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## NTE2411 Silicon PNP Transistor High Voltage Amp/Driver (Compl to NTE2410)

**Description:**

The NTE2411 is a silicon PNP transistor in an SOT-23 type surface mount case designed for use in high voltage applications.

**Absolute Maximum Ratings:**

Collector-Emitter Voltage, $V_{CEO}$ .....	150V
Collector-Base Voltage, $V_{CBO}$ .....	160V
Emitter-Base Voltage, $V_{EBO}$ .....	5V
Continuous Collector Current, $I_C$ .....	500mA
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ , FR-5 Board, Note 1), $P_D$ .....	225mW
Derate Above $25^\circ\text{C}$ .....	1.8mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	556 $^\circ\text{C}/\text{mW}$
Total Power Dissipation ( $T_A = +25^\circ\text{C}$ , Alumina Substrate, Note 2), $P_D$ .....	300mW
Derate Above $25^\circ\text{C}$ .....	2.4mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ .....	417 $^\circ\text{C}/\text{mW}$
Operating Junction Temperature Range, $T_J$ .....	-55 $^\circ$ to +150 $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-55 $^\circ$ to +150 $^\circ\text{C}$

Note 1. FR-5 = 1.0 x 0.75 x 0.62 in.

Note 2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0$	150	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	160	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	5	-	-	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 100\text{V}, I_E = 0$	-	-	50	nA
		$V_{CB} = 100\text{V}, I_E = 0, T_A = +100^\circ\text{C}$	-	-	50	$\mu\text{A}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics</b>						
DC Current Gain	$h_{FE}$	$I_C = 1\text{mA}, V_{CE} = 5\text{V}$	50	–	–	
		$I_C = 10\text{mA}, V_{CE} = 5\text{V}$	60	–	240	
		$I_C = 50\text{mA}, V_{CE} = 5\text{V}$	50	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	–	–	1.0	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	–	–	1.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	–	–	1.0	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	–	–	1.0	V
<b>Small–Signal Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	100	–	300	MHz
Output Capacitance	$C_{obo}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	–	–	6	pF
Small Signal Current gain	$h_{fe}$	$I_C = 1\text{mA}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	40	–	200	
Noise Figure	NF	$I_C = 200\mu\text{A}, V_{CE} = 5\text{V}, R_S = 10\Omega, f = 10\text{Hz to } 15.7\text{kHz}$	–	–	8	dB

