



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## **NTE377 (NPN) & NTE378 (PNP) Silicon Complementary Transistors Power Amp Driver, Output, Switch**

**Description:**

The NTE377 (NPN) and NTE378 (PNP) are silicon complementary transistors in a TO220 type package designed for general purpose power amplification and switching such as output or driver stages in applications such as switching regulators, converters, and power amplifiers.

**Features:**

- Low Collector–Emitter Saturation Voltage:  $V_{CE(sat)} = 1V \text{ Max @ } 8A$
- Fast Switching Speeds
- Complementary Pairs Simplifies Designs

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	80V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Collector Current, $I_C$	
Continuous .....	10A
Peak (Note 1) .....	20A
Total Power Dissipation, $P_D$	
$T_C = +25^\circ C$ .....	50W
$T_A = +25^\circ C$ .....	1.67W
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$
Thermal Resistance, Junction–to–Case, $R_{\theta JC}$ .....	2.5°C/W
Thermal Resistance, Junction–to–Ambient, $R_{\theta JA}$ .....	75°C/W
Maximum Lead Temperature (During Soldering, 1/8" from case, 5sec), $T_L$ .....	$+275^\circ C$

Note 1. Pulse Width  $\leq 6ms$ , Duty Cycle  $\leq 50\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 80\text{V}, V_{BE} = 0$	–	–	10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}$	–	–	100	$\mu\text{A}$
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 1\text{V}, I_C = 2\text{A}, T_J = +25^\circ\text{C}$	60	–	–	
		$V_{CE} = 1\text{V}, I_C = 4\text{A}, T_J = +25^\circ\text{C}$	40	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 8\text{A}, I_B = 400\text{mA}$	–	–	1.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 8\text{A}, I_b = 800\text{mA}$	–	–	1.5	V
<b>Dynamic Characteristics</b>						
Collector Capacitance NTE377	$C_{cb}$	$V_{CB} = 10\text{V}, f_{test} = 1\text{MHz}$	–	130	–	pF
			–	230	–	pF
Gain Bandwidth Product NTE377	$f_T$	$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 20\text{MHz}$	–	50	–	MHz
			–	40	–	MHz
<b>Switching Times</b>						
Delay and Rise Time NTE377	$t_d + t_r$	$I_C = 5\text{A}, I_{B1} = 500\text{mA}$	–	300	–	ns
			–	135	–	ns
Storage Time	$t_s$	$I_C = 5\text{A}, I_{B1} = I_{B2} = 500\text{mA}$	–	500	–	ns
Fall Time NTE377	$t_f$		–	140	–	ns
			–	100	–	ns

