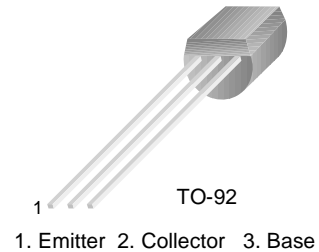


2N4953

NPN General Purpose Amplifier

- This device designed for use as general purpose amplifier and switches requiring collector currents to 500mA.
- Sourced from Process 10.



NPN Epitaxial Silicon Transistor

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	1.0	A
T_J, T_{ST}	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:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) 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.	Typ.	Max.	Units
Off Characteristics						
$BV_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	30			V
$BV_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\mu\text{A}, I_E = 0$	60			V
$BV_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\mu\text{A}, I_C = 0$	5.0			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 40\text{V}, I_E = 0$			50	nA
I_{EBO}	Reverse Base Current	$V_{EB} = 3.0\text{V}, I_C = 0$			50	nA
On Characteristics *						
h_{FE}	DC Current Gain	$V_{CE} = 10\text{V}, I_C = 1.0\text{mA}$ $V_{CE} = 10\text{V}, I_C = 10\text{mA}$ $V_{CE} = 10\text{V}, I_C = 150\text{mA}$	75 150 200		600	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}, I_B = 15\text{mA}$			0.3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}, I_B = 15\text{mA}$			1.3	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$			1.2	V
Small Signal Characteristics						
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$			8.0	pF
h_{fe}	Small-Signal Current Gain	$I_C = 20\text{mA}, V_{CE} = 10\text{V},$ $f = 100\text{MHz}$	2.5			
t_{on}	Turn-On Time	$V_{CC} = 30\text{V}, I_C = 150\text{mA},$			40	ns
t_{off}	Turn-Off Time	$I_{B1} = I_{B2} = 15\text{mA}$			400	ns

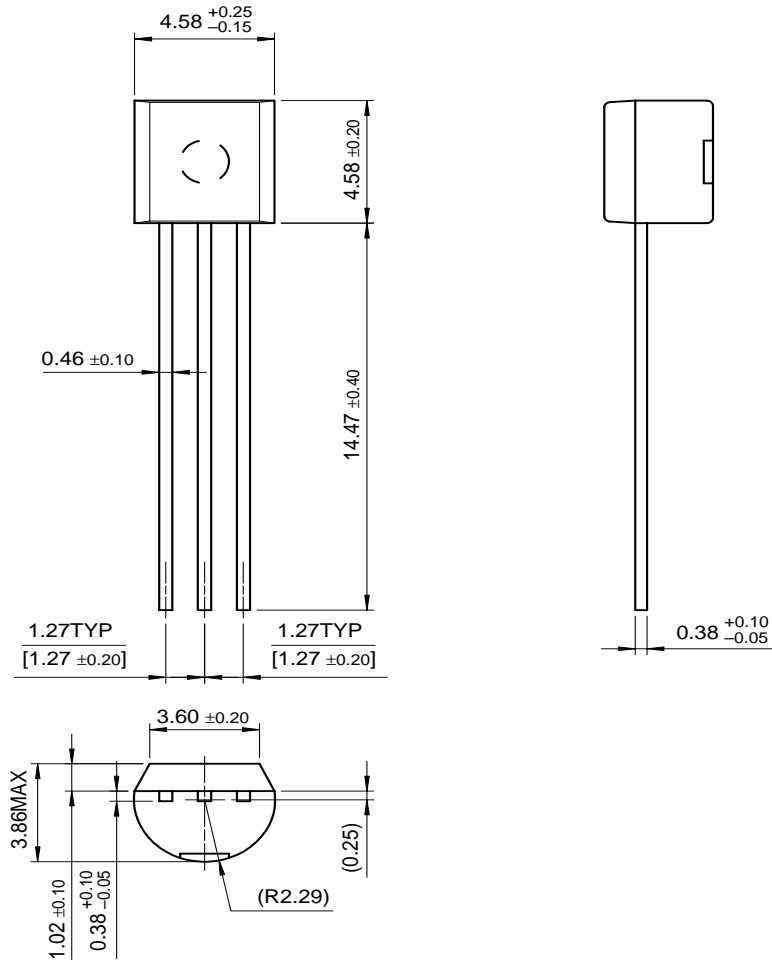
* Pulse Test: Pulse $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$ **Thermal Characteristics** $T_A=25^\circ\text{C}$ unless otherwise noted

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

Package Dimensions

2N4953

TO-92



Dimensions in Millimeters

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