

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

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Manufacturers of World Class Discrete Semiconductors

2N2102  
2N2102A

NPN SILICON TRANSISTOR

JEDEC TO-39 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N2102, A types are NPN Silicon Transistors designed for high current general purpose amplifier applications, where low leakage and low  $V_{CE(SAT)}$  is required. Higher  $h_{FE}$  versions are also available on special order.

MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$  unless otherwise noted)

	SYMBOL		UNIT
Collector Base Voltage	$V_{CB0}$	120	V
Collector Emitter Voltage ( $R_{BE}=10\Omega$ )	$V_{CER}$	80	V
Collector Emitter Voltage	$V_{CEO}$	65	V
Emitter Base Voltage	$V_{EBO}$	7.0	V
Collector Current	$I_C$	1.0	A
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)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
$I_{CB0}$	$V_{CB}=60\text{V}$		2.0	nA
$I_{CB0}$	$V_{CB}=60\text{V}, T_A=150^\circ\text{C}$		2.0	$\mu\text{A}$
$I_{EBO}$	$V_{BE}=5.0\text{V}$		2.0	nA
$BV_{CB0}$	$I_C=100\mu\text{A}$	120		V
$BV_{CER}$	$I_C=100\text{mA}, R_{BE}=10\Omega$	80		V
$BV_{CEO}$	$I_C=100\text{mA}$	65		V
$BV_{EBO}$	$I_E=100\mu\text{A}$	7.0		V
$V_{CE(SAT)}$	$I_C=150\text{mA}$ (2N2102)		0.5	V
$V_{CE(SAT)}$	$I_C=150\text{mA}$ (2N2102A)		0.3	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$		1.1	V
$h_{FE}$	$V_{CE}=10\text{V}, I_C=10\mu\text{A}$	10		
$h_{FE}$	$V_{CE}=10\text{V}, I_C=100\mu\text{A}$	20		
$h_{FE}$	$V_{CE}=10\text{V}, I_C=10\text{mA}$	35		
$h_{FE}$	$V_{CE}=10\text{V}, I_C=10\text{mA}, T_C=55^\circ\text{C}$	20		
$h_{FE}$	$V_{CE}=10\text{V}, I_C=150\text{mA}$	40	120	
$h_{FE}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$	25		
$h_{FE}$	$V_{CE}=10\text{V}, I_C=1.0\text{A}$	10		
$h_{fe}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	30	100	
$h_{fe}$	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$	35	150	
$h_{ib}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	24	34	$\Omega$
$h_{ib}$	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$	4.0	8.0	$\Omega$
$h_{rb}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$		$3 \times 10^{-4}$	
$h_{rb}$	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$		$3 \times 10^{-4}$	
$h_{ob}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	0.08	0.5	$\mu\text{mho}$
$h_{ob}$	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$	0.08	1.0	$\mu\text{mho}$
$f_T$	$V_{CE}=10\text{V}, I_C=50\text{mA}, f=20\text{MHz}$	60		MHz
$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$		15	pF
$C_{ib}$	$V_{BE}=0.5\text{V}, I_C=0, f=100\text{kHz}$		80	pF
NF	$V_{CE}=10\text{V}, I_C=300\mu\text{A}, R_S=1.0\text{k}\Omega, f=1.0\text{kHz}, \text{Bandwidth}=1.0\text{Hz}$		6.0	dB

## 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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