# 2N2723

CASE 20-03, STYLE 8
TO-72 (TO-206AF)

**DARLINGTON TRANSISTOR**

**NPN SILICON**



**MAXIMUM RATINGS**

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Emitter Voltage (Base 1 and Base 2 open) | $V_{CE2O}$ | 60 | Vdc |
| Collector-Base Voltage | $V_{CB1}$ | 80 | Vdc |
| Emitter-Base Voltage | $V_{E2B1}$ | 12 | Vdc |
| Collector Current — Continuous | $I_C$ | 40 | Adc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 0.5<br>2.9 | Watt<br>mW/°C |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 1.8<br>10.5 | Watts<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | −65 to +200 | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted.)

| Characteristic | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | |
| Collector-Emitter Breakdown Voltage(1) ($I_C$ = 10 mAdc, $I_{B1}$ = 0) | $V_{(BR)CE2O}$ | 60 | — | Vdc |
| Collector-Base Breakdown Voltage ($I_C$ = 10 μAdc, $I_{E2}$ = 0) | $V_{(BR)CB1O}$ | 80 | — | Vdc |
| Emitter-Base Breakdown Voltage ($I_{E2}$ = 10 μAdc, $I_C$ = 0) | $V_{(BR)E2B1O}$ | 12 | — | Vdc |
| Collector Cutoff Current<br>($V_{CB1}$ = 60 Vdc, $I_E$ = 0)<br>($V_{CB1}$ = 60 Vdc, $I_E$ = 0, $T_A$ = 150°C) | $I_{CB1O}$ | —<br>— | 0.01<br>10 | μAdc |
| Emitter Cutoff Current ($V_{B1E2}$ = 10 Vdc, $I_C$ = 0) | $I_{E2B1O}$ | — | 10 | nAdc |
| **ON CHARACTERISTICS** | | | | |
| DC Current Gain ($I_C$ = 10 mAdc, $V_{CE2}$ = 5.0 Vdc, $I_{B2}$ = 0) | $h_{FE}$ | 2000 | 10,000 | — |
| Collector-Emitter Saturation Voltage ($I_C$ = 10 mAdc, $I_{B1}$ = 1.0 mAdc) | $V_{CE2(sat)}$ | — | 1.0 | Vdc |
| Base-Emitter Saturation Voltage ($I_C$ = 10 mAdc, $I_{B1}$ = 1.0 mAdc) | $V_{BE2(sat)}$ | — | 1.7 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | |
| Output Capacitance ($V_{CB1}$ = 10 Vdc, $I_{E2}$ = 0, f = 140 kHz) | $C_{ob1o}$ | — | 10 | pF |
| Small-Signal Current Gain ($I_C$ = 10 mAdc, $V_{CE2}$ = 5.0 Vdc, f = 1.0 kHz) | $h_{fe}$ | 1500 | 15,000 | — |
| Current Gain — Bandwidth Product (Each Unit) ($I_C$ = 10 mAdc, $V_{CE1}$ or $V_{CE2}$ = 10 Vdc, f = 20 MHz) | $\|h_{fe}\|$ | 5.0 | — | — |
| Noise Figure (Input Stage Only) ($I_C$ = 50 μAdc, $V_{CE}$ = 5.0 Vdc, $R_S$ = 3.0 kohms, f = 1.0 kHz, BW = 100 Hz) | NF | — | 10 | dB |

(1) Pulse Test: Pulse Width ≤ 12 ms, Duty Cycle ≤ 2.0%.