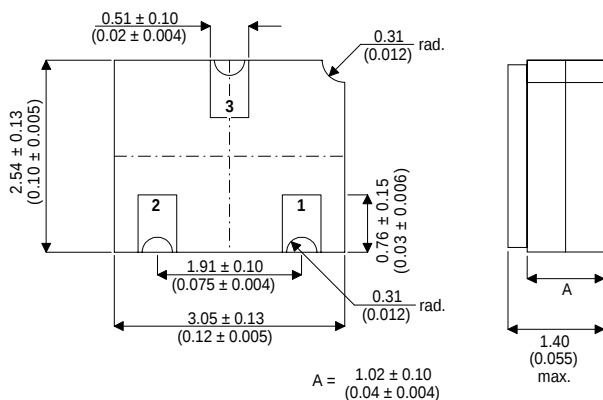


# HIGH SPEED, MEDIUM POWER, PNP SWITCHING TRANSISTOR IN A HERMETICALLY SEALED CERAMIC SURFACE MOUNT PACKAGE FOR HIGH RELIABILITY APPLICATIONS

## MECHANICAL DATA Dimensions in mm (inches)



## SOT23 CERAMIC (LCC1 PACKAGE)

### Underside View

PAD 1 – Base    PAD 2 – Emitter    PAD 3 – Collector

## FEATURES

- SILICON PLANAR EPITAXIAL PNP TRANSISTOR
- HERMETIC CERAMIC SURFACE MOUNT PACKAGE (SOT23 COMPATIBLE)
- CECC SCREENING OPTIONS
- SPACE QUALITY LEVELS OPTIONS
- HIGH SPEED SATURATED SWITCHING

## APPLICATIONS:

Hermetically sealed surface mount version of the popular 2N2907A for high reliability / space applications requiring small size and low weight devices.

## ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

|                |                                           |                        |
|----------------|-------------------------------------------|------------------------|
| $V_{CBO}$      | Collector - Base Voltage                  | -60V                   |
| $V_{CEO}$      | Collector - Emitter Voltage               | -60V                   |
| $V_{EBO}$      | Emitter - Base Voltage                    | -5V                    |
| $I_C$          | Collector Current                         | 600mA                  |
| $P_D$          | Total Device Dissipation                  | 350mW                  |
| $P_D$          | Derate above $50^{\circ}C$                | 2.0mW / $^{\circ}C$    |
| $R_{ja}$       | Thermal Resistance Junction to Ambient    | 350 $^{\circ}C$ / W    |
| $T_{stg}, T_j$ | Storage Temperature, Operating Temp Range | -55 to 200 $^{\circ}C$ |

## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

| Parameter                                              | Test Conditions                | Min. | Typ. | Max. | Unit    |
|--------------------------------------------------------|--------------------------------|------|------|------|---------|
| $V_{CE(sus)}^*$ Collector – Emitter Sustaining Voltage | $I_C = 10mA$                   | -60  |      |      | V       |
| $V_{(BR)CBO}^*$ Collector – Base Breakdown Voltage     | $I_C = 10\mu A$                | -60  |      |      | V       |
| $V_{(BR)EBO}^*$ Emitter – Base Breakdown Voltage       | $I_E = 10\mu A$ $I_C = 0$      | -5   |      |      | V       |
| $I_{CEX}^*$ Collector Cut-off Current                  | $V_{CE} = 30V$ $V_{BE} = 0.5V$ |      |      | 50   | nA      |
| $I_{CBO}^*$ Collector – Base Cut-off Current           | $I_E = 0$ $V_{CB} = 50V$       |      |      | 0.01 | $\mu A$ |
|                                                        | $T_C = 125^{\circ}C$           |      |      | 10   |         |
| $I_{BEO}$ Base Cut-off Current                         | $V_{CE} = 30V$ $V_{BE} = 0.5V$ |      |      | 50   | nA      |
| $V_{CE(sat)}^*$ Collector – Emitter Saturation Voltage | $I_C = 150mA$ $I_B = 15mA$     |      |      | -0.4 | V       |
|                                                        | $I_C = 500mA$ $I_B = 50mA$     |      |      | -1.6 |         |
| $V_{BE(sat)}^*$ Base – Emitter Saturation Voltage      | $I_C = 150mA$ $I_B = 15mA$     |      |      | -1.3 | V       |
|                                                        | $I_C = 500mA$ $I_B = 50mA$     |      |      | -2.6 |         |
| $h_{FE}^*$ DC Current Gain                             | $I_C = 0.1mA$ $V_{CE} = 10V$   | 75   |      |      | —       |
|                                                        | $I_C = 1mA$ $V_{CE} = 10V$     | 100  |      |      |         |
|                                                        | $I_C = 10mA$ $V_{CE} = 10V$    | 100  |      |      |         |
|                                                        | $I_C = 150mA$ $V_{CE} = 10V$   | 100  |      | 300  |         |
|                                                        | $I_C = 500mA$ $V_{CE} = 10V$   | 50   |      |      |         |

\* Pulse test  $t_p = 300\mu s$ ,  $\delta \leq 2\%$

## DYNAMIC CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

| Parameter                   | Test Conditions                          | Min. | Typ. | Max. | Unit |
|-----------------------------|------------------------------------------|------|------|------|------|
| $f_T$ Transition Frequency  | $I_C = 50mA$ $V_{CE} = 20V$ $f = 100MHz$ | 200  |      |      | MHz  |
| $C_{ob}$ Output Capacitance | $V_{CB} = 10V$ $I_E = 0$ $f = 1.0MHz$    |      |      | 8    | pF   |
| $C_{ib}$ Input Capacitance  | $V_{BE} = 2V$ $I_C = 0$ $f = 1.0MHz$     |      |      | 30   | pF   |

## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

| Parameter               | Test Conditions                                            | Min. | Typ. | Max. | Unit |
|-------------------------|------------------------------------------------------------|------|------|------|------|
| $t_{on}$ Turn-on Time   | $V_{CC} = 30V$<br>$I_C = 150mA$<br>$I_{B1} = 15mA$         |      | 26   | 45   | ns   |
| $t_d$ Delay Time        |                                                            |      | 6.0  | 10   |      |
| $t_r$ Rise Time         |                                                            |      | 20   | 40   |      |
| $t_{off}$ Turn-off Time | $V_{CC} = 6V$<br>$I_C = 150mA$<br>$I_{B1} = I_{B2} = 15mA$ |      | 70   | 100  | ns   |
| $t_s$ Storage Time      |                                                            |      | 50   | 80   |      |
| $t_f$ Fall Time         |                                                            |      | 20   | 30   |      |