

NTE228A

Silicon NPN Transistor

High Voltage Amp, Video Output

Description:

The NTE228A is a silicon NPN transistor in a TO202M type package designed for high-voltage TV video and chroma output circuits, high-voltage linear amplifiers, and high-voltage transistor regulators.

Features:

- High Collector-Emitter Breakdown Voltage: $V_{(BR)CEO} = 350V$ (Min) @ $I_C = 1mA$
- Low Collector-Emitter Saturation Voltage: $V_{CE(sat)} = 600mV$ (Max) @ $I_C = 20mA$
- Low Collector-Emitter Capacitance: $C_{cb} = 3pF$ (Max) @ $V_{CB} = 30V$
- 2 Watts Free Air Dissipation @ $T_A = +25^\circ C$

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	350V
Collector-Base Voltage, V_{CBO}	450V
Emitter-Base Voltage, V_{EBO}	6V
Collector Current, I_C	
Continuous	500mA
Peak	700mA
Base Current, I_B	250mA
Total Power Dissipation ($T_A = +25^\circ C$), P_D	2W
Derate Above $25^\circ C$	16mW/ $^\circ C$
Total Power Dissipation ($T_C = +25^\circ C$), P_D	10W
Derate Above $25^\circ C$	80mW/ $^\circ C$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ C$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	62.5 $^\circ C/W$
Thermal Resistance, Junction-to-Case, R_{thJC}	12.5 $^\circ C/W$
Lead Temperature (During Soldering, 1/16" from case, 10sec), T_L	$+250^\circ C$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1mA, I_B = 0$	350	—	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu A, I_E = 0$	450	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu A, I_C = 0$	6	—	—	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 250V, I_E = 0$	—	—	0.2	μA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 5V, I_C = 0$	—	—	0.1	μA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 1)						
DC Current Gain	h_{FE}	$I_C = 1\text{mA}, V_{CE} = 10\text{V}$	25	–	–	
		$I_C = 30\text{mA}, V_{CE} = 10\text{V}$	40	–	180	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 30\text{mA}, I_B = 3\text{mA}$	–	–	0.6	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	–	–	1.5	V
Base–Emitter ON Voltage	$V_{BE(on)}$	$I_C = 30\text{mA}$	–	–	0.85	V
Dynamic Characteristics						
Current Gain–Bandwidth Product	f_T	$I_C = 10\text{mA}, V_E = 20\text{V}, f = 20\text{MHz}$	45	–	200	MHz
Collector–Base Capacitance	C_{cb}	$V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$	–	–	3	pF

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

