



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

NTE394 Silicon NPN Transistor Power Amp, High Voltage Switch TO-3PN Type Package

Description:

The NTE394 is a silicon multiepitaxial mesa NPN transistor in a TO-3PN 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 $+150^\circ\text{C}$
 Storage Temperature Range, T_{stg} -65° to $+150^\circ\text{C}$
 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 = $300\mu\text{s}$, 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	$E_{s/b}$	$V_{BE} = 20\text{V}, R_{BE} = 100\Omega, I = 30\text{mH}$	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

