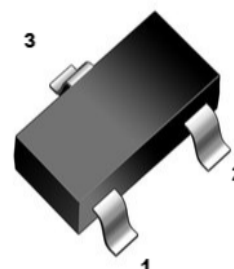




### 1. Features

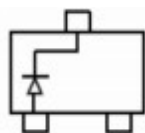
- Very low turn-on voltage and fast switching.
- These devices are protected by a PN junction guard ring against excessive voltage, such as electrostatic discharges.
- For linear amplification .
- Available in lead free version.

SOT-23

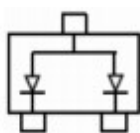


### 2. Mechanical Data

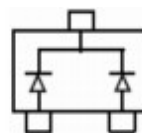
- Case:Molded Plastic,SOT-23.
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750, Method-2026.
- Marking:marked on body.
- Mounting Position : Any.



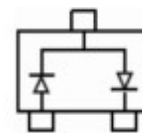
BAT54 MARKING: KL1



BAT54A MARKING: KL2



BAT54C MARKING: KL3



BAT54S MARKING: KL4

### 3. Maximum Ratings

Electrical Characteristics Rating at 25°C ambient temperature unless otherwise specified.

| Characteristic                                   | Symbol         | Value       | Unit |
|--|----------------|-------------|------|
| Repetitive Peak Reverse Voltage                  | $V_{RRM}$      | 30          | V    |
| Forward Continuous Current                       | $I_F$          | 200         | mA   |
| Power Dissipation                                | $P_D$          | 200         | mW   |
| Operating junction and storage temperature range | $T_j, T_{stg}$ | -55 to +125 | °C   |

### 4. Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameters                | Symbol   | Cindition   | Min | TYP | Max  | Unit          |
|---------------------------|----------|---|-----|-----|------|---------------|
| Reverse Breakdown Voltage | $V_{BR}$ | $I_R = 100\mu\text{A}$                                    | 30  | -   | -    | V             |
| Forward Voltage           | $V_F$    | $I_F = 0.1\text{mA}$                                      | -   | -   | 240  | mV            |
|                           |          | $I_F = 1\text{mA}$  |     |     | 320  |               |
|                           |          | $I_F = 10\text{mA}$                                       |     |     | 400  |               |
|                           |          | $I_F = 30\text{mA}$                                       |     |     | 500  |               |
|                           |          | $I_F = 100\text{mA}$                                      |     |     | 1000 |               |
| Reverse Leakage Current   | $I_R$    | $V_R = 25\text{V}$  | -   | -   | 2    | $\mu\text{A}$ |
| Diode Capacitance         | $C_D$    | $V_R = 1\text{V}, f = 1\text{MHz}$                        | -   | 10  | -    | pF            |
| Reverse Recovery Time     | $t_{rr}$ | $I_F=I_R=10\text{mA}, I_{tr}=0.1*I_R,$<br>$R_L=100\Omega$ | -   | -   | 5    | ns            |



### 5. Rating And Characteristic Curves

FIG.1- POWER DERATING CURVE

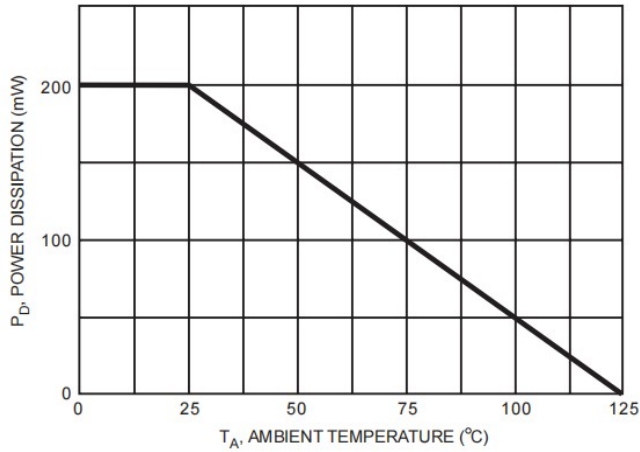


FIG.2- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PER LEG

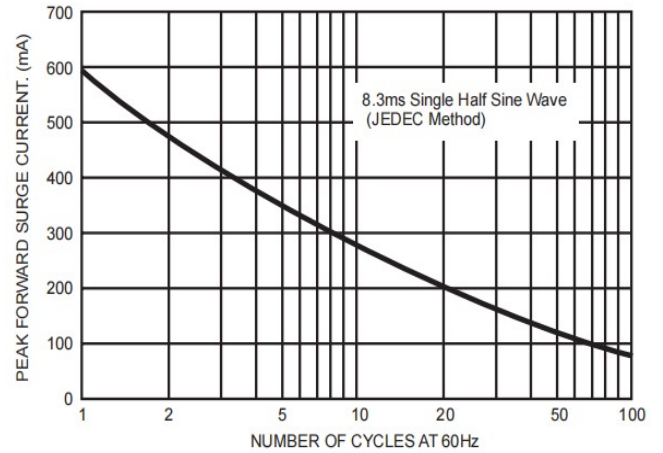


FIG.3- TYPICAL FORWARD CHARACTERISTICS

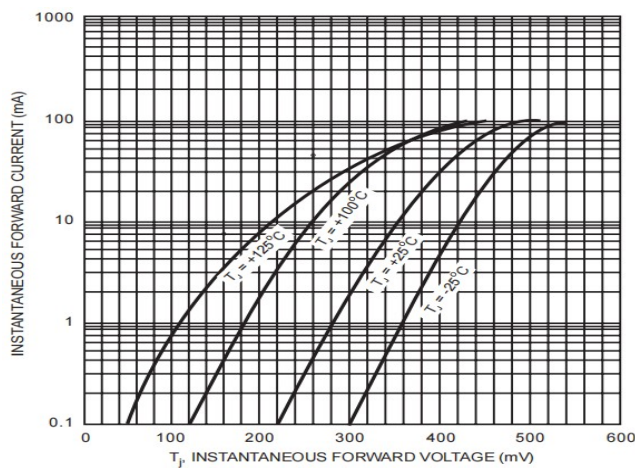


FIG.4- TYPICAL REVERSE CHARACTERISTICS

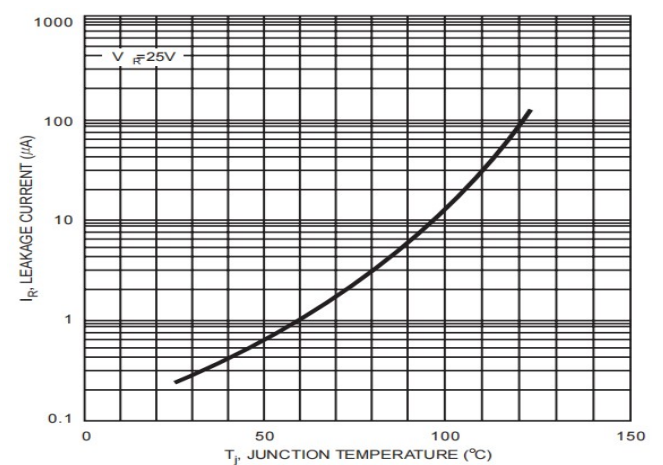


FIG.5- TYPICAL TOTAL CAPACITANCE VS REVERSE VOLTAGE

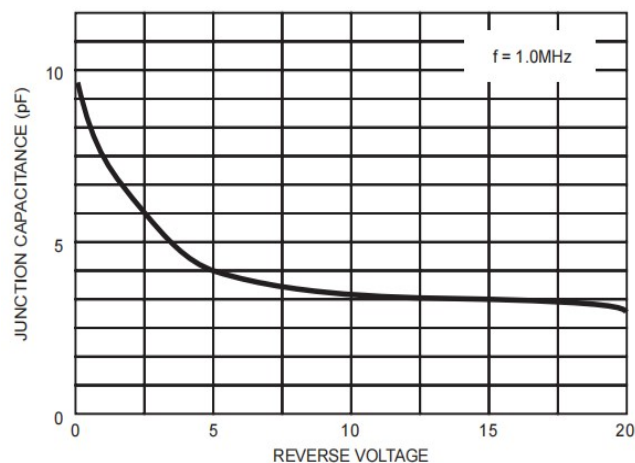
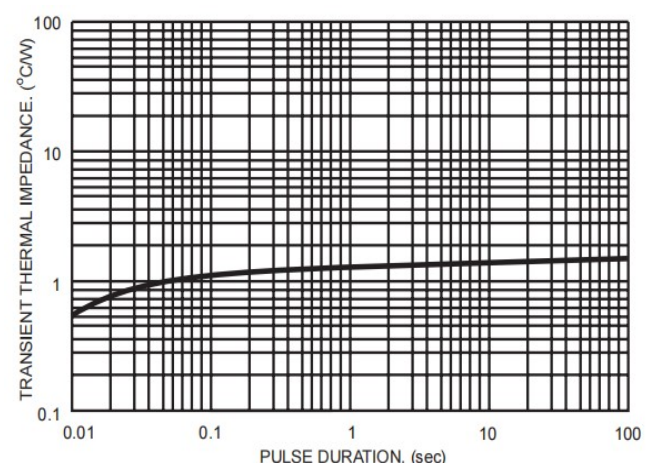
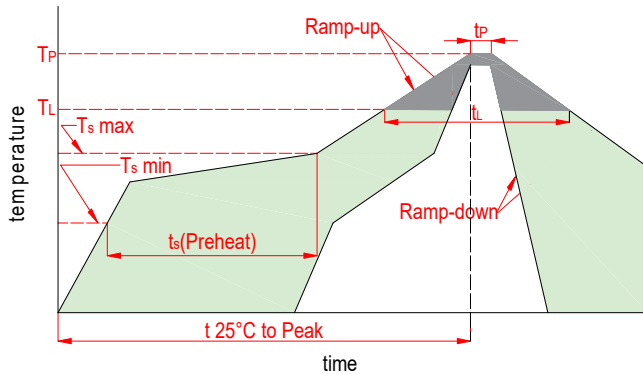


FIG.6- TYPICAL TRANSIENT THERMAL CHARACTERISTICS



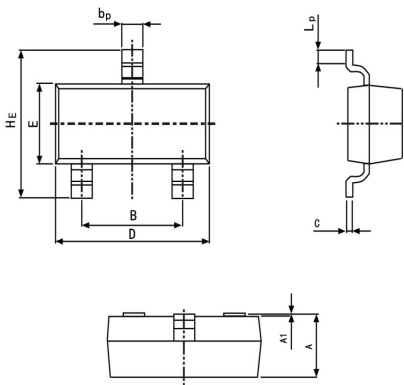


### 6. Soldering Parameters



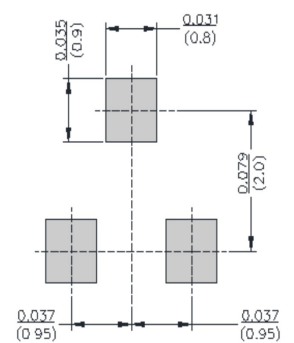
| Reflow Condition                                   |                           | Lead-free               |
|--|---------------------------|-------------------------|
| Pre Heat   | Temp. min( $T_s$ (min))   | 150°C                   |
|  | Temp. max( $T_s$ (min))   | 200°C                   |
|  | Time(min to max)( $t_s$ ) | 60~120s                 |
| Aver. ramp up rate(Liquidus Temp.)( $T_L$ )to peak |                           | 3°C/s max               |
| $T_s$ (max) to $T_L$ -Ramp-up Rate                 |                           | 3°C/s max               |
| Reflow   | Temp.( $T_L$ )(Liquidus)  | 217°C                   |
|  | Temp.( $t_L$ )(Liquidus)  | 60~150s                 |
| Peak Temp.( $T_P$ )                                |                           | 260 <sup>+0/-5</sup> °C |
| Time within actual peak Temp.( $t_p$ )             |                           | 30s max                 |
| Ramp-down Rate                                     |                           | 6°C/s max               |
| Time 25°C to peak Tempe.( $T_p$ )                  |                           | 8 minutes max           |
| Do not exceed                                      |                           | 260°C                   |

### 7. Dimensions

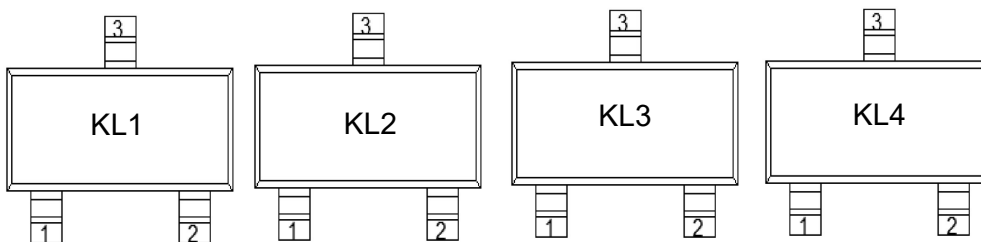


| Dimensions | Inches |       | Millimeters |      |
|------------|--------|-------|-------------|------|
|            | Min    | Max   | Min         | Max  |
| A          | 0.035  | 0.045 | 0.90        | 1.15 |
| B          | 0.070  | 0.081 | 1.78        | 2.05 |
| bp         | 0.012  | 0.020 | 0.30        | 0.51 |
| C          | 0.003  | 0.007 | 0.08        | 0.18 |
| D          | 0.110  | 0.118 | 2.80        | 3.00 |
| E          | 0.047  | 0.055 | 1.20        | 1.40 |
| HE         | 0.087  | 0.110 | 2.20        | 2.80 |
| A1         | 0.000  | 0.004 | 0.00        | 0.10 |
| LP         | 0.008  | 0.020 | 0.20        | 0.50 |

Mounting PAD Layout



### 8. Part Marking System



### 9. Package Information

| Package | Part Number | Marking Code | Tape Width(mm) | Quantity(pcs) |
|---------|-------------|--------------|----------------|---------------|
| SOT-23  | BAT54       | KL1          | 8              | 3000          |
| SOT-23  | BAT54A      | KL2          | 8              | 3000          |
| SOT-23  | BAT54C      | KL3          | 8              | 3000          |
| SOT-23  | BAT54S      | KL4          | 8              | 3000          |



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