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## NTE2301 Silicon NPN Transistor High Voltage Horizontal Output

**Description:**

The NTE2301 is a silicon NPN power transistor in a TO218 type package designed for use in large screen deflection circuits.

**Features:**

- Collector–Emitter Voltage:  $V_{CEX} = 1500V$
- Glassivated Base–Collector Junction
- Safe Operating Area @  $50\mu s = 20A, 400V$
- Switching Times with Inductive Loads:  $t_f = 0.4\mu s$  (Typ) @  $I_C = 4.5A$

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ .....	750V
Collector–Emitter Voltage, $V_{CEX}$ .....	1500V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Continuous Collector Current, $I_C$ .....	5A
Continuous Base Current, $I_B$ .....	4A
Continuous Emitter Current, $I_E$ .....	9A
Total Power Dissipation, $P_D$	
$T_C = +25^\circ C$ .....	100W
$T_C = +100^\circ C$ .....	40W
Derate Above $25^\circ C$ .....	0.8W/ $^\circ C$
Operating Junction Temperature Range, $T_J$ .....	$-65^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ C$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	1.25 $^\circ C/W$
Maximum Lead Temperature (During Soldering, 1/8" from Case for 5sec), $T_L$ .....	$+275^\circ C$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b> (Note 1)						
Collector–Emitter Sustaining Voltage	$V_{CE(sus)}$	$I_C = 50\text{mA}, I_B = 0$	750	–	–	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 1500\text{V}, V_{BE} = 0$	–	–	1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 5\text{V}, I_C = 0$	–	–	1	mA
<b>ON Characteristics</b> (Note 1)						
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4.5\text{A}, I_B = 1.8\text{A}$	–	–	5	V
		$I_C = 3.5\text{A}, I_B = 1.5\text{A}$	–	–	5	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 4.5\text{A}, I_B = 1.8\text{A}$	–	–	1.5	V
		$I_C = 3.5\text{A}, I_B = 1.5\text{A}$	–	–	1.5	V
<b>Dynamic Characteristics</b>						
Current Gain – Bandwidth Product	$f_T$	$I_C = 100\text{mA}, V_{CE} = 5\text{V}, f_{test} = 1\text{MHz}$	–	4	–	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$	–	125	–	pF
<b>Switching Characteristics</b>						
Fall Time	$t_f$	$I_C = 4.5\text{A}, I_{B1} = 1.8\text{A}, L_B = 8\mu\text{H}$	–	0.4	1.0	$\mu\text{s}$
		$I_C = 4.5\text{A}, I_{B1} = 1.8\text{A}, L_B = 8\mu\text{H}, T_C = +100^\circ\text{C}$	–	0.6	–	$\mu\text{s}$

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle = 2%.

