



# NPN Transistor Bare Die – 2N3767

Rev 1.0  
24/06/26

## Bipolar Medium Power Transistor in bare die form

Complement to PNP 2N3741

### Features:

- Collector current up to 4A
- High DC Current Gain,  $h_{FE} = 40 - 160 @ I_C = 0.5A$
- Low  $V_{CE(sat)} = 1V \text{ Max } @ I_C = 0.5A$
- Solderable back metal
- High Reliability tested grades for Military + Space

### Ordering Information:

The following part suffixes apply:

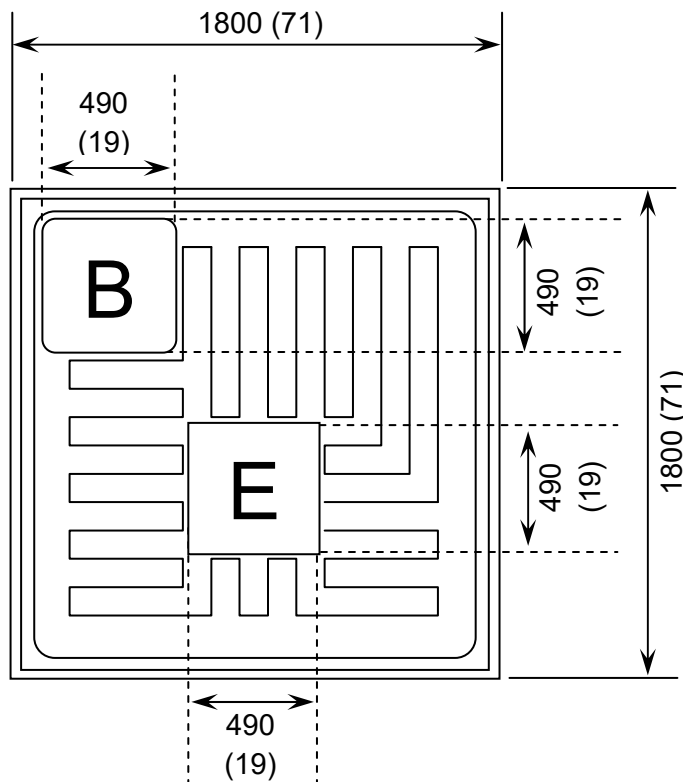
- No suffix - Commercial grade die
- "H" – Hi-rel grade die + MIL-STD-38534 Class H LAT
- "K" – Hi-rel grade die + MIL-STD-38534 Class K LAT.

LAT = Lot acceptance Test.

For information on Hi-Rel LAT flows please see below.

[www.siliconsupplies.com/bare-die-lot-qualification](http://www.siliconsupplies.com/bare-die-lot-qualification)

### Die Dimensions in $\mu m$ (mils)



**DIE BACK = COLLECTOR**

### Supply Formats:

- Default – Die in Waffle Pack (169 per tray capacity)
- Sawn Wafer on Tape – Specific request
- Unsawn Wafer – Specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

### Mechanical Specification

|                                    |                                      |                 |
|------------------------------------|--------------------------------------|-----------------|
| Die Size<br>(Excluding Saw Street) | 1800 x 1800<br>71 x 71               | $\mu m$<br>mils |
| Emitter Pad Size                   | 490 x 490<br>19 x 19                 | $\mu m$<br>mils |
| Base Pad Size                      | 490 x 490<br>19 x 19                 | $\mu m$<br>mils |
| Die Thickness                      | 250 ( $\pm 25$ )<br>9.84 ( $\pm 1$ ) | $\mu m$<br>mils |
| Top Metal Composition              | Al                                   |                 |
| Back Metal Composition             | Ti/Ni/Ag                             |                 |





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## Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

| PARAMETER                      | SYMBOL    | VALUE      | UNIT             |
|--------------------------------|-----------|------------|------------------|
| Collector-Base Voltage         | $V_{CBO}$ | 100        | V                |
| Collector-Emitter Voltage      | $V_{CEO}$ | 80         | V                |
| Emitter-Base Voltage           | $V_{EBO}$ | 6          | V                |
| Collector Current - Continuous | $I_C$     | 4          | A                |
| Base Current                   | $I_B$     | 2          | A                |
| Operating Junction Temperature | $T_J$     | -65 to 175 | $^\circ\text{C}$ |
| Storage Temperature            | $T_{stg}$ | -65 to 175 | $^\circ\text{C}$ |

## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

| PARAMETER                                         | SYMBOL         | CONDITIONS                                                  | MIN | TYP | MAX  | UNIT |
|---------------------------------------------------|----------------|-------------------------------------------------------------|-----|-----|------|------|
| <b>OFF CHARACTERISTICS</b>                        |                |                                                             |     |     |      |      |
| Collector-Base Breakdown Voltage                  | $V_{(BR)CBO}$  | $I_E = 0$                                                   | 100 | -   | -    | V    |
| Collector-Emitter Sustaining Voltage <sup>1</sup> | $V_{CEO(SUS)}$ | $I_B = 0, I_C = 100\text{mA}$                               | 80  | -   | -    | V    |
| Emitter-Base Breakdown Voltage                    | $V_{(BR)EBO}$  | $I_C = 0$                                                   | 6   | -   | -    | V    |
| Collector Cut-off Current                         | $I_{CEO}$      | $V_{CE} = 80\text{V}, I_B = 0$                              | -   | -   | 0.7  | mA   |
|                                                   | $I_{CEX}$      | $V_{CE} = 100\text{V}, V_{BE(off)} = 1.5\text{V}$           | -   | -   | 0.1  | mA   |
|                                                   | $I_{CBO}$      | $V_{CB} = 100\text{V}, I_E = 0$                             | -   | -   | 0.1  | mA   |
| Emitter Cut-off Current                           | $I_{EBO}$      | $V_{EB} = 6\text{V}, I_C = 0$                               | -   | -   | 0.75 | mA   |
| <b>ON CHARACTERISTICS</b>                         |                |                                                             |     |     |      |      |
| Forward-Current Transfer Ratio <sup>1</sup>       | $h_{FE}$       | $I_C = 50\text{mA}, V_{CE} = 5\text{V}$                     | 30  | -   | -    | -    |
|                                                   |                | $I_C = 500\text{mA}, V_{CE} = 5\text{V}$                    | 40  | -   | 160  | -    |
|                                                   |                | $I_C = 1\text{A}, V_{CE} = 10\text{V}$                      | 20  | -   | -    | -    |
| Collector-Emitter Saturation Voltage <sup>1</sup> | $V_{CE(sat)}$  | $I_C = 1\text{A}, I_B = 0.1\text{A}$                        | -   | -   | 2.5  | V    |
|                                                   |                | $I_C = 500\text{mA}, I_B = 50\text{mA}$                     | -   | -   | 1    | V    |
| Base-Emitter On Voltage <sup>1</sup>              | $V_{BE(on)}$   | $I_C = 1\text{A}, V_{CE} = 10\text{V}$                      | -   | -   | 1.5  | V    |
| <b>SMALL SIGNAL CHARACTERISTICS<sup>2</sup></b>   |                |                                                             |     |     |      |      |
| Transition Frequency                              | $f_T$          | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 10\text{ MHz}$ | 10  | -   | -    | MHz  |
| Small-Signal Current Gain                         | $h_{fe}$       | $V_{CE} = 10\text{V}, I_C = 0.1\text{A}, f = 1\text{ kHz}$  | 40  | -   | -    | -    |
| Output Capacitance                                | $C_{obo}$      | $V_{CB} = 10\text{V}, I_C = 0, f = 100\text{ kHz}$          | -   | -   | 50   | pF   |

1. Pulsed duration = 300 $\mu\text{s}$ , duty cycle  $\leq 2\%$

2. Not production testing in die form, characterized by chip design and package verification

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