



**THE DATASHEET OF  
2N3859A**

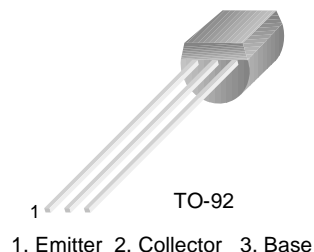


## 2N3859A

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### NPN General Purpose Amplifier

- This device designed for use as general purpose amplifier and switches requiring collector currents to 300mA.
- Sourced from Process 10.
- See PN100 for characteristics.



### 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	60	V
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	6.0	V
$I_C$	Collector Current - Continuous	500	mA
$T_J, T_{ST}$	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
<b>Off Characteristics</b>						
$BV_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1.0\text{mA}, I_B = 0$	60			V
$BV_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}, I_E = 0$	60			V
$BV_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}, I_C = 0$	6.0			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 18\text{V}, I_E = 0$			0.5	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 4.0\text{V}, I_C = 0$			0.5	$\mu\text{A}$
<b>On Characteristics *</b>						
$h_{FE}$	DC Current Gain	$V_{CE} = 1.0\text{V}, I_C = 1.0\text{mA}$ $V_{CE} = 1.0\text{V}, I_C = 1.0\text{mA}$	75 100		200	
<b>Small Signal Characteristics</b>						
$C_{ob}$	Current Gain Bandwidth Product	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}$			4	pF
$f_T$	Output Capacitance	$I_C = 2.0\text{mA}, V_{CE} = 10\text{V}$	90		250	MHz
$rb'C_C$	Collector-Base Time Constant	$V_{CE} = 10\text{V}, I_C = 2.0\text{mA}$ $f = 31.9\text{MHz}$			150	pS

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

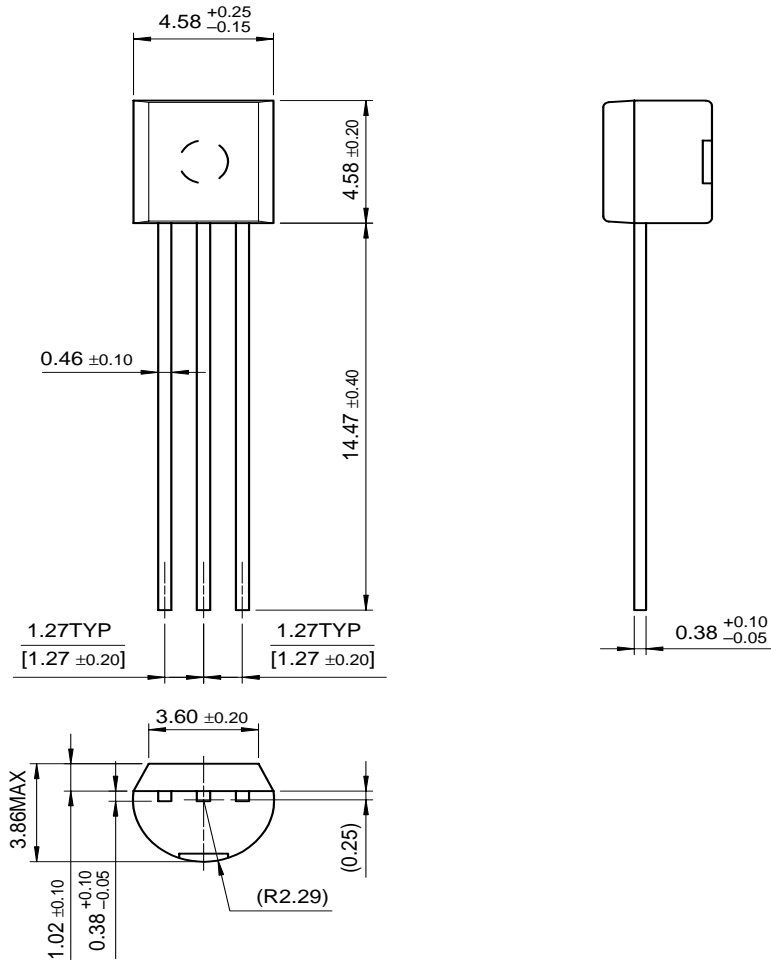
#### Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	625 5.0	mW 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

2N3859A

## TO-92



Dimensions in Millimeters

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