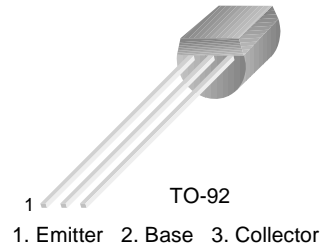


PN5134

NPN General Purpose Amplifier

- This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300mA.



Absolute Maximum Ratings* $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	10	V
V_{CBO}	Collector-Base Voltage	20	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Collector Current - Continuous	500	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	- 55 ~ 150	$^\circ\text{C}$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	10		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	20		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}, I_C = 0$	3.5		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 10\mu\text{A}$	20		V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 15\text{V}, I_E = 0, T_A = 65^\circ\text{C}$		10	μA
I_{CES}	Collector Cutoff Current	$V_{CB} = 15\text{V}, I_C = 0$		0.4	μA
On Characteristics					
h_{FE}	DC Current Gain	$V_{CE} = 1.0\text{V}, I_C = 10\text{mA}$ $V_{CE} = 0.4\text{V}, I_C = 30\text{mA}$	20 15	150	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 10\text{mA}, I_B = 3.3\text{mA}$		0.25 0.20	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 10\text{mA}, I_B = 3.3\text{mA}$	0.70 0.72	0.9 1.1	V
Small Signal Characteristics					
C_{ob}	Output Capacitance	$V_{CB} = 5.0\text{V}, f = 1.0\text{MHz}$		4.0	pF
h_{fe}	Small Signal Current Gain	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$	2.5		
Switching Characteristics					
t_s	Storage Time	$I_C = I_{B1} = I_{B2} = 15\text{mA}$		18	ns
t_{on}	Turn-on Time	$V_{CC} = 3.0\text{V}, I_C = 10\text{mA}$ $I_{B1} = 3.3\text{mA}$		18	ns
t_d	Delay Time			14	ns
t_r	Rise Time			12	ns
t_{off}	Turn-off Time	$V_{CC} = 3.0\text{V}, I_C = 10\text{mA}$ $I_{B1} = I_{B2} = 3.3\text{mA}$		18	ns
t_s	Storage Time			13	ns
t_f	Fall Time			13	ns

* Pulse Test: Pulse Width $\leq 300\text{ms}$, Duty Cycle $\leq 2.0\%$

Thermal Characteristics $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation	625	mW
	Derate above 25°C	5.0	$\text{mW}/^{\circ}\text{C}$
$R_{\theta\text{JC}}$	Thermal Resistance, Junction to Case	83.3	$^{\circ}\text{C}/\text{W}$
$R_{\theta\text{JA}}$	Thermal Resistance, Junction to Ambient	200	$^{\circ}\text{C}/\text{W}$

Package Dimensions

TO-92



Dimensions in Millimeters

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