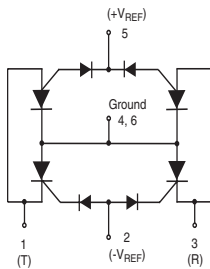


Battrax[®] Single Port Positive/Negative SLIC Protector



This six-pin surface mount package contains programmable protection devices for both negative and positive voltage references.

It is constructed using four SCRs and four gate diodes. The SCRs conduct when a voltage that is more negative than $-V_{REF}$ or more positive than $+V_{REF}$ is applied to Pin 1 or 3 of the SCR. During conduction, the SCRs appear as a low-resistive path which forces all transients to be shorted to ground.

For a diagram of a *Battrax* application, see Figure 6.49 in Section 6, “Reference Designs” of this *Telecom Design Guide*.

SIDACTor Devices

Electrical Parameters

| Part Number * | V_{DRM} Volts | V_S Volts | V_T Volts | I_{DRM} μ Amps | I_{GT} mAmps | I_T Amps | I_H mAmps |
|-----------------|---------------------------|--------------------------|-------------|----------------------|----------------|------------|-------------|
| B3104U_L | $ -V_{REF} + \pm 1.2V $ | $ -V_{REF} + \pm 10V $ | 4 | 5 | 100 | 2.2 | 100 |
| B3164U_L | $ -V_{REF} + \pm 1.2V $ | $ -V_{REF} + \pm 10V $ | 4 | 5 | 100 | 2.2 | 160 |
| B3204U_L | $ -V_{REF} + \pm 1.2V $ | $ -V_{REF} + \pm 10V $ | 4 | 5 | 100 | 2.2 | 200 |

* “L” in part number indicates RoHS compliance. For non-RoHS compliant device, delete “L” from part number.
For individual “UA” and “UC” surge ratings, see table below.

General Notes:

- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- I_{PP} ratings assume a $V_{REF} = \pm 48$ V.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Positive *Battrax* information is preliminary data.
- V_{REF} maximum value for the negative *Battrax* is -200 V.
- V_{REF} maximum value for the positive *Battrax* is 110 V.

Surge Ratings in Amps

| Series | I_{PP} | | | | | | | | | I_{TSM} 50 / 60 Hz | di/dt |
|--------|-------------------------|-------------------|---------------------|-----------------------|-----------------------|---------------------|-----------------------|-------------------------|----------------------|-------------------------|---------------|
| | 0.2x310 * 0.5x700 ** | 2x10 * 2x10 ** | 8x20 * 1.2x50 ** | 10x160 * 10x160 ** | 10x560 * 10x560 ** | 5x320 * 9x720 ** | 10x360 * 10x360 ** | 10x1000 * 10x1000 ** | 5x310 * 10x700 ** | | |
| | Amps | Amps | Amps | Amps | Amps | Amps | Amps | Amps | Amps | Amps | Amps/ μ s |
| A | 20 | 150 | 150 | 90 | 50 | 75 | 75 | 45 | 75 | 20 | 500 |
| C | 50 | 500 | 400 | 200 | 150 | 200 | 175 | 100 | 200 | 50 | 500 |

* Current waveform in μ s

** Voltage waveform in μ s

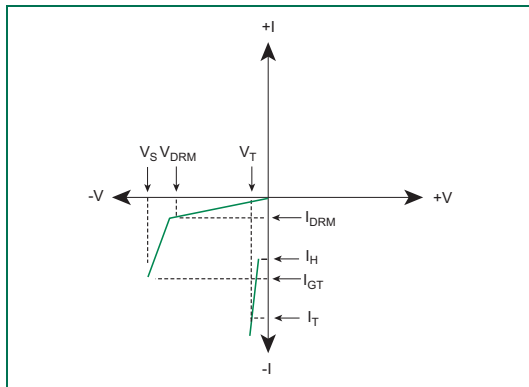
Thermal Considerations

| Package | Symbol | Parameter | Value | Unit |
|---------|------------------|---|-------------|------|
| | T _J | Operating Junction Temperature Range | -40 to +125 | °C |
| | T _S | Storage Temperature Range | -65 to +150 | °C |
| | R _{θJA} | Thermal Resistance: Junction to Ambient | 60 | °C/W |

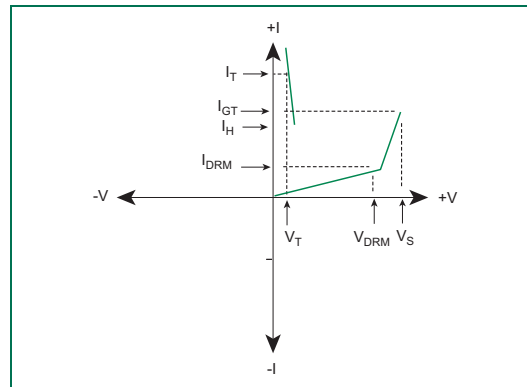
Capacitance Values

| Part Number | pF | |
|-------------|-----|-----|
| | MIN | MAX |
| B3104UAL | 50 | 200 |
| B3104UCL | 50 | 200 |
| B3164UAL | 50 | 200 |
| B3164UCL | 50 | 200 |
| B3204UAL | 50 | 200 |
| B3204UCL | 50 | 200 |

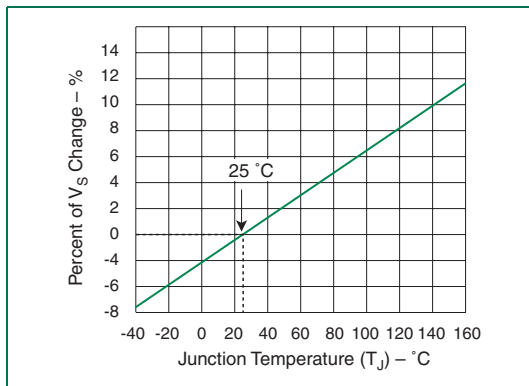
Note: Off-state capacitance (C_O) is measured at 1 MHz with a 2 V bias.



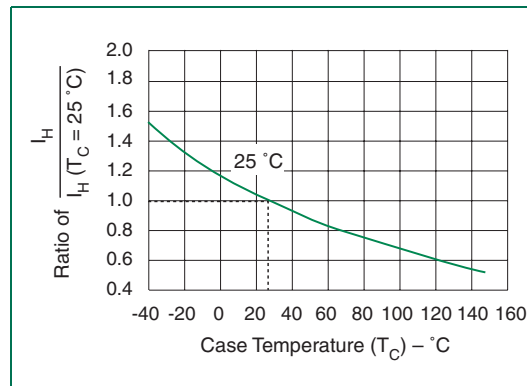
V-I Characteristics for Negative Battrax



t_r x t_d Pulse Waveform



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature