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MJ11028 Silicon Darlington NPN Transistor High Current, General Purpose TO-3 Type Package

Description:

The MJ11028 is a silicon Darlington NPN transistor in a TO-3 type package designed for use as an output device in general purpose amplifier applications.

Features:

- High Gain Darlington Performance
- High DC Current Gain: $h_{FE} = 1000$ (Min) @ $I_C = 25A$
 $h_{FE} = 400$ (Min) @ $I_C = 50A$
- Monolithic Construction ^w/Built-In Base-Emitter Shunt Resistor

Absolute Maximum Ratings:

| | |
|--|-------------------------------|
| Collector-Emitter Voltage, V_{CEO} | 60V |
| Collector-Base Voltage, V_{CB} | 60V |
| Emitter-Base Voltage, V_{EBO} | 5V |
| Collector Current, I_C | |
| Continuous | 50A |
| Peak | 100A |
| Continuous Base Current, I_B | 2A |
| Total Power Dissipation ($T_C = +25^\circ C$), P_D | 300W |
| Derate Above $25^\circ C$ @ $T_C = +100^\circ C$ | 1.71W/ $^\circ C$ |
| Operating Junction Temperature Range, T_J | -65° to $+200^\circ C$ |
| Storage Temperature Range, T_{stg} | -65° to $+200^\circ C$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | $0.584^\circ C/W$ |

Electrical Characteristics: ($T_C = +25^\circ C$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|-----|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector-Emitter Sustaining Voltage | $V_{CEO(sus)}$ | $I_C = 100mA, I_B = 0$, Note 1 | 60 | - | - | V |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 50V, I_B = 0$ | - | - | 2 | mA |
| Collector-Emitter Leakage Current | I_{CER} | $V_{CE} = 60V, R_{BE} = 1k\Omega$ | - | - | 2 | mA |
| | | $V_{CE} = 60V, R_{BE} = 1k\Omega, T_C = +125^\circ C$ | - | - | 10 | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{BE} = 5V, I_C = 0$ | - | - | 5 | mA |

Note 1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

Electrical Characteristics (Cont'd): ($T_C = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|---|------|-----|-------|------|
| ON Characteristics (Note 1) | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 25\text{A}, V_{CE} = 5\text{V}$ | 1000 | - | 18000 | |
| | | $I_C = 50\text{A}, V_{CE} = 5\text{V}$ | 400 | - | - | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 25\text{A}, I_B = 250\text{mA}$ | - | - | 2.5 | V |
| | | $I_C = 50\text{A}, I_B = 500\text{mA}$ | - | - | 3.5 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 25\text{A}, I_B = 200\text{mA}$ | - | - | 3.0 | V |
| | | $I_C = 50\text{A}, I_B = 300\text{mA}$ | - | - | 4.5 | V |
| Dynamic Characteristics | | | | | | |
| Small-Signal Current Gain | $ h_{fe} $ | $I_C = 10\text{A}, V_{CE} = 3\text{V}, f = 1.0\text{MHz}$ | 4 | - | - | |

Note 1. Pulse Test: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Note 2. $f_T = |h_{fe}| \cdot f_{test}$

