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PN2907A

Silicon PNP Transistor

Audio Amplifier, Switch

TO-92 Type Package

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$, Note 1 unless otherwise specified)

Collector-Emitter Voltage, V_{CEO}	60V
Collector-Base Voltage, V_{CBO}	60V
Emitter-Base Voltage, V_{EBO}	5V
Continuous Collector Current, I_C	800mA
Total Device Dissipation ($T_A = 25^\circ\text{C}$, Note 2), P_D	625mW
Derate Above 25°C	5mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-55° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Case (Note 2), R_{thJC}	83.3 $^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (Note 2), R_{thJA}	200 $^\circ\text{C/W}$

Note 1. These are steady-state limits and based on a maximum junction temperature of $+150^\circ\text{C}$.

Note 2. PCB size: FR-4 76mm x 114mm x 1.57mm (3 inch x 4.5 inch x .062 inch) with minimum land pattern size.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, $I_B = 0$, Note 3	60	—	—	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu\text{A}$, $I_E = 0$	60	—	—	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$, $I_C = 0$	5	—	—	V
Base Cutoff Current	I_{BL}	$V_{CE} = 30\text{V}$, $V_{EB} = 0.5\text{V}$	—	—	50	nA
Collector Cutoff Current	I_{CEX}	$V_{CE} = 30\text{V}$, $V_{EB} = 0.5\text{V}$	—	—	50	nA
		$V_{CB} = 50\text{V}$, $I_E = 0$	—	—	0.02	μA
		$V_{CB} = 50\text{V}$, $I_E = 0$, $T_A = +150^\circ\text{C}$	—	—	20	μA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	75	—	—	
		$V_{CE} = 10\text{V}$, $I_C = 1\text{mA}$	100	—	—	
		$V_{CE} = 10\text{V}$, $I_C = 10\text{mA}$	100	—	—	
		$V_{CE} = 10\text{V}$, $I_C = 150\text{mA}$, Note 3	100	—	300	
		$V_{CE} = 10\text{V}$, $I_C = 500\text{mA}$, Note 3	50	—	—	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150\text{mA}$, $I_B = 15\text{mA}$, Note 3	—	—	0.4	V
		$I_C = 500\text{mA}$, $I_B = 50\text{mA}$, Note 3	—	—	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 150\text{mA}$, $I_B = 15\text{mA}$, Note 4	—	—	1.3	V
		$I_C = 500\text{mA}$, $I_B = 50\text{mA}$	—	—	2.6	V

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, 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
Small Signal Characteristics						
Current Gain – Bandwidth Product	f_T	$I_C = 50\text{mA}$, $V_{CE} = 20\text{V}$, $f = 100\text{MHz}$	200	–	–	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 100\text{kHz}$	–	–	8	pF
Input Capacitance	C_{ib}	$V_{BE} = 2\text{V}$, $I_C = 0$, $f = 1\text{MHz}$	–	–	30	pF
Switching Characteristics						
Turn-On Time	t_{on}	$V_{CC} = 30\text{V}$, $I_C = 150\text{mA}$, $I_{B1} = 15\text{mA}$	–	–	45	ns
Delay Time	t_d		–	–	10	ns
Rise Time	t_r		–	–	40	ns
Turn-Off Time	t_{off}	$V_{CC} = 6\text{V}$, $I_C = 150\text{mA}$, $I_{B1} = I_{B2} = 15\text{mA}$	–	–	100	ns
Storage Time	t_s		–	–	80	ns
Fall Time	t_f		–	–	30	ns

