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## NTE265 Silicon NPN Transistor Darlington Power Amplifier

**Features:**

- Forward Current Transfer Ratio:  $h_{FE} = 10,000$  Min
- Power Dissipation: 1.33W Free-Air @  $T_A = +50^\circ\text{C}$
- Hard Solder Mountdown

**Applications:**

- Driver, IC Driver
- Regulator
- Touch Switch
- Audio Output
- Relay Substitute
- Oscillator
- Servo-Amplifier
- Capacitor Multiplier

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Collector-to-Emitter Voltage, $V_{CEO}$ .....	50V
Collector-to-Emitter Voltage, $V_{CES}$ .....	50V
Emitter-to-Base Voltage, $V_{EBO}$ .....	13V
Collector Current (Note 1), $I_C$	
Continuous .....	0.5A
Peak .....	1.0A
Power Dissipation, $P_D$	
$T_C = +25^\circ\text{C}$ (Note 2) .....	6.25W
$T_C = +70^\circ\text{C}$ .....	4W
$T_A = +50^\circ\text{C}$	
With Tab .....	1.33W
Without Tab .....	1W
Thermal Resistance, Junction-to-Case (Note 2), $R_{\theta JC}$ .....	20°C/W
Thermal Resistance, Junction-to-Ambient (Note 2), $R_{\theta JA}$	
With Tab .....	75°C/W
Without Tab .....	100°C/W
Operating Junction Temperature range (Note 2), $T_J$ .....	-55° to +150°C
Storage Temperature range (Note 2), $T_{stg}$ .....	-55° to +150°C
Lead Temperature (During Soldering, 1/16" from case, 10sec Max, Note 2), $T_L$ .....	+260°C

Note 1. Pulse Test: Pulse Width = 25ms, Duty Cycle = 50%

Note 2. Tab temperature is measured on center of tab, 1/16" from plastic body.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Current Transfer Ratio	$h_{FE}$	$I_C = 200\text{mA}, V_{CE} = 5\text{V}$	10k	–	60k	
	$h_{fe}$	$I_C = 20\text{mA}, V_{CE} = 5\text{V}, f = 1\text{kHz}$	–	10k	–	
Collector-to-Emitter Voltage	$V_{CEO}$	$I_C = 10\text{mA}$	50	–	–	V
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$ , Note 3	–	–	1.5	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_C = 500\text{mA}, I_B = 0.5\text{mA}$ , Note 3	–	–	2.0	V
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 50\text{V}, T_J = +25^\circ\text{C}$	–	–	0.5	$\mu\text{A}$
	$I_{CBO}$	$V_{CE} = 50\text{V}, T_J = +150^\circ\text{C}$	–	–	20	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 13\text{V}$	–	–	0.1	$\mu\text{A}$
Input Impedance	$h_{ie}$	$I_C = 20\text{mA}, V_{CE} = 5\text{V}, f = 1\text{kHz}$	50	500	–	$\Omega$
Collector Capacitance	$C_{cbo}$	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	–	5	10	pF
Gain Bandwidth Product	$f_T$	$V_{CE} = 5\text{V}, I_C = 20\text{mA}$	–	75	–	MHz
Delay Time and Rise Time	$t_d + t_r$	$I_C = 1\text{A}, I_{B1} = 1\text{mA}$	–	100	–	ns
Storage Time	$t_s$	$I_C = 1\text{A}, I_{B1} = I_{B2} = 1\text{mA}$	–	350	–	ns
Fall Time	$t_f$	$I_C = 1\text{A}, I_{B1} = I_{B2} = 1\text{mA}$	–	800	–	ns

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

