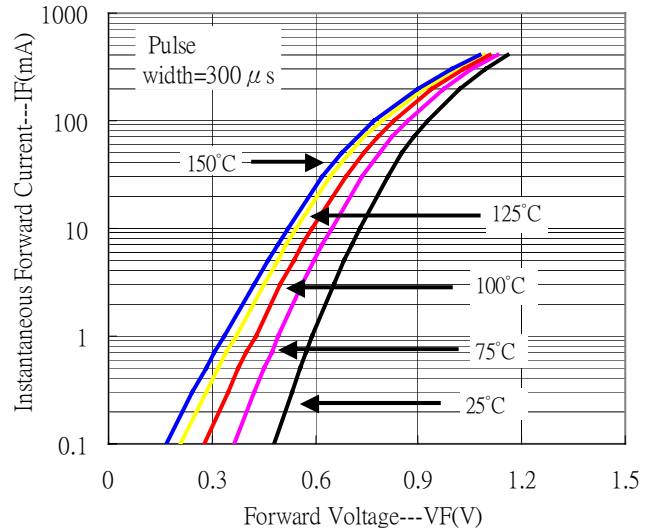
Note 1: Device mounted on an FR-4 PCB.

## Typical Characteristics

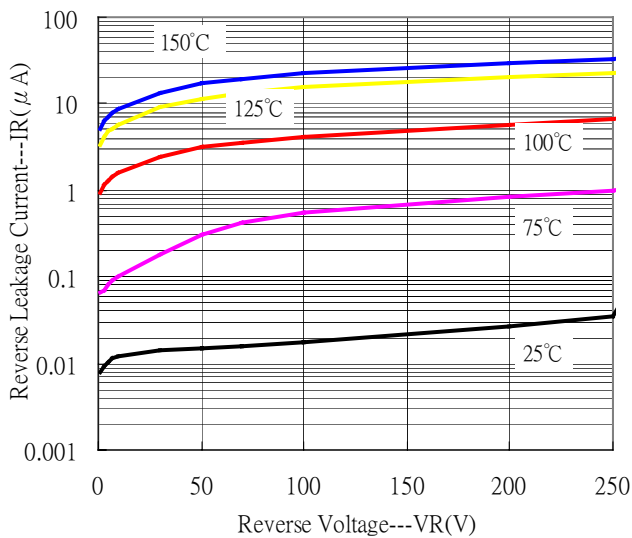
Forward Current Derating Curve



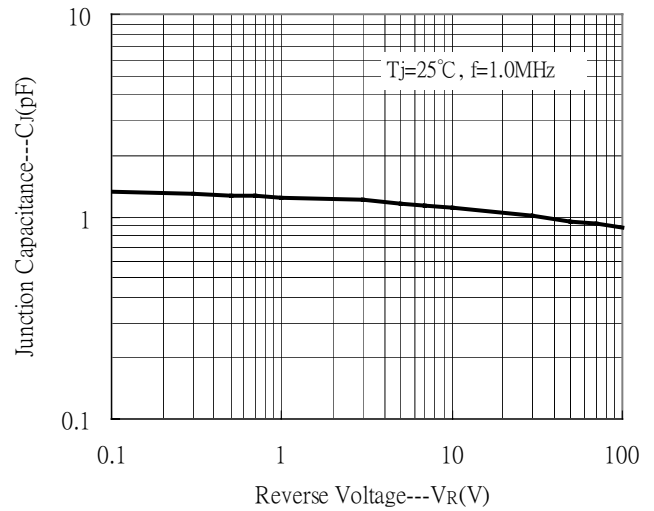
Forward Current vs Forward Voltage



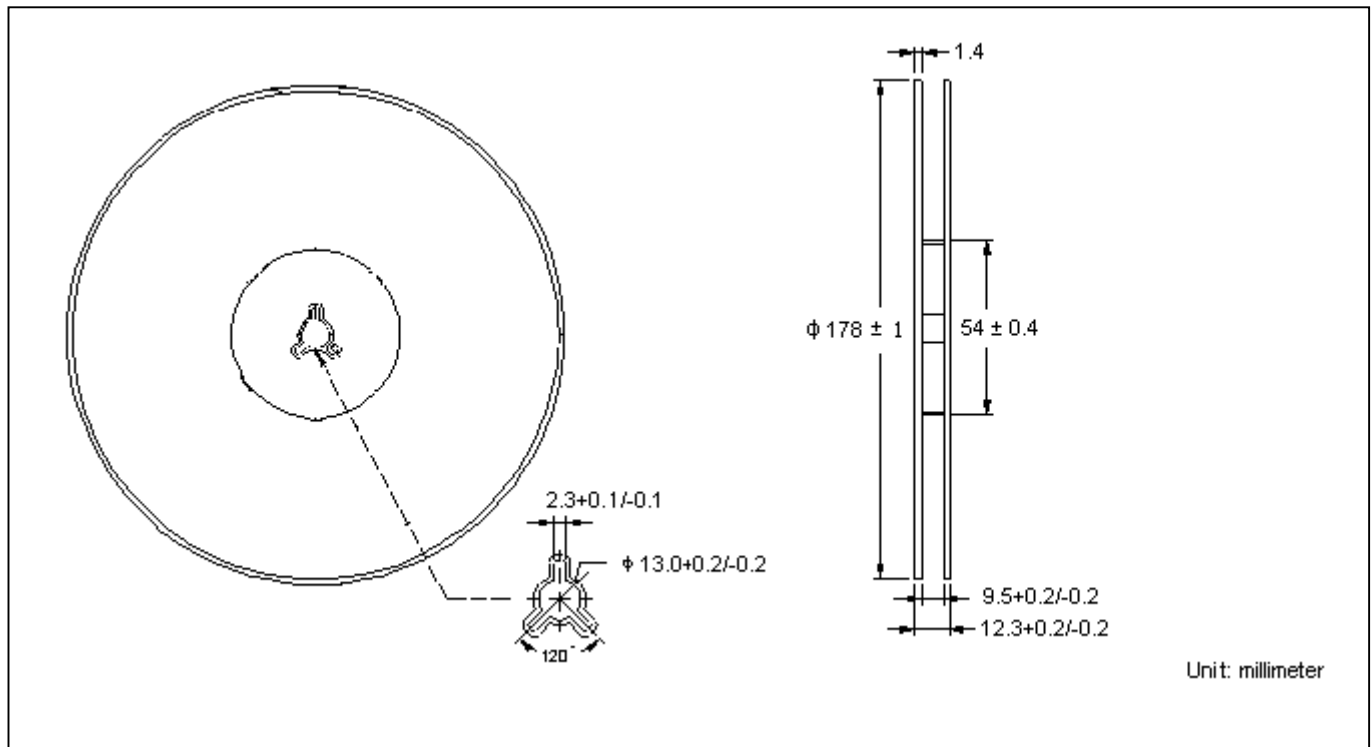
Reverse Leakage Current vs Reverse Voltage



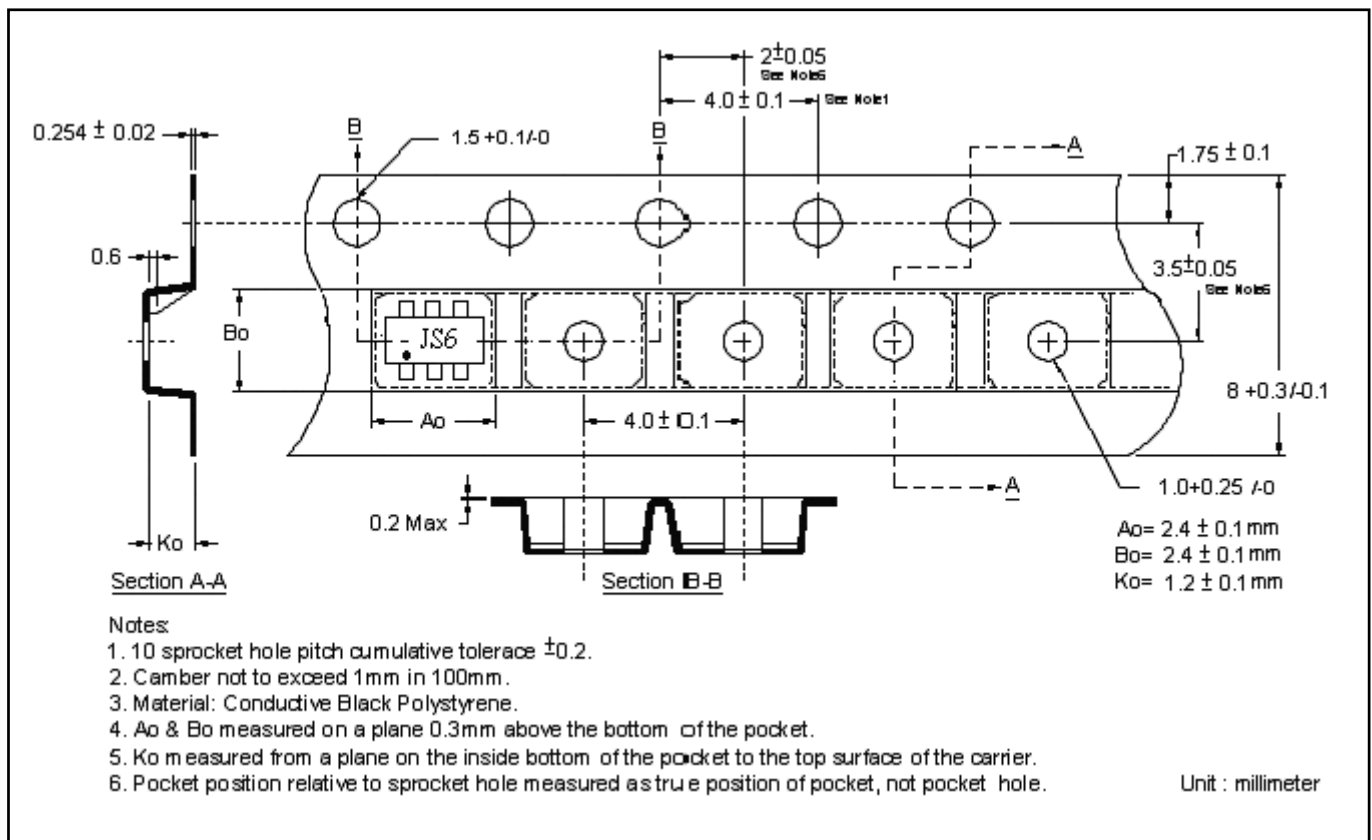
Junction Capacitance vs Reverse Voltage



**Reel Dimension**



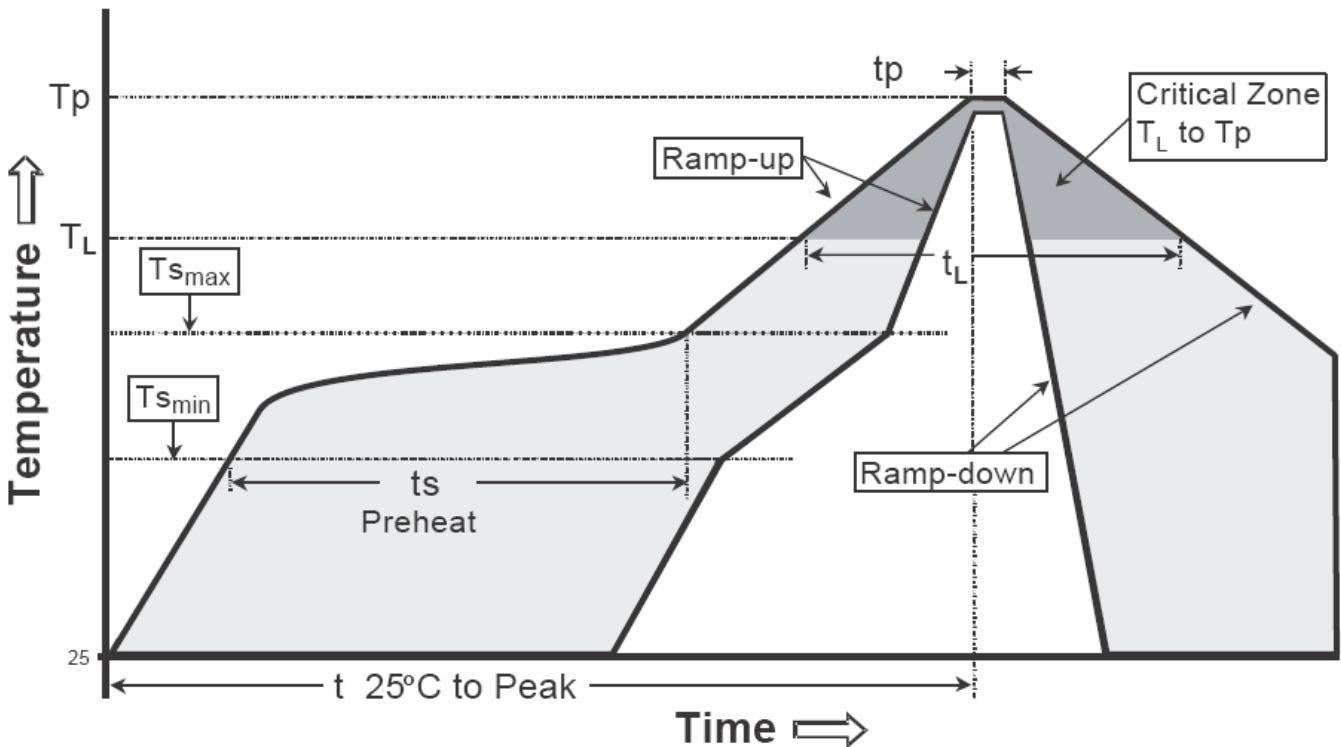
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

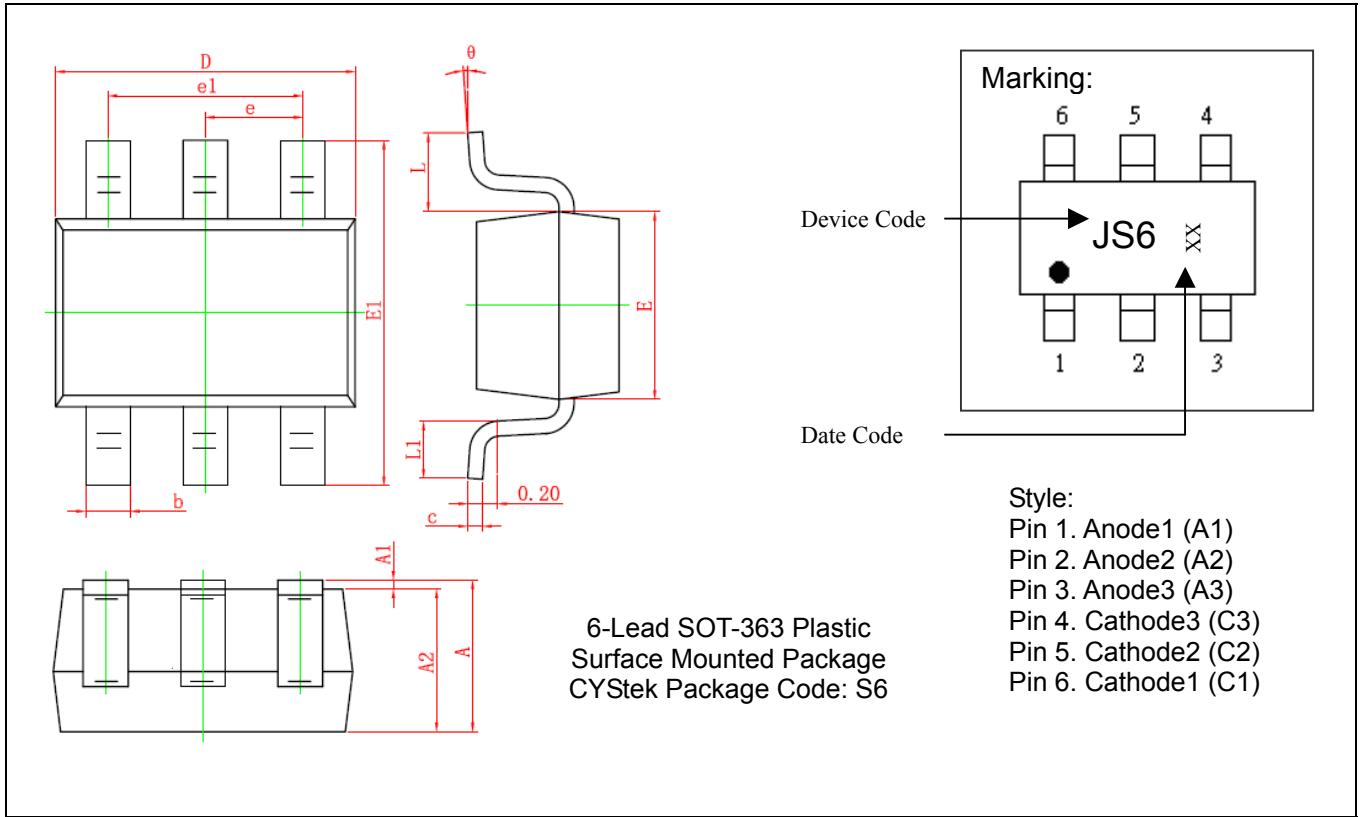
**Recommended temperature profile for IR reflow**



| Profile feature   | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|-------------------------|------------------|
| Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> ) | 3°C/second max.         | 3°C/second max.  |
| Preheat   |                         |                  |
| -Temperature Min(T <sub>s min</sub> )                       | 100°C                   | 150°C            |
| -Temperature Max(T <sub>s max</sub> )                       | 150°C                   | 200°C            |
| -Time(t <sub>s min</sub> to t <sub>s max</sub> )            | 60-120 seconds          | 60-180 seconds   |
| Time maintained above:                                      |                         |                  |
| -Temperature (T <sub>L</sub> )                              | 183°C                   | 217°C            |
| - Time (t <sub>L</sub> )                                    | 60-150 seconds          | 60-150 seconds   |
| Peak Temperature(T <sub>p</sub> )                           | 240 +0/-5 °C            | 260 +0/-5 °C     |
| Time within 5°C of actual peak temperature(t <sub>p</sub> ) | 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.

**SOT-363 Dimension**



\*:Typical

| DIM | Inches |       | Millimeters |       | DIM | Inches |       | Millimeters |       |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|-------|
|     | Min.   | Max.  | Min.        | Max.  |     | Min.   | Max.  | Min.        | Max.  |
| A   | 0.035  | 0.043 | 0.900       | 1.100 | E1  | 0.085  | 0.096 | 2.150       | 2.450 |
| A1  | 0.000  | 0.004 | 0.000       | 0.100 | e   | 0.026* |       | 0.650*      |       |
| A2  | 0.035  | 0.039 | 0.900       | 1.000 | e1  | 0.047  | 0.055 | 1.200       | 1.400 |
| b   | 0.006  | 0.014 | 0.150       | 0.350 | L   | 0.021  | REF   | 0.525       | REF   |
| c   | 0.003  | 0.006 | 0.080       | 0.150 | L1  | 0.010  | 0.018 | 0.260       | 0.460 |
| D   | 0.079  | 0.087 | 2.000       | 2.200 | θ   | 0°     | 8°    | 0°          | 8°    |
| E   | 0.045  | 0.053 | 1.150       | 1.350 |     |        |       |             |       |

Notes : 1.Controlling dimension : millimeters.  
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 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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