

NTE386 Silicon NPN Transistor Audio Power Amp, Switch

Description:

The NTE386 is a silicon NPN power transistor in a TO3 type package designed for high voltage, high-speed power switching in inductive circuit where fall time is critical. This device is particularly suited for line operated switchmode applications.

Applications:

- Switching Regulators
- Inverters
- Solenoid and Relay Drivers
- Motor Controls
- Deflection Circuits

Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO(sus)}$	500V
Collector–Emitter Voltage, V_{CEV}	800V
Emitter–Base Voltage, V_{EB}	6V
Collector Current, I_C	
Continuous	20A
Peak (Note 1)	30A
Base Current, I_B	
Continuous	10A
Peak (Note 1)	30A
Total Power Dissipation ($T_C = +100^\circ\text{C}$), P_D	100W
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	175W
Derate Above 25°C	1.0W/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$
Thermal Resistance, Junction–to–Case, R_{thJC}	1.0 $^\circ\text{C}/\text{W}$
Maximum Lead Temperature (During Soldering, 1/8" from case, 5sec), T_L	$+275^\circ\text{C}$

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle \leq 10%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100\text{mA}, I_B = 0$	500	–	–	V
Collector Cutoff Current	I_{CEV}	$V_{CEV} = 800\text{V}, V_{EB(off)} = 1.5\text{V}$	–	–	0.25	mA
	I_{CER}	$V_{CE} = 800\text{V}, R_{BE} = 50\Omega, T_C = +100^\circ\text{C}$	–	–	5.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 6\text{V}, I_C = 0$	–	–	1.0	mA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 5\text{A}$	10	–	60	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{A}, I_B = 2\text{A}$	–	–	1.8	V
		$I_C = 20\text{A}, I_B = 6.7\text{A}$	–	–	5.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{A}, I_B = 2\text{A}$	–	–	1.8	V
Dynamic Characteristics						
Output Capacitance	C_{cb}	$V_{CB} = 10\text{V}, I_E = 0, f_{test} = 1\text{kHz}$	125	–	500	pF
Switching Characteristics (Resistive Load)						
Dealy Time	t_d	$V_{CC} = 250\text{V}, I_C = 10\text{A}, I_{B1} = 2\text{A},$ $V_{BE(off)} = 5\text{V}, t_p = 10\mu\text{s},$ Duty Cycle $\leq 2\%$	–	0.02	0.1	μs
Rise Time	t_r		–	0.3	0.7	μs
Storage Time	t_s		–	1.6	4.0	μs
Fall Time	t_f		–	0.3	0.7	μs

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

