



NTE394 Silicon NPN Transistor Power Amp, High Voltage Switch

Description:

The NTE394 is a silicon multi-epitaxial mesa NPN transistor in a TO218 type package designed for use in high voltage, fast switching applications.

Absolute Maximum Ratings:

Collector–Emitter Voltage ($V_{BE} = 0$), V_{CES}	500V
Collector–Emitter Voltage ($I_B = 0$), V_{CEO}	400V
Emitter–Base Voltage ($I_C = 0$), V_{EB}	5V
Collector Current, I_C	
Continuous	3A
Peak	5A
Continuous Base Current, I_B	600mA
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_{tot}	100W
Operating Junction Temperature, T_J	+150°C
Storage Temperature Range, T_{stg}	–65° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC}	1.25°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Emitter Cutoff Current	I_{CEO}	$V_{CE} = 300\text{V}$, $I_B = 0$	–	–	1	mA
	I_{CES}	$V_{CE} = 500\text{V}$, $V_{EB} = 0$	–	–	1	mA
Emitter–Base Cutoff Current	I_{EBO}	$V_{EB} = 5\text{V}$, $I_C = 0$	–	–	1	mA
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 30\text{mA}$, $I_B = 0$, Note 1	400	–	–	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{A}$, $I_B = 0.6\text{A}$, Note 1	–	–	1.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 3\text{A}$, $V_{CE} = 10\text{V}$, Note 1	–	–	1.5	V
DC Current Gain	h_{FE}	$I_C = 0.3\text{A}$, $V_{CE} = 10\text{V}$	30	150	–	
		$I_C = 3\text{A}$, $V_{CE} = 10\text{V}$	10	–	–	

Note 1. Pulse Test: Pulse Width = 300 μs , Duty Cycle = 1.5%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Small-Signal Current Gain	h_{fe}	$I_C = 0.2\text{A}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	30	–	–	
		$I_C = 0.2\text{A}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2.5	–	–	
Second Breakdown Unclamped Energy	$E_{s/b}$	$V_{BE} = 20\text{V}, R_{BE} = 100\Omega, I = 30\text{mA}$	100	–	–	mJ
Turn-On Time	t_{on}	$I_C = 1\text{A}, I_{B1} = 100\text{mA}, V_{CC} = 200\text{V}$	–	0.2	–	μs
Turn-Off Time	t_{off}	$I_C = 1\text{A}, I_{B1} = -I_{B2} = 100\text{mA}, V_{CC} = 200\text{V}$	–	0.2	–	μs

