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## NTE191 (NPN) & NTE240 (PNP) Silicon Complementary Transistors High Voltage Video Amplifier

### Description:

The NTE191 (NPN) and NTE240 (PNP) are silicon complementary transistors in a TO202N type package designed for high-voltage video and luminance output stages in TV receivers.

### Features:

- High Collector–Emitter Breakdown Voltage:  $V_{(BR)CEO} = 300V$  (Min) @  $I_C = 1mA$
- Low Collector–Emitter Saturation Voltage:  $V_{CE(sat)} = 0.75V$  (Max) @  $I_C = 30mA$
- Low Collector–Base Capacitance:  $C_{cb} = 3pF$  (Max) @  $V_{CB} = 20V$

### Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO}$ .....	300V
Collector–Base Voltage, $V_{CB}$ .....	300V
Emitter–Base Voltage, $V_{EBO}$	
NTE191 .....	6V
NTE240 .....	5V
Continuous Collector Current, $I_C$ .....	500mA
Total Device Dissipation ( $T_A = +25^\circ C$ ), $P_D$ .....	1W
Derate Above $25^\circ C$ .....	8mW/ $^\circ C$
Total Device Dissipation ( $T_C = +25^\circ C$ ), $P_D$ .....	10W
Derate Above $25^\circ C$ .....	80mW/ $^\circ C$
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ C$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	12.5 $^\circ C/W$
Thermal Resistance, Junction–to–Ambient (Note 2), $R_{thJA}$ .....	125 $^\circ C/W$

Note 1. NTE191 is a **discontinued** device and **no longer available**.

Note 2.  $R_{thJA}$  is measured with the device soldered into a typical printed circuit board.

### Electrical Characteristics: ( $T_A = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, I_B = 0$ , Note 3	300	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	300	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu A, I_C = 0$				
NTE191			6	–	–	V
NTE240			5	–	–	V

Note 3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics (Cont'd)</b>						
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 200\text{V}, I_E = 0$	–	–	0.2	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{BE} = 6\text{V}, I_C = 0$	–	–	0.1	$\mu\text{A}$
<b>ON Characteristics</b>						
DC Current Gain (NTE191 & NTE240)	$h_{FE}$	$I_C = 1\text{mA}, V_{CE} = 10\text{V}, \text{Note 3}$	25	–	–	
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}, \text{Note 3}$	40	–	–	
		$I_C = 30\text{mA}, V_{CE} = 10\text{V}, \text{Note 3}$	40	–	–	
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}, \text{Note 3}$	30	–	–	
		$I_C = 30\text{mA}, V_{CE} = 10\text{V}, \text{Note 3}$	30	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 30\text{mA}, I_B = 3\text{mA}$	–	–	0.75	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 30\text{mA}, V_{CE} = 10\text{V}$	–	–	0.85	V
			–	–	0.90	V
<b>Dynamic Characteristics</b>						
Current Gain–Bandwidth Product	$f_T$	$I_C = 10\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}, \text{Note 2}$	45	–	–	MHz
			60	–	–	MHz
Collector–Base Capacitance	$C_{cb}$	$V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$	–	–	3.0	pF
			–	–	8.0	pF

Note 3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

