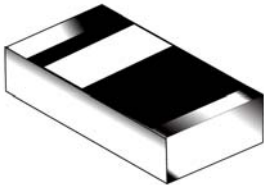


## Switching Diode



### FEATURES

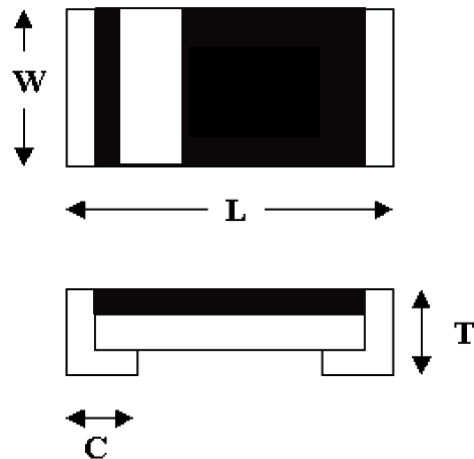
- Silicon epitaxial planar diode
- SMD chip pattern, available in various dimension included 1206 & 0603
- Leadfree and RoHS compliance components
- For small signal switching and operating ambient temperature less than 55°C and voltage withstand less than 60V; not suitable for AC switching input as rectified circuit and high reverse voltage location. BAS216 is suitable for those application

### MECHANICAL CHARACTERISTICS

- Size: 0805
- Weight: approx. 6mg
- Marking: Cathode terminal

### DIMENSIONS

| Dimension/mm | 0805     |
|--------------|----------|
| L            | 2.0±0.2  |
| W            | 1.25±0.2 |
| T            | 0.85±0.1 |
| C            | 0.45±0.2 |



### THERMAL CHARACTERISTICS<sup>1)</sup>

| Parameter at $T_{amb}=25^{\circ}C^{1)}$                | Symbol          | Value      | Unit  |
|--|-----------------|------------|-------|
| Forward Power Dissipation<br>Power derating above 25°C | $P_{tot}$       | 200        | mW    |
|  |                 | 1.6        | mW/°C |
| Junction Temperature                                   | $T_j$           | 150        | °C    |
| Thermal Resistance Junction to Ambient air             | $R_{\theta JA}$ | 375        | °C/W  |
| Operating& Storage Temperature range                   | $T_{sta}$       | -55 to 150 | °C    |

1) Valid provided that electrodes are kept at ambient temperature.

**MAXIMUM RATING<sup>1)</sup>**

| Parameter at $T_{amb}=25^{\circ}C^{1)}$   | Symbol      | Value | Unit |
|---|-------------|-------|------|
| Repetitive Peak Reverse Voltage   | $V_{RRM}$   | 75    | V    |
| Average rectified current sin half wave rectification with resistive load   | $I_{F(AV)}$ | 150   | mA   |
| Repetitive Peak Forward Current at $T_{amb}=25^{\circ}C$  | $I_{FRM}$   | 300   | mA   |
| Non-Repetitive Surge Forward Current at $t < 1s$ and $T_j=25^{\circ}C$<br>at $t \leq 8.3ms$ and $T_j=25^{\circ}C$ | $I_{FSM}$   | 500   | mA   |
|   |             | 1000  | mA   |

1) Valid provided that electrodes are kept at ambient temperature.

**ELECTRICAL CHARACTERISTICS<sup>1)</sup>**

| Parameter at $T_{amb}=25^{\circ}C^{1)}$                | Symbol    | Value                    | Unit    |
|--|-----------|--------------------------|---------|
| Forward Voltage at $I_F=10mA$<br>at $I_F=100mA$        | $V_F$     | 1.0 <small>MAX</small>   | V       |
|  |           | 1.25 <small>MAX</small>  | V       |
| Leakage Current at $V_R=20V$                           | $I_R$     | 0.025 <small>MAX</small> | $\mu A$ |
| Leakage Current at $V_R=75V$                           |           | 5 <small>MAX</small>     | $\mu A$ |
| Capacitance at $V_R=0V, f=1MHz$                        | $C_{tot}$ | 4 <small>MAX</small>     | pF      |
| Reverse Recovery Time at $I_F=I_R=10mA, R_L=100\Omega$ | $t_{rr}$  | 4 <small>MAX</small>     | ns      |

1) Valid provided that electrodes are kept at ambient temperature.

**TYPICAL CHARACTERISTICS**

Figure 1. Forward Characteristic

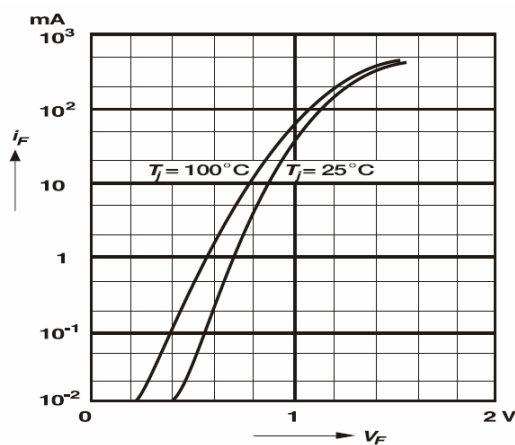


Figure 2. Power De-rating

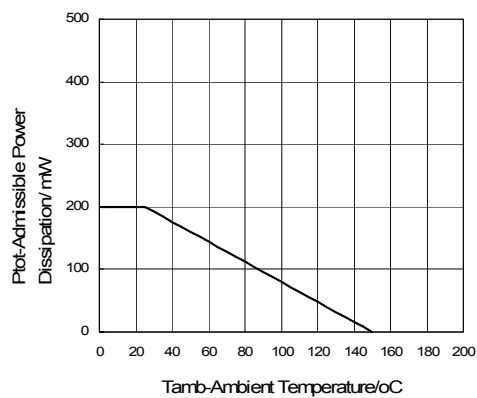


Figure 3. Forward Current De-rating

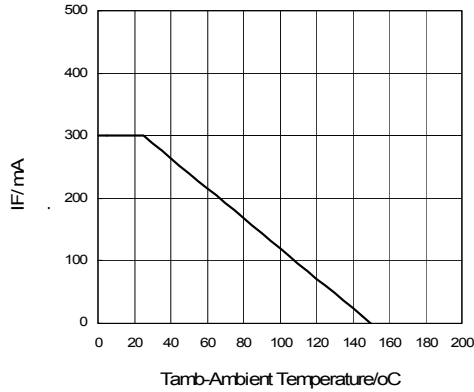
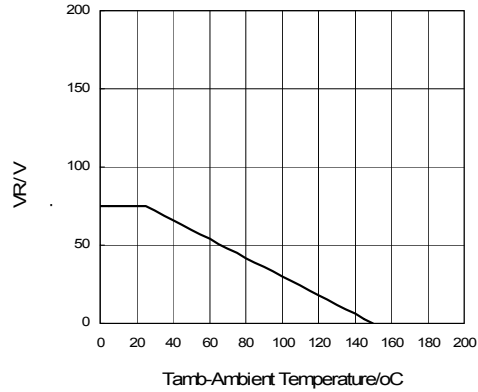


Figure 4. Reverse Voltage De-rating

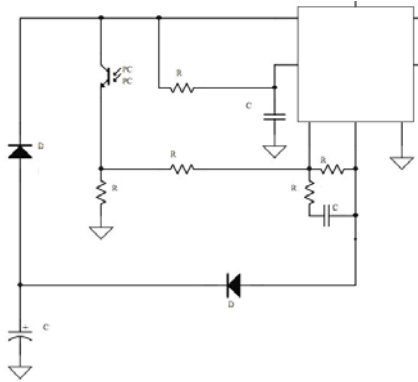


**TEST CHARACTERISTICS**

| Test Item                       | Test Condition   | Requirement   |
|---------------------------------|--|---|
| Solderability                   | Sn bath at 245±5°C for 2±0.5s                          | >95% area tin covered   |
| Resistance to Soldering Heat    | Sn bath at 260±5°C for 10±2s                           | V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec;<br>no mechanical damage |
| Humidity Steady State           | At 85°C 85%RH for 168hrs                               | V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec                          |
| Continue Forward Operating Life | At 25°C I <sub>F</sub> = 1.1I <sub>F</sub> for 1000hrs | V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec                          |
| Thermal Shock                   | -55 ±5°C/5min to 150±5°C/5min for 10cycles             | V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec                          |
| Bending Strength                | Bending up to 2mm for 1cycle                           | V <sub>F</sub> , V <sub>R</sub> & I <sub>R</sub> within spec;<br>no mechanical damage |

## APPLICATIONS

- Function: suit for small signal switching application
- Typical Application circuit:



- Typical Product field: General application except high reverse voltage location

- Soldering Condition:

### Soldering Condition & Caution

- Recommended Soldering Condition  
(Refer to IPC/JEDEC J-STD-020D 4-1&5.2)

| Recommended Profile Condition       | Sn-Pb Soldering       | Leadfree Soldering    | Wave Soldering        |
|-------------------------------------|-----------------------|-----------------------|-----------------------|
| Ramp-up rate (from pre-heat stage)  | <3°C/s                | <3°C/s                | ΔT<150°C              |
| Pre-heat Temperature & Time         | 100-150 °C<br>60-120s | 150-200 °C<br>60-120s | 100-150 °C<br>60-120s |
| Soldering Temperature & Time        | 183 °C<br>60-150s     | 217 °C<br>60-150s     | 260±5°C<br>5±2s       |
| Peak Temperature                    | 230±5°C<br><260°C     | 245±5°C<br><260°C     | 260±5°C               |
| Time within 5°C of peak temperature | 10-20s                | 20-30s                | -                     |
| Ramp-down rate                      | <6°C/s                | <6°C/s                | <6°C/s                |
| Time 25°C to peak temperature       | <6min                 | <8min                 | -                     |

Manual Soldering: Approx. 350°C for 3s, avoid solder iron tip direct touch the components body

Recommended Soldering Profile

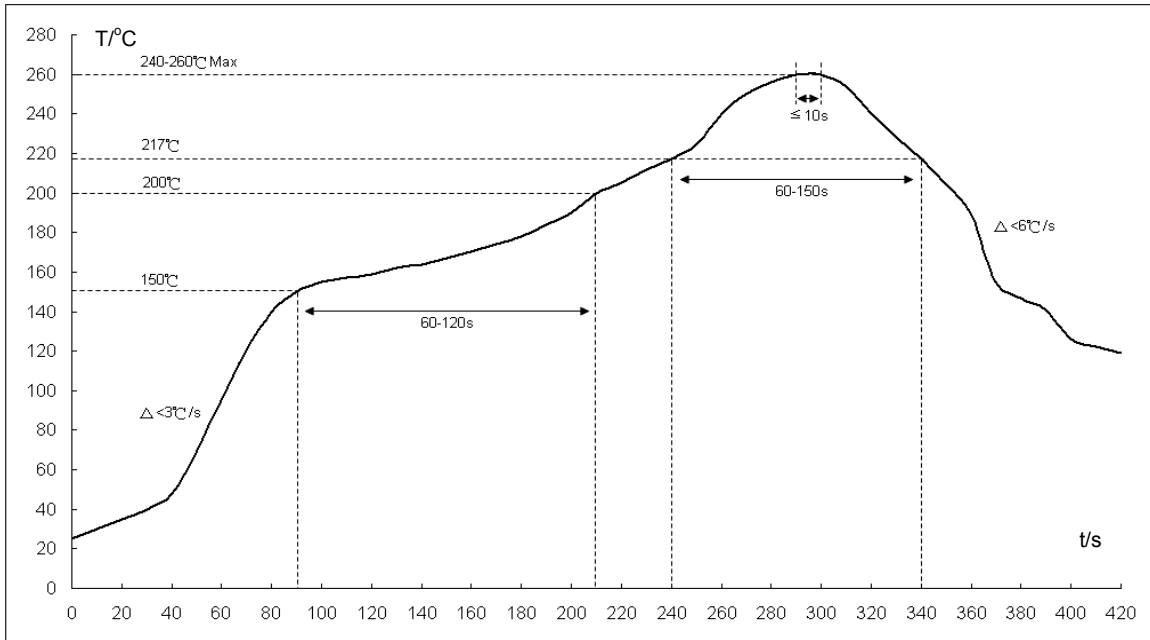


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

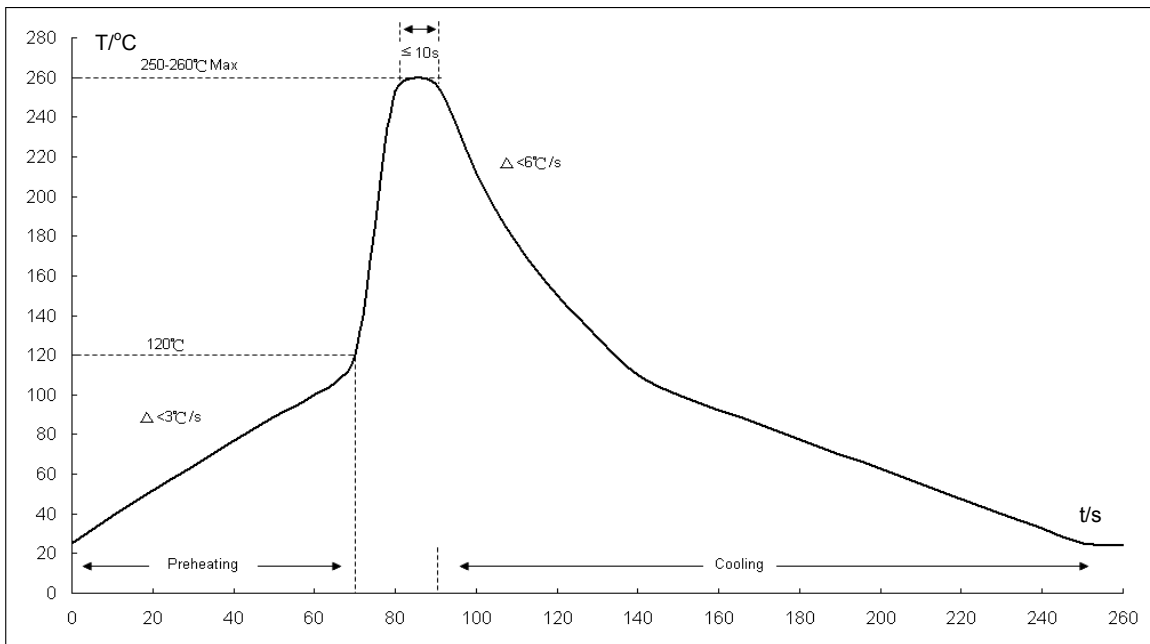
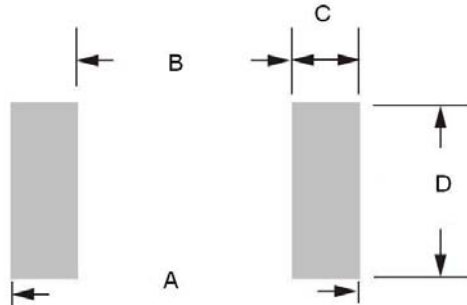


Fig2: Wave soldering profile

- \*1. The recommended profiles are referring to IPC/JEDEC J-STD-020D & IEC-60068-2-58
- \*2. Chip diodes are able to stand maximum soldering temperature up to 260°C max for 10s, and the soldering cycles with max 3 times, referring to IEC-60068-2-58

■ Recommended Soldering Footprint:



■ Reflow/Wave Soldering

| Product Size | Dimension/ mm |     |         |         |
|--------------|---------------|-----|---------|---------|
|              | A             | B   | C       | D       |
| 0805         | 2.6-3.4       | 1.2 | 0.7-1.1 | 1.2-1.4 |

- Storage Condition: Product termination solderability can degrade due to high temperature and humidity or chemical environment. Storage condition must be in an ambient temperature of <40°C and ambient humidity of <75%RH, and free from chemical.

**ENVIRONMENTAL CHARACTERISTICS**

| Product | Hazardous Substance or Element/ppm |      |       |                  |       |       |
|---------|------------------------------------|------|-------|------------------|-------|-------|
|         | Pb                                 | Cd   | Hg    | Cr <sup>6+</sup> | PBB   | PBDE  |
|         | <1000                              | <100 | <1000 | <1000            | <1000 | <1000 |

| Product | Halogen Substance/ ppm |      |      |      |       |
|---------|------------------------|------|------|------|-------|
|         | F                      | Cl   | Br   | I    | Total |
|         | <900                   | <900 | <900 | <900 | <1500 |

**PACKING METHOD**

| Product | Quantity/Reel | Reel Size | Tape  |
|---------|---------------|-----------|-------|
|         | 5,000pcs      | 7"        | Paper |