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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 <sup>w/</sup>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, $T_J$ .....	$-65^\circ$ to $+200^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ 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
<b>OFF Characteristics</b>						
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 $\mu s$ , 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
<b>ON Characteristics</b> (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
<b>Dynamic Characteristics</b>						
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.  $f_T = |h_{fe}| \cdot f_{test}$

