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## NTE2349 (NPN) & NTE2350 (PNP) Silicon Darlington Transistors High Current, General Purpose

### **Description:**

The NTE2349 (NPN) and NTE2350 (PNP) are silicon complementary Darlington transistors in a TO3 type package designed for use as output devices in general purpose amplifier applications.

### **Features:**

- High DC Current Gain:  $h_{FE} = 1000$  (Min) @  $I_C = 25A$   
 $h_{FE} = 400$  (Min) @  $I_C = 50A$
- Diode Protection to Rated  $I_C$
- Monolithic Construction <sup>w</sup>/Built-In Base-Emitter Shunt Resistor
- Junction Temperature to +200°C

### **Absolute Maximum Ratings:**

Collector-Emitter Voltage, $V_{CEO}$ .....	120V
Collector-Base Voltage, $V_{CB}$ .....	120V
Emitter-Base Voltage, $V_{EB}$ .....	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°C @ $T_C = +100^\circ C$ .....	1.71W/°C
Operating Junction Temperature Range, $T_J$ .....	-55° to +200°C
Storage Temperature Range, $T_{stg}$ .....	-55° to +200°C
Thermal Resistance, Junction-to-Case, $R_{thJC}$ .....	0.584°C
Lead Temperature (During Soldering, 10sec Max), $T_L$ .....	+275°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 100mA, I_B = 0$	120	-	-	V
Collector-Emitter Leakage Current	$I_{CER}$	$V_{CE} = 120V, R_{BE} = 1k\Omega$	-	-	2	mA
		$V_{CE} = 120V, R_{BE} = 1k\Omega, T_C = +150^\circ C$	-	-	10	mA
	$I_{CEO}$	$V_{CE} = 50V, I_B = 0$	-	-	2	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5V, I_C = 0$	-	-	2	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics (Note 1)</b>						
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

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

**Schematic Diagram**

