

CentralTM 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	θ_{JA}	175	$^\circ\text{C/W}$
Thermal Resistance	θ_{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	μA
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	Ω
h_{ib}	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$	4.0	8.0	Ω
h_{rb}	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$		3×10^{-4}	
h_{rb}	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$		3×10^{-4}	
h_{ob}	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	0.08	0.5	μmho
h_{ob}	$V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$	0.08	1.0	μmho
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

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