

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N3500  
2N3501

NPN SILICON TRANSISTOR

JEDEC TO-39 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N3500 and 2N3501 types are Silicon NPN Epitaxial Planar Transistors designed for high voltage inductive load switching applications.

## MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ )

	<u>SYMBOL</u>		<u>UNITS</u>
Collector-Base Voltage	$V_{CBO}$	150	V
Collector-Emitter Voltage	$V_{CEO}$	150	V
Emitter-Base Voltage	$V_{EBO}$	6.0	V
Collector Current	$I_C$	300	mA
Power Dissipation	$P_D$	1.0	W
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	5.0	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$
Thermal Resistance	$\Theta_{JA}$	175	$^\circ\text{C/W}$
Thermal Resistance	$\Theta_{JC}$	35	$^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise noted)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>MAX</u>	<u>UNITS</u>
$I_{CBO}$	$V_{CB}=75\text{V}$		50	nA
$I_{CBO}$	$V_{CB}=75\text{V}, T_A=150^\circ\text{C}$		50	$\mu\text{A}$
$I_{EBO}$	$V_{EB}=4.0\text{V}$		25	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	150		V
$BV_{CEO}$	$I_C=10\text{mA}$	150		V
$BV_{EBO}$	$I_E=10\mu\text{A}$	6.0		V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.2	V
$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$		0.25	V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.4	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.8	V
$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$		0.9	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$		1.2	V

(Continued on Reverse Side)

ELECTRICAL CHARACTERISTICS (Continued)

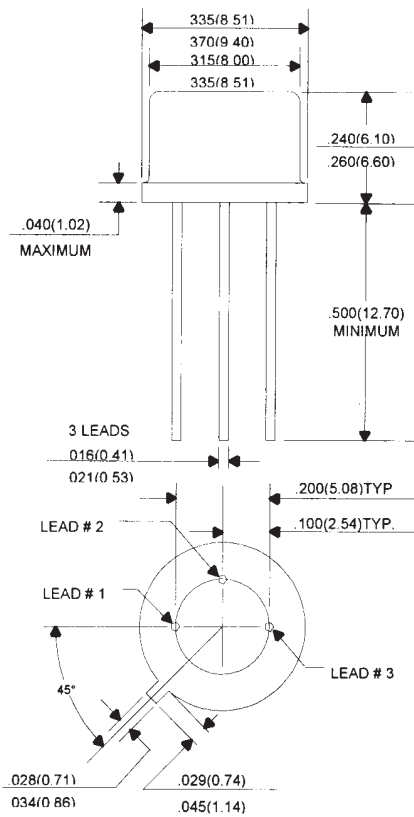
2N3500

2N3501

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	<u>UNITS</u>
$h_{FE}$	$V_{CE}=10V, I_C=0.1mA$	20		35		
$h_{FE}$	$V_{CE}=10V, I_C=1.0mA$	25		50		
$h_{FE}$	$V_{CE}=10V, I_C=10mA$	35		75		
$h_{FE}$	$V_{CE}=10V, I_C=150mA$	40	120	100	300	
$h_{FE}$	$V_{CE}=10V, I_C=300mA$	15		20		
$f_T$	$V_{CE}=20V, I_C=20mA, f=100MHz$	150		150		MHz
$C_{ob}$	$V_{CB}=10V, I_E=0, f=100kHz$		8.0		8.0	pF
$C_{ib}$	$V_{EB}=0.5V, I_C=0, f=100kHz$		80		80	pF
$t_d$	$V_{CC}=100V, I_C=150mA, I_{B1}=15mA$	20 TYP		20 TYP		ns
$t_r$	$V_{CC}=100V, I_C=150mA, I_{B1}=15mA$	35 TYP		35 TYP		ns
$t_s$	$V_{CC}=100V, I_C=150mA, I_{B1}=I_{B2}=15mA$	800 TYP		800 TYP		ns
$t_f$	$V_{CC}=100V, I_C=150mA, I_{B1}=I_{B2}=15mA$	80 TYP		80 TYP		ns

JEDEC TO-39 CASE - MECHANICAL OUTLINE

All Dimensions in Inches (mm).



Lead Code:

- 1) Emitter
- 2) Base
- 3) Collector

**Central**  
Semiconductor Corp.

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

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