DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

# 2N3878

## NPN SILICON POWER TRANSISTOR

**FEATURES**

- Available as “HR” (high reliability) screened per MIL-PRF-19500, JANTX level. Add “HR” suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding “-PBF” suffix.

**MAXIMUM RATINGS**

| Ratings | Symbol | 2N3878 | Unit |
|---|---|---|---|
| **Collector-Emitter Voltage** | $V_{CEO}$ | 50 | Vdc |
| **Collector-Base Voltage** | $V_{CBO}$ | 120 | Vdc |
| **Emitter-Base Voltage** | $V_{EBO}$ | 7.0 | Vdc |
| **Collector Current** | $I_C$ | 4.0 | Adc |
| **Total Power Dissipation** $T_C$ = 25°C | $P_D$ | 35 | W |
| **Operating & Storage Junction Temperature Range** | $T_J$,$T_{stg}$ | -65 to +200 | °C |
| **Maximum Thermal Resistance Junction to Case** | $R_{\theta JC}$ | 5.0 | °C/W |

**ELECTRICAL CHARACTERSITICS** ($T_A$ = 25°C unless otherwise specified)

| Characteristics | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | |
| **Collector-Emitter Sustaining Voltage**<br>$I_C$ = 200mA, $I_B$ = 0 | $V_{CEO(sus)}$ | 50 | - | V |
| **Emitter-Base Cutoff Current**<br>$V_{EB}$ = 7.0 Vdc, $I_C$ = 0 | $I_{EBO}$ | - | 10 | mAdc |
| **Collector-Emitter Saturation Voltage**<br>$I_C$ = 4.0 Adc, $I_B$ = 0.4 Adc | $V_{CE(sat)}$ | - | 2.0 | Vdc |
| **Base-Emitter On Voltage**<br>$I_c$ = 4 Adc, $V_{CE}$ = 2 Vdc | $V_{BE(on)}$ | - | 2.5 | V |
| **Forward Current Transfer Ratio**<br>$I_C$ = 0.5 Adc, $V_{CE}$ = 2.0 Vdc<br>$I_C$ = 4.0 Adc, $V_{CE}$ = 2.0 Vdc<br>$I_C$ = 4.0 Adc, $V_{CE}$ = 5.0 Vdc<br>$I_C$ = 0.5 Adc, $V_{CE}$ = 5.0 Vdc | $h_{FE}$ | <br>40<br>8<br>20<br>50 | <br>200<br>-<br>-<br>200 | - |

Note 1: Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%

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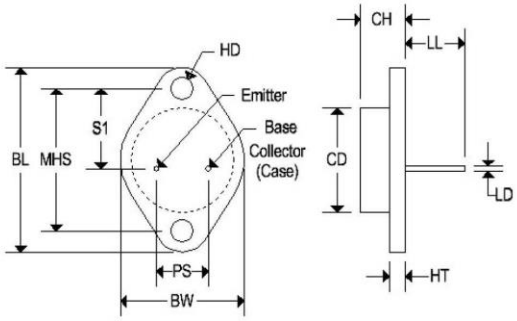
**MECHANICAL CHARACTERISTICS**

| | |
|---|---|
| **Case** | TO-66 |
| **Marking** | Alpha-numeric |
| **Polarity** | See below |




| Dim | TO-66 | | | |
|---|---|---|---|---|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| BL | 1.205 | 1.280 | 30.60 | 32.50 |
| CD | 0.445 | 0.557 | 11.303 | 14.148 |
| CH | 0.257 | 0.284 | 6.540 | 7.220 |
| LL | 0.374 | 0.413 | 9.500 | 10.50 |
| BW | 0.680 | 0.727 | 17.26 | 18.46 |
| LD | 0.030 | 0.036 | 0.760 | 0.920 |
| HT | 0.054 | 0.065 | 1.380 | 1.650 |
| MHS | 0.951 | 0.976 | 24.16 | 24.78 |
| S1 | 0.545 | 0.614 | 13.84 | 15.60 |
| HD | 0.131 | 0.154 | 3.320 | 3.920 |
| PS | 0.191 | 0.210 | 4.860 | 5.340 |