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## NTE2318 Silicon NPN Transistor High Voltage, High Speed Switch

**Description:**

The NTE2318 is a high-voltage, high-speed, switching NPN transistor with an internal damper diode in a TO218 type package. This device is specifically designed for use in large screen color deflection circuits.

**Features:**

- Collector–Emitter Voltage:  $V_{CE} = 1500V$
- Collector–Emitter Sustaining Voltage:  $V_{CEO(sus)} = 700V$
- Switching Time with Inductive Loads:  $t_f = 0.5\mu s$  (Typ) @  $I_C = 4.5A$
- Internal Flyback Diode

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO(sus)}$ .....	700V
Collector–Emitter Voltage, $V_{CES}$ .....	1500V
Emitter–Base Voltage, $V_{EB}$ .....	5V
Collector Current, $I_C$	
Continuous .....	8A
Peak (Note 1) .....	15A
Base Current, $I_B$	
Continuous .....	4A
Peak (Note 1) .....	6A
Total Power Dissipation ( $T_C = +25^\circ C$ ), $P_D$ .....	125W
Derate Above $25^\circ C$ .....	1W/ $^\circ C$
Operating 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 $^\circ C/W$
Maximum Lead Temperature (During Soldering, 1/8" from case, 5sec), $T_L$ .....	$+275^\circ C$

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle  $\leq$  10%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics (Note 1)</b>						
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 100mA, I_B = 0$	700	–	–	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 1500V, V_{BE} = 0$	–	–	0.1	mA
		$V_{CE} = 1500V, V_{BE} = 0,$ $T_C = +125^\circ C$	–	–	2.0	mA
Emitter–Base Leakage Current	$I_{EBO}$	$V_{EB} = 6V, I_C = 0$	–	–	300	mA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$I_C = 4.5\text{A}, V_{CE} = 5\text{V}$	2.25	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4.5\text{A}, I_B = 2\text{A}$	–	–	1	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 4.5\text{A}, I_B = 2\text{A}$	–	–	1.3	V
<b>Dynamic Characteristics</b>						
Current–Gain Bandwidth Product	$f_T$	$I_C = 0.1\text{A}, V_{CE} = 5\text{V}, f = 1\text{MHz}$	–	7	–	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$	–	125	–	pF
<b>Switching Characteristics</b>						
Storage Time	$t_s$	$I_C = 4.5\text{A}, I_B = 1.8\text{A},$ $L_B = 10\mu\text{H}$	–	8.0	–	$\mu\text{s}$
Fall Time	$t_f$		–	0.5	–	$\mu\text{s}$

Note 1. Pulse Test: Pulse Width = 5ms, Duty Cycle  $\leq$  10%.

