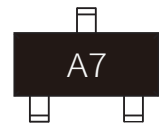


## FEATURES

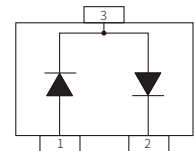
- | Fast Switching Device (TRR <4nS)
- | Power Dissipation of 225mW
- | High Stability and High Reliability
- | Low reverse leakage



SOT-23



Marking



Schematic Symbol

## MECHANICAL DATA

- | SOT-23 Small Outline Plastic Package
- | Epoxy UL: 94V-0
- | Mounting Position: Any

## APPROVALS

|             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |

## MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$ )

| Parameter                                                       | Symbol          | Value      | Unit                 |
|-----------------------------------------------------------------|-----------------|------------|----------------------|
| Reverse Voltage                                                 | $V_R$           | 110        | V                    |
| Power Dissipation                                               | $P_D$           | 225        | mW                   |
| Non-repetitive Peak Forward Current                             | $I_{FM}$        | 400        | mA                   |
| Average Rectified Current                                       | $I_o$           | 200        | mA                   |
| Peak Forward Surge Current<br>@tp=1ms; $T_A=25^{\circ}\text{C}$ | $I_{FSM}$       | 2.0        | A                    |
| Operating Junction Temperature                                  | $T_J$           | -55 ~ +150 | $^{\circ}\text{C}$   |
| Storage Temperature Range                                       | $T_S$           | -65 ~ +150 | $^{\circ}\text{C}$   |
| Thermal Resistance from Junction to Ambient                     | $R_{\theta JA}$ | 500        | $^{\circ}\text{C/W}$ |

Valid provided that electrodes are kept at ambient temperature.

## ELECTRICAL CHARACTERISTICS( $T_A=25^{\circ}\text{C}$ )

| Parameter               | Test Condition                                                          | Symbol     | Min. | Max.  | Unit          |
|-------------------------|-------------------------------------------------------------------------|------------|------|-------|---------------|
| Reverse Voltage         | $I_R = 100\mu\text{A}$                                                  | $V_{(BR)}$ | 110  |       | V             |
| Reverse Leakage Current | $V_R = 100\text{V}$                                                     | $I_R$      |      | 1.0   | $\mu\text{A}$ |
| Forward Voltage         | $I_F = 1\text{mA}$                                                      | $V_F$      |      | 0.715 | V             |
|                         | $I_F = 10\text{mA}$                                                     |            |      | 0.855 |               |
|                         | $I_F = 50\text{mA}$                                                     |            |      | 1.00  |               |
|                         | $I_F = 150\text{mA}$                                                    |            |      | 1.25  |               |
| Reverse Recovery Time   | $I_F = I_R = 10\text{mA}, R_L = 100\Omega$<br>$I_{RR} = 0.1 \times I_R$ | $T_{RR}$   |      | 4     | nS            |
| Capacitance             | $V_R = 0\text{V}, f = 1\text{MHz}$                                      | $C_T$      |      | 3     | pF            |

## CHARACTERISTIC CURVES

Fig 1. Forward Characteristics

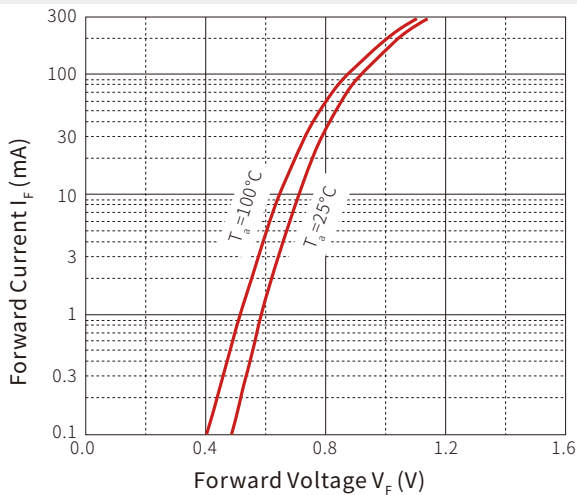
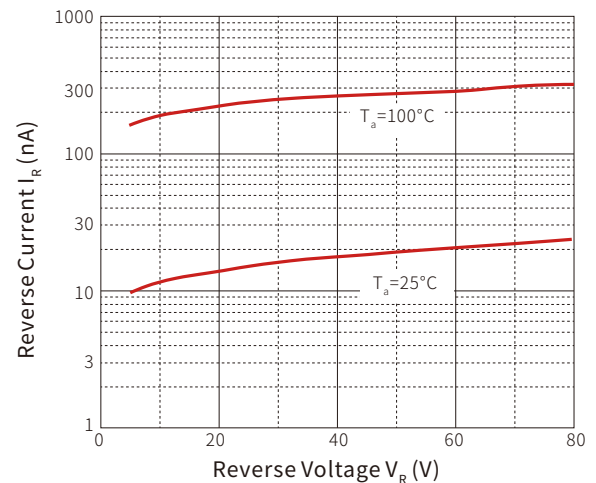
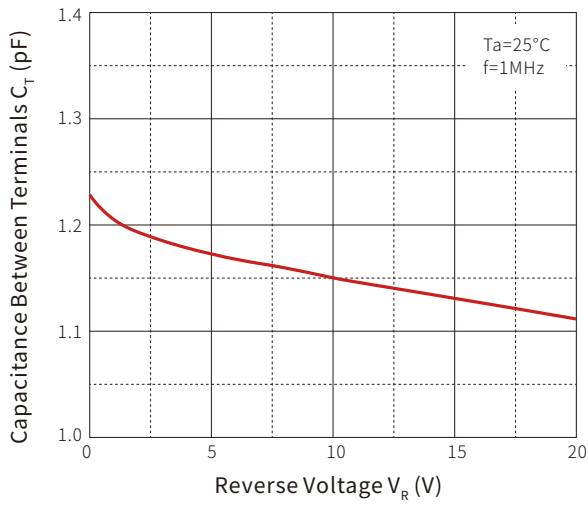
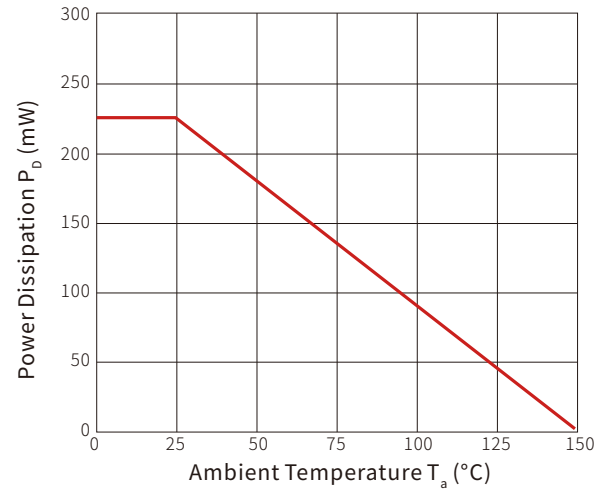


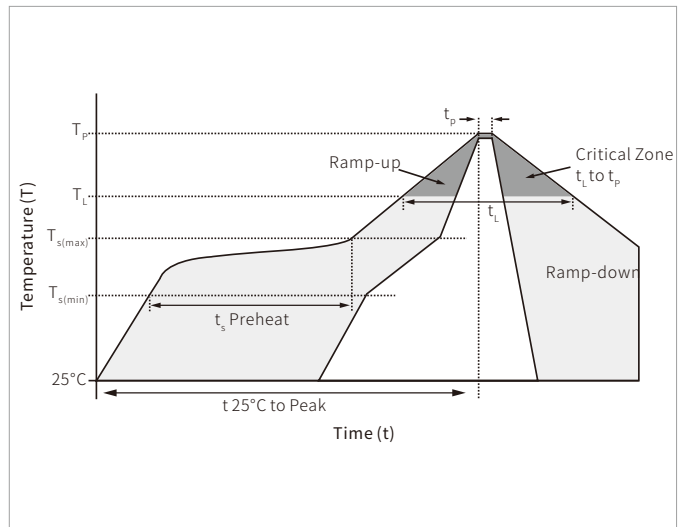
Fig 2. Reverse Characteristics



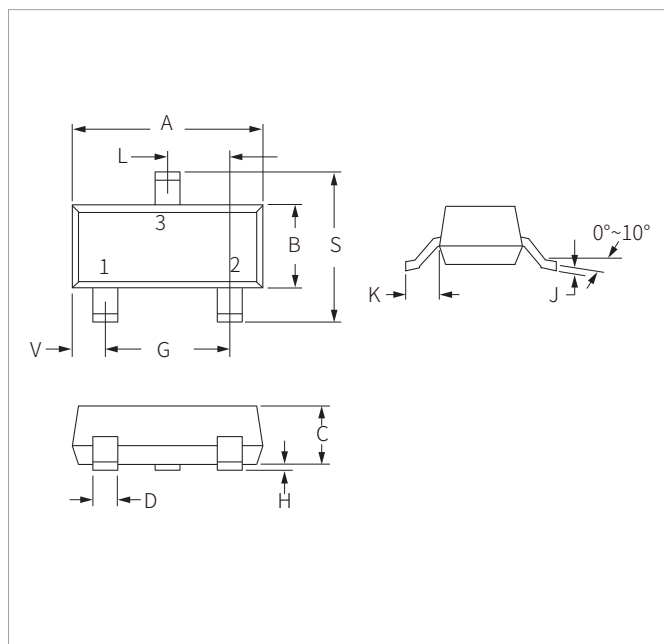
**Fig 3. Capacitance Characteristics**

**Fig 4. Power Derating Curve**


## SOLDERING PARAMETERS

| Reflow Condition                                                    |                                   | Lead-free assembly                   |
|---------------------------------------------------------------------|-----------------------------------|--------------------------------------|
| Pre Heat                                                            | Temperature Max ( $T_{s(\min)}$ ) | 150 $^\circ\text{C}$                 |
|                                                                     | Temperature Max ( $T_{s(\max)}$ ) | 200 $^\circ\text{C}$                 |
|                                                                     | Time (min to max) ( $t_s$ )       | 60 – 180 secs                        |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)              |                                   | 3 $^\circ\text{C}/\text{second}$ max |
| $T_{s(\max)}$ to $T_L$ - Ramp-up Rate                               |                                   | 3 $^\circ\text{C}/\text{second}$ max |
| Reflow                                                              | Temperature ( $T_L$ ) (Liquidus)  | 217 $^\circ\text{C}$                 |
|                                                                     | Time (min to max) ( $t_L$ )       | 60 – 150 seconds                     |
| Peak Temperature ( $T_p$ )                                          |                                   | 260 $^\circ\text{C}$                 |
| Time within 5 $^\circ\text{C}$ of actual peak Temperature ( $t_p$ ) |                                   | 20 – 40 seconds                      |
| Ramp-down Rate                                                      |                                   | 6 $^\circ\text{C}/\text{second}$ max |
| Time 25 $^\circ\text{C}$ to peak Temperature ( $T_p$ )              |                                   | 8 minutes max.                       |
| Do not exceed                                                       |                                   | 260 $^\circ\text{C}$                 |

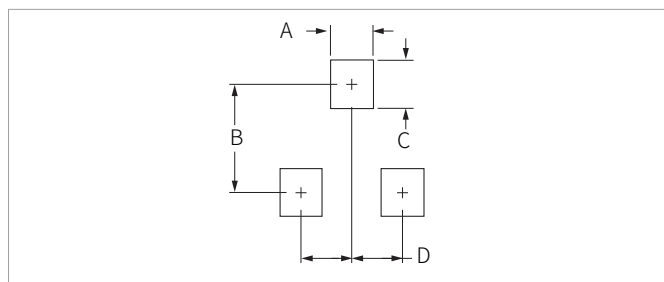


## SOT-23 PACKAGE INFORMATION



| Ref. | Millimeters |       | Inches |       |
|------|-------------|-------|--------|-------|
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 2.80        | 3.05  | 0.110  | 0.120 |
| B    | 1.20        | 1.40  | 0.047  | 0.055 |
| C    | 0.90        | 1.15  | 0.035  | 0.045 |
| D    | 0.37        | 0.50  | 0.015  | 0.020 |
| G    | 1.75        | 2.05  | 0.069  | 0.081 |
| H    | 0.01        | 0.100 | 0.001  | 0.004 |
| J    | 0.085       | 0.180 | 0.003  | 0.007 |
| K    | 0.35        | 0.69  | 0.014  | 0.029 |
| L    | 0.89        | 1.02  | 0.035  | 0.040 |
| S    | 2.10        | 2.65  | 0.083  | 0.104 |
| V    | 0.45        | 0.60  | 0.018  | 0.024 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 0.71        | 0.97 | 0.028  | 0.038 |
| B    | 1.88        | 2.13 | 0.074  | 0.084 |
| C    | 0.71        | 0.97 | 0.028  | 0.038 |
| D    | 0.81        | 1.07 | 0.032  | 0.042 |

## ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| BAS299      | SOT-23            | 3000PCS  | 7"        |

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