

NTE387 Silicon NPN Transistor Power Amp, Switch

Features:

- High Collector–Emitter Sustaining Voltage
- High DC Current Gain
- Low Collector–Emitter Saturation Voltage
- Fast Switching Times

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}	150V
Collector–Base Voltage, V_{CB}	180V
Emitter–Base Voltage, V_{EB}	6V
Collector Current, I_C	
Continuous	50A
Peak	100A
Continuous Base Current, I_B	20A
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	250W
Derate Above 25°C	1.43W/ $^\circ\text{C}$
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}	0.70 $^\circ\text{C/W}$

Note 1. Matched pairs are available upon request (NTE387MP). Matched pairs have their gain specification (h_{FE}) matched to within 10% of each other.

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	$V_{CEO(sus)}$	$I_C = 50\text{mA}$, $I_B = 0$, Note 2	150	–	–	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 75\text{V}$, $I_B = 0$	–	–	50	μA
	I_{CEX}	$V_{CE} = 180\text{V}$, $V_{EB(off)} = 1.5\text{V}$	–	–	10	μA
		$V_{CE} = 180\text{V}$, $V_{EB(off)} = 1.5\text{V}$, $T_C = +150^\circ\text{C}$	–	–	1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 6\text{V}$, $I_C = 0$	–	–	100	μA

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, 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
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	50	—	—	
		$V_{CE} = 4\text{V}, I_C = 20\text{A}$	30	—	120	
		$V_{CE} = 4\text{V}, I_C = 50\text{A}$	10	—	—	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 20\text{A}, I_B = 2\text{A}$	—	—	1	V
		$I_C = 50\text{A}, I_B = 10\text{A}$	—	—	3	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 20\text{A}, I_B = 2\text{A}$	—	—	1.8	V
		$I_C = 50\text{A}, I_B = 10\text{A}$	—	—	3.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 4\text{V}, I_C = 20\text{A}$	—	—	1.8	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f_{\text{test}} = 10\text{MHz}$, Note 3	30	—	—	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f_{\text{test}} = 0.1\text{MHz}$	—	—	600	pF
Switching Characteristics						
Rise Time	t_r	$V_{CC} = 80\text{V}, I_C = 20\text{A}, I_{B1} = 2\text{A}, V_{BE(off)} = 5\text{V}$	—	—	0.35	μs
Storage Time	t_s	$V_{CC} = 80\text{V}, I_C = 20\text{A}, I_{B1} = I_{B2} = 2\text{A}$	—	—	0.80	μs
Fall Time	t_f		—	—	0.25	μs

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

Note 3. $f_T = (h_{fe}) \bullet \text{test}$

