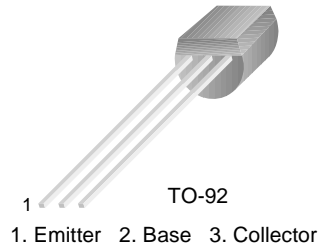


PN4141

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	30	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5.0	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 *	$I_C = 10\text{mA}, I_B = 0$	30		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}, I_C = 0$	5.0		V
I_{CEX}	Collector Cut-off Current	$V_{CB} = 40\text{V}, V_{OB} = 3.0\text{V}$		50	nA
I_{BL}	Base Cutoff Current	$V_{CB} = 40\text{V}, V_{OB} = 3.0\text{V}$		50	nA
On Characteristics					
h_{FE}	DC Current Gain	$V_{CE} = 10\text{V}, I_C = 100\mu\text{A}$ $V_{CE} = 10\text{V}, I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}, I_C = 10\text{mA}$ $V_{CE} = 10\text{V}, I_C = 150\text{mA}$ $V_{CE} = 10\text{V}, I_C = 500\text{mA}$ $V_{CE} = 1.0\text{V}, I_C = 150\text{mA}$	35 50 75 100 30 50	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$		0.4 1.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$		1.3 2.6	V
Small Signal Characteristics					
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 100\text{KHz}$		8.0	pF
h_{fe}	Small Signal Current Gain	$I_C = 20\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}$	2.5		
Switching Characteristics					
t_d	Delay Time	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$		10	ns
t_r	Rise Time	$I_{B1} = 15\text{mA}, V_{OB(off)} = 0.5\text{V}$		40	ns
t_s	Storage Time	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$		250	ns
t_f	Fall Time	$I_{B1} = I_{B2} = 15\text{mA}$	2.5	60	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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