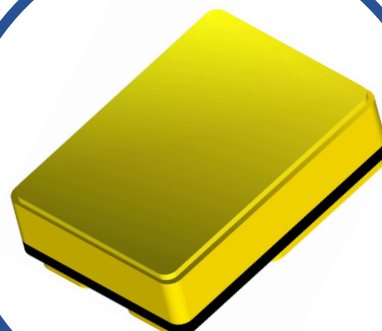


# SILICON NPN TRANSISTOR

## 2N2891SMD05

- $V_{(BR)CEO} = 80V$  (Min).
- Hermetic Ceramic Surface Mount Package
- Ideally Suited For Low Frequency Large Signal Applications (High Voltage).
- Screening Options Available



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ unless otherwise stated)

|           |                                               |                        |
|-----------|-----------------------------------------------|------------------------|
| $V_{CBO}$ | Collector – Base Voltage                      | 100V                   |
| $V_{CEO}$ | Collector – Emitter Voltage                   | 80V                    |
| $V_{EBO}$ | Emitter – Base Voltage                        | 5V                     |
| $I_C$     | Continuous Collector Current                  | 3A                     |
| $I_{CM}$  | Peak Collector Current                        | 5A                     |
| $I_B$     | Base Current                                  | 0.5A                   |
| $P_D$     | Total Power Dissipation at $T_A = 25^\circ C$ | 0.8W                   |
|           | Derate Above $25^\circ C$                     | 4.57mW/ $^\circ C$     |
| $P_D$     | Total Power Dissipation at $T_C = 25^\circ C$ | 35W                    |
|           | Derate Above $25^\circ C$                     | 200mW/ $^\circ C$      |
| $T_J$     | Junction Temperature Range                    | -65 to +200 $^\circ C$ |
| $T_{stg}$ | Storage Temperature Range                     | -65 to +200 $^\circ C$ |

### THERMAL PROPERTIES

| Symbols         | Parameters                              | Max.   | Units        |
|-----------------|-----------------------------------------|--------|--------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction To Ambient | 218.75 | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case    | 5      | $^\circ C/W$ |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

# SILICON

## NPN TRANSISTOR

### 2N2891SMD05

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

| Symbols             | Parameters                           | Test Conditions                             | Min. | Typ | Max. | Units         |
|---------------------|--------------------------------------|---------------------------------------------|------|-----|------|---------------|
| $V_{(BR)CEO}^{(1)}$ | Collector-Emitter Breakdown Voltage  | $I_C = 10\text{mA}$ $I_B = 0$               | 80   |     |      | V             |
| $V_{(BR)CBO}^{(1)}$ | Collector-Base Breakdown Voltage     | $I_C = 0.1\text{mA}$ $I_E = 0$              | 100  |     |      |               |
| $I_{CEO}$           | Collector Cut-Off Current            | $V_{CE} = 60\text{V}$ $I_B = 0$             |      |     | 50   | $\mu\text{A}$ |
| $I_{CEX}$           | Collector Cut-Off Current            | $V_{CE} = 60\text{V}$ $V_{BE} = -2\text{V}$ |      |     | 0.1  |               |
|                     |                                      | $T_A = 150^\circ\text{C}$                   |      |     | 100  |               |
|                     |                                      | $V_{CE} = 90\text{V}$ $V_{BE} = -2\text{V}$ |      |     | 100  |               |
| $I_{EBO}$           | Emitter Cut-Off Current              | $V_{EB} = 5\text{V}$ $I_C = 0$              |      |     | 10   |               |
| $h_{FE}^{(1)}$      | Forward-current transfer ratio       | $I_C = 100\text{mA}$ $V_{CE} = 2\text{V}$   | 35   |     |      |               |
|                     |                                      | $I_C = 1.0\text{A}$ $V_{CE} = 2\text{V}$    | 50   |     | 150  |               |
|                     |                                      | $I_C = 2\text{A}$ $V_{CE} = 5\text{V}$      | 40   |     |      |               |
| $V_{CE(sat)}^{(1)}$ | Collector-Emitter Saturation Voltage | $I_C = 1.0\text{A}$ $I_B = 100\text{mA}$    |      |     | 0.5  | V             |
|                     |                                      | $I_C = 2\text{A}$ $I_B = 200\text{mA}$      |      |     | 0.75 |               |
| $V_{BE(sat)}^{(1)}$ | Base-Emitter Saturation Voltage      | $I_C = 1.0\text{A}$ $I_B = 100\text{mA}$    |      |     | 1.2  |               |
|                     |                                      | $I_C = 2\text{A}$ $I_B = 200\text{mA}$      |      |     | 1.3  |               |

#### DYNAMIC CHARACTERISTICS

|           |                           |                                                                                             |    |    |     |               |
|-----------|---------------------------|---------------------------------------------------------------------------------------------|----|----|-----|---------------|
| $h_{fe}$  | Small-Signal Current Gain | $I_C = 50\text{mA}$ $V_{CE} = 10\text{V}$<br>$f = 1.0\text{KHz}$                            | 50 |    | 350 |               |
| $f_T$     | Transition Frequency      | $I_C = 200\text{mA}$ $V_{CE} = 10\text{V}$<br>$f = 20\text{MHz}$                            | 30 |    |     | MHz           |
| $C_{obo}$ | Output Capacitance        | $V_{CB} = 10\text{V}$ $I_E = 0$<br>$f = 1.0\text{MHz}$                                      |    | 70 | 100 | pF            |
| $t_{on}$  | Turn-On Time              | $I_C = 1.0\text{A}$ $V_{CC} = 20\text{V}$<br>$I_{B1} = 50\text{mA}$                         |    |    | 0.3 | $\mu\text{s}$ |
| $t_{off}$ | Turn-Off Time             | $I_C = 1.0\text{A}$ $V_{CC} = 20\text{V}$<br>$I_{B1} = 50\text{mA}$ $I_{B2} = -50\text{mA}$ |    |    | 1.5 |               |

#### Notes

(1) Pulse Width  $\leq 380\mu\text{s}$ ,  $\delta \leq 2\%$



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Dimensions in mm (inches)



Pad 1 – Base      Pad 2 – Collector      Pad 3 - Emitter