ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

NTE377 (NPN) & NTE378 (PNP)
Silicon Complementary Transistors
Power Amp Driver, Output, Switch
TO–220 Type Package

Description:

The NTE377 (NPN) and NTE378 (PNP) are silicon complementary transistors in a TO–220 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 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°C 50W
  T_A = +25°C 1.67W
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 2.5°C/W
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 75°C/W
Maximum Lead Temperature (During Soldering, 1/8” from case, 5sec), T_L . . . . . +275°C

Note 1. Pulse Width ≤ 6ms, Duty Cycle ≤ 50%.

Electrical Characteristics: (T_C = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector Cutoff Current	I_{CES}	V_{CE} = 80V, V_{BE} = 0	–	–	10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 5V	–	–	100	μA
ON Characteristics						
DC Current Gain	h_{FE}	V_{CE} = 1V, I_C = 2A, T_J = +25°C	60	–	–	
		V_{CE} = 1V, I_C = 4A, T_J = +25°C	40	–	–	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 8A, I_B = 400mA	–	–	1.0	V
Base−Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 8A, I_b = 800mA	–	–	1.5	V
Dynamic Characteristics						
Collector Capacitance NTE377	C_{cb}	V_{CB} = 10V, f_{test} = 1MHz	–	130	–	pF
NTE378			–	230	–	pF
Gain Bandwidth Product NTE377	f_T	I_C = 500mA, V_{CE} = 10V, f = 20MHz	–	50	–	MHz
NTE378			–	40	–	MHz
Switching Times						
Delay and Rise Time NTE377	$t_d + t_r$	I_C = 5A, I_{B1} = 500mA	–	300	–	ns
NTE378			–	135	–	ns
Storage Time	t_s	I_C = 5A, I_{B1} = I_{B2} = 500mA	–	500	–	ns
Fall Time NTE377	t_f		–	140	–	ns
NTE378			–	100	–	ns

Note 2. Matched complementary pairs are available upon request (NTE377MCP). Matched complementary pairs have their gain specification (h_{FE}) matched to within 10% of each other.