

## Small Signal Schottky Diodes, Single and Dual



### FEATURES

- These diodes feature 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
- AEC-Q101 qualified
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


RoHS  
COMPLIANT

### MECHANICAL DATA

Case: SOT-23

Weight: approx. 8.8 mg

Packaging codes/options:

18/10K per 13" reel (8 mm tape), 10K/box

08/3K per 7" reel (8 mm tape), 15K/box

### PARTS TABLE

| PART   | ORDERING CODE                  | INTERNAL CONSTRUCTION      | TYPE MARKING | REMARKS       |
|--------|--------------------------------|----------------------------|--------------|---------------|
| BAT54  | BAT54-E3-08 or BAT54-E3-18     | Single diode               | L4           | Tape and reel |
|        | BAT54-HE3-08 or BAT54-HE3-18   |                            |              |               |
| BAT54A | BAT54A-E3-08 or BAT54A-E3-18   | Dual diodes common anode   | L42          |               |
|        | BAT54A-HE3-08 or BAT54A-HE3-18 |                            |              |               |
| BAT54C | BAT54C-E3-08 or BAT54C-E3-18   | Dual diodes common cathode | L43          |               |
|        | BAT54C-HE3-08 or BAT54C-HE3-18 |                            |              |               |
| BAT54S | BAT54S-E3-08 or BAT54S-E3-18   | Dual diodes serial         | L44          |               |
|        | BAT54S-HE3-08 or BAT54S-HE3-18 |                            |              |               |

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                      | TEST CONDITION     | SYMBOL    | VALUE | UNIT |
|------------------------------------------------|--------------------|-----------|-------|------|
| Repetitive peak reverse voltage                |                    | $V_{RRM}$ | 30    | V    |
| Forward continuous current <sup>(1)</sup>      |                    | $I_F$     | 200   | mA   |
| Repetitive peak forward current <sup>(1)</sup> |                    | $I_{FRM}$ | 300   | mA   |
| Surge forward current <sup>(1)</sup>           | $t_p < 1\text{ s}$ | $I_{FSM}$ | 600   | mA   |
| Repetitive peak forward current                |                    | $P_{tot}$ | 230   | mW   |

#### Note

<sup>(1)</sup> Device on fiberglass substrate, see layout on next page

### THERMAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                  | TEST CONDITION                                          | SYMBOL     | VALUE         | UNIT               |
|--------------------------------------------|---------------------------------------------------------|------------|---------------|--------------------|
| Thermal resistance junction to ambient air | Device on fiberglass substrate, see layout on next page | $R_{thJA}$ | 430           | K/W                |
| Junction temperature                       |                                                         | $T_j$      | 125           | $^{\circ}\text{C}$ |
| Storage temperature range                  |                                                         | $T_{stg}$  | - 65 to + 150 | $^{\circ}\text{C}$ |
| Operating temperature range                |                                                         | $T_{op}$   | - 55 to + 125 | $^{\circ}\text{C}$ |

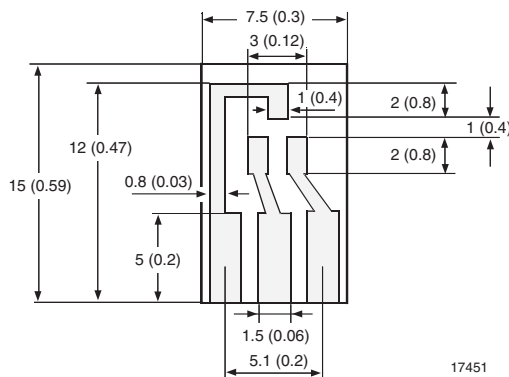
| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                                                                   |            |      |      |      |               |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------|------|------|------|---------------|
| PARAMETER                                                                                                | TEST CONDITION                                                                                    | SYMBOL     | MIN. | TYP. | MAX. | UNIT          |
| Reverse breakdown voltage                                                                                | $I_R = 100\text{ }\mu\text{A}$ (pulsed)                                                           | $V_{(BR)}$ | 30   |      |      | V             |
| Leakage current                                                                                          | Pulsed test $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$ at $V_R = 25\text{ V}$                | $I_R$      |      |      | 2    | $\mu\text{A}$ |
| Forward voltage                                                                                          | $I_F = 0.1\text{ mA}$ , $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$                           | $V_F$      |      |      | 240  | mV            |
|                                                                                                          | $I_F = 1\text{ mA}$ , $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$                             | $V_F$      |      |      | 320  | mV            |
|                                                                                                          | $I_F = 10\text{ mA}$ , $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$                            | $V_F$      |      |      | 400  | mV            |
|                                                                                                          | $I_F = 30\text{ mA}$ , $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$                            | $V_F$      |      |      | 500  | mV            |
|                                                                                                          | $I_F = 100\text{ mA}$ , $t_p < 300\text{ }\mu\text{s}$ , $\delta < 2\%$                           | $V_F$      |      |      | 800  | mV            |
| Diode capacitance                                                                                        | $V_R = 1\text{ V}$ , $f = 1\text{ MHz}$                                                           | $C_D$      |      |      | 10   | pF            |
| Reverse recovery time                                                                                    | $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ,<br>$i_R = 1\text{ mA}$ , $R_L = 100\text{ }\Omega$ | $t_{rr}$   |      |      | 5    | ns            |

### LAYOUT FOR $R_{thJA}$ TEST

Thickness:

Fiberglass 15 mm (0.059")

Copper leads 0.3 mm (0.012")



### TYPICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

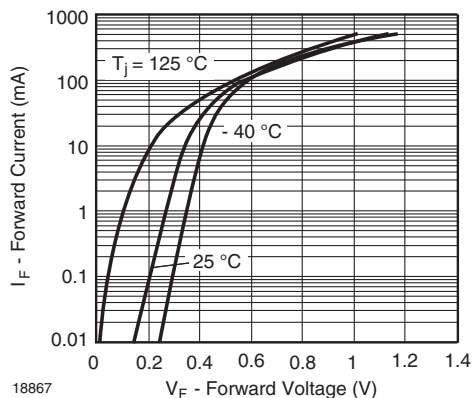


Fig. 1 - Typical Forward Voltage Forward Current vs. Various Temperatures

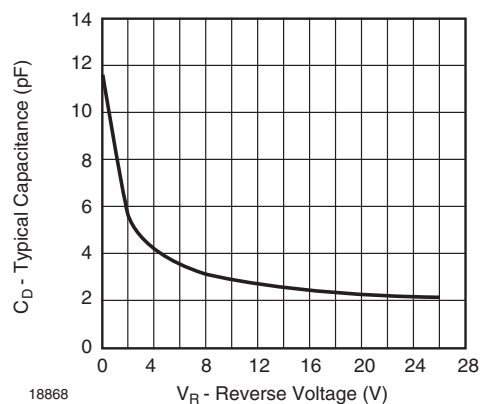
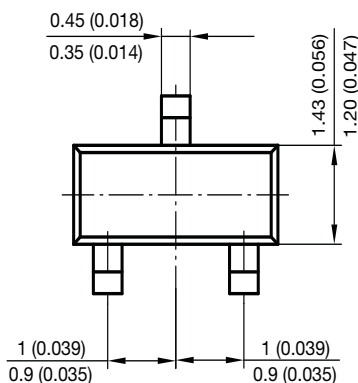


Fig. 2 - Diode Capacitance vs. Reverse Voltage  $V_R$

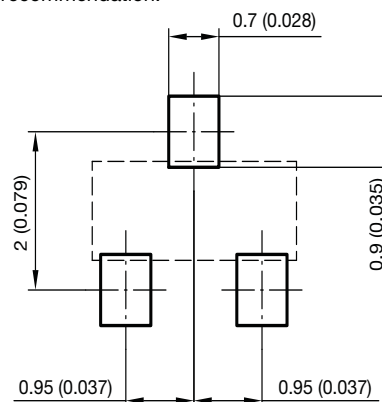


Fig. 3 - Typical Variation of Reverse Current vs. Various Temperatures

### PACKAGE DIMENSIONS in millimeters (inches): SOT-23



Foot print recommendation:



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