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NTE75 Silicon NPN Transistor High Power Amplifier, Switch (Stud Mount)

Description:

The NTE75 is a silicon NPN transistor in a TO111 type stud mount package that provides a unique combination of low saturation voltage, high gain, and fast switching. This device is ideally suited for power supply, pulse amplifier, and similar high efficiency power switching applications.

Features:

- Fast Switching: $t_r, t_f = 300\text{ns}$ (Max)
- Low Saturation Voltage: 250mV max @ 1A

Absolute Maximum Ratings:

Collector–Base Voltage, V_{CBO}	110V
Collector–Emitter Voltage, V_{CEO}	80V
Emitter–Base Voltage, V_{EBO}	8V
DC Collector Current, I_C	5A
Power Dissipation, P_D	
$T_A = +25^\circ\text{C}$	2W
$T_C = +100^\circ\text{C}$	30W
Operating Temperature Range, T_{opr}	-65° to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ\text{C}$
Thermal Resistance, Junction–to–Case, R_{thJC}	3.33°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}$	110	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 100\text{mA}$, Note 1	80	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$	8	–	–	V
Collector–Emitter Cutoff Current	I_{CEO}	$V_{CE} = 60\text{V}$	–	–	100	μA
	I_{CEX}	$V_{CE} = 110\text{V}, V_{EB} = 500\text{mV}$	–	–	10	μA
Collector–Base Cutoff Current	I_{CBO}	$V_{CB} = 80\text{V}$	–	–	0.4	μA
Emitter–Base Cutoff Current	I_{EBO}	$V_{EB} = 6\text{V}$	–	–	0.4	μA

Note 1. Pulse Width = 300 μs , 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
DC Current Gain (Note 1)	h_{FE}	$V_{CE} = 5\text{V}, I_C = 50\text{mA}$	40	–	–	
		$V_{CE} = 5\text{V}, I_C = 1\text{A}$	40	–	120	
		$V_{CE} = 5\text{V}, I_C = 1\text{A}, T_A = -65^\circ\text{C}$	15	–	–	
		$V_{CE} = 5\text{V}, I_C = 5\text{A}$	15	–	–	
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 100\text{mA}, \text{Note 1}$	–	–	0.25	V
		$I_C = 5\text{A}, I_B = 500\text{mA}, \text{Note 1}$	–	–	1.5	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{A}, I_B = 100\text{mA}, \text{Note 1}$	–	–	1.2	V
Base ON Voltage	$V_{BE(on)}$	$V_{CE} = 2\text{V}, I_C = 1\text{A}, \text{Note 1}$	–	–	1.2	V
AC Current Gain	h_{FE}	$V_{CE} = 5\text{V}, I_C = 50\text{mA}, f = 1\text{kHz}$	40	–	120	
Current Gain–Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 10\text{MHz}$	20	–	120	MHz
Output Capacitance	C_{ob}	$V_{CE} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	–	–	150	pF
Delay Time	t_d	$V_{CC} = 20\text{V}, I_C = 1\text{A}, I_{B1} = -I_{B2} = 100\text{mA}, \text{Pulse Width} = 2\mu\text{s}, \text{Duty Cycle} \leq 2\%, \text{Source Impedance} = 50\Omega$	–	–	60	ns
Rise Time	t_r		–	–	300	ns
Storage Time	t_s		–	–	1.7	μs
Fall Time	t_f		–	–	300	ns

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

