

# SOT89 NPN SILICON PLANAR DARLINGTON TRANSISTOR

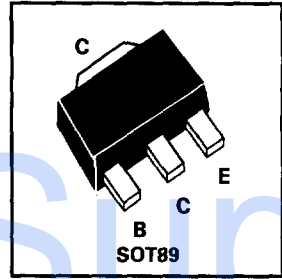
**BST52**

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## FEATURES

- \* Fast Switching
- \* High  $h_{FE}$

PARTMAKING DETAIL — AS3



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                       | SYMBOL         | VALUE       | UNIT             |
|---|----------------|-------------|------------------|
| Collector-Base Voltage                          | $V_{CBO}$      | 90          | V                |
| Collector-Emitter Voltage                       | $V_{CEO}$      | 80          | V                |
| Emitter-Base Voltage                            | $V_{EBO}$      | 10          | V                |
| Pea Pulse Current                               | $I_{CM}$       | 1.5         | A                |
| Continuous Collector Current                    | $I_C$          | 500         | mA               |
| Base Current                                    | $I_B$          | 100         | mA               |
| Power Dissipation at $T_{amb}=25^\circ\text{C}$ | $P_{tot}$      | 1           | W                |
| Operating and Storage Temperature Range         | $T_j; T_{stg}$ | -65 to +150 | $^\circ\text{C}$ |

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated).

| PARAMETER                             | SYMBOL        | MIN.         | MAX.       | UNIT          | CONDITIONS.   |
|---------------------------------------|---------------|--------------|------------|---------------|---|
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$ | 90           |            | V             | $I_C=10\mu\text{A}, I_E=0$  |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$ | 80           |            | V             | $I_C=10\text{mA}, I_B=0^*$  |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$ | 10           |            | V             | $I_E=10\mu\text{A}, I_C=0$  |
| Emitter Cut-Off Current               | $I_{EBO}$     |              | 10         | $\mu\text{A}$ | $V_{EB}=8\text{V}, I_E=0$   |
| Collector-Emitter Cut-Off Current     | $I_{CES}$     |              | 10         | $\mu\text{A}$ | $V_{CE}=80\text{V}, I_C=0$  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$ |              | 1.3<br>1.3 | V<br>V        | $I_C=500\text{mA}, I_B=0.5\text{mA}$<br>$I_C=500\text{mA}, I_B=0.5\text{mA}$<br>$T_j=150^\circ\text{C}$ |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$ |              | 1.9        | V             | $I_C=500\text{mA}, I_B=0.5\text{mA}$  |
| Static Forward Current Transfer Ratio | $h_{FE}$      | 1K<br>2K     |            |               | $I_C=150\text{mA}, V_{CE}=10\text{V}^*$<br>$I_C=500\text{mA}, V_{CE}=10\text{V}^*$                      |
| Turn On Time                          | $t_{on}$      | 400 Typical  |            | ns            | $I_C=500\text{mA}$<br>$I_{B(on)}=I_{B(off)}=0.5\text{mA}$   |
| Turn Off Time                         | $t_{off}$     | 1.5K Typical |            | ns            |   |

\* Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device  
For typical characteristics graphs see FMMT614 datasheet.