



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



2N3963
2N3964

SILICON
PNP TRANSISTORS



TO-18 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N3963 and 2N3964 are silicon PNP transistors designed for general purpose applications.

MARKING: FULL PART NUMBER

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

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Power Dissipation ($T_C=25^\circ\text{C}$)
Power Dissipation
Operating and Storage Junction Temperature
Thermal Resistance
Thermal Resistance

SYMBOL	2N3963	2N3964	UNITS
V_{CB0}	80	45	V
V_{CEO}	80	45	V
V_{EBO}		6.0	V
I_C	200		mA
P_D	1.2		W
P_D		360	mW
T_J, T_{stg}	-65 to +200		$^\circ\text{C}$
θ_{JC}	146		$^\circ\text{C}/\text{W}$
θ_{JA}	486		$^\circ\text{C}/\text{W}$

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

SYMBOL	TEST CONDITIONS	2N3963		2N3964		UNITS
		MIN	MAX	MIN	MAX	
I_{CB0}	$V_{CB}=70\text{V}$	-	10	-	-	nA
I_{CB0}	$V_{CB}=40\text{V}$	-	-	-	10	nA
I_{CES}	$V_{CE}=70\text{V}$	-	10	-	-	nA
I_{CES}	$V_{CE}=40\text{V}$	-	-	-	10	nA
I_{EBO}	$V_{EB}=4.0\text{V}$	-	10	-	10	nA
BV_{CB0}	$I_C=10\mu\text{A}$	80	-	45	-	V
BV_{CES}	$I_C=10\mu\text{A}$	80	-	45	-	V
BV_{CEO}	$I_C=5.0\text{mA}$	80	-	45	-	V
BV_{EBO}	$I_E=10\mu\text{A}$	6.0	-	6.0	-	V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$	-	0.25	-	0.25	V
$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.40	-	0.40	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=0.5\text{mA}$	-	0.90	-	0.90	V
$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.95	-	0.95	V
h_{FE}	$V_{CE}=5.0\text{V}, I_C=1.0\mu\text{A}$	60	-	180	-	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$	100	300	250	500	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\mu\text{A}, T_A=-55^\circ\text{C}$	40	-	100	-	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=100\mu\text{A}$	100	-	250	-	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$	100	450	250	600	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, T_A=100^\circ\text{C}$	-	600	-	800	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=10\text{mA}$	100	-	200	-	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=50\text{mA}$	90	-	180	-	
h_{FE}	$V_{CE}=5.0\text{V}, I_C=50\text{mA}, T_A=-55^\circ\text{C}$	45	-	90	-	

R0 (17-May 2013)

**2N3963
2N3964**

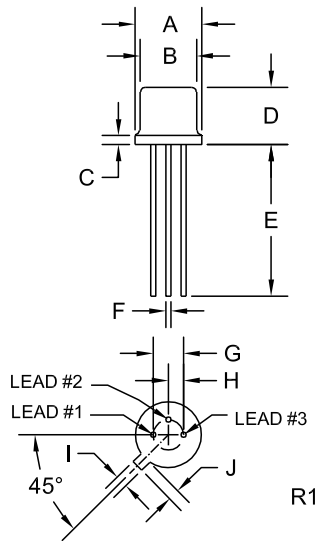
**SILICON
PNP TRANSISTORS**



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

SYMBOL	TEST CONDITIONS	2N3963		2N3964		UNITS
		MIN	MAX	MIN	MAX	
f_T	$V_{CE}=5.0\text{V}$, $I_C=0.5\text{mA}$, $f=20\text{MHz}$	40	-	50	-	MHz
C_{ob}	$V_{CB}=5.0\text{V}$, $I_E=0$, $f=1.0\text{MHz}$	-	6.0	-	6.0	pF
C_{ib}	$V_{EB}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$	-	15	-	15	pF
h_{ie}	$V_{CE}=5.0\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	2.5	17	6.0	20	$k\Omega$
h_{re}	$V_{CE}=5.0\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	-	10	-	10	10^{-4}
h_{fe}	$V_{CE}=5.0\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	100	550	250	700	
h_{oe}	$V_{CE}=5.0\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	5.0	40	5.0	50	μS
NF	$V_{CE}=5.0\text{V}$, $I_C=20\text{mA}$, $BW=15.7\text{kHz}$	-	3.0	-	2.0	dB
NF	$V_{CE}=5.0\text{V}$, $I_C=20\mu\text{A}$, $BW=1.5\text{kHz}$ $f=10\text{kHz}$, $R_S=10k\Omega$	-	3.0	-	2.0	dB
NF	$V_{CE}=5.0\text{V}$, $I_C=20\mu\text{A}$, $BW=150\text{Hz}$ $f=1.0\text{kHz}$, $R_S=10k\Omega$	-	3.0	-	2.0	dB
NF	$V_{CE}=5.0\text{V}$, $I_C=20\mu\text{A}$, $BW=15\text{Hz}$ $f=100\text{Hz}$, $R_S=10k\Omega$	-	10	-	4.0	dB
NF	$V_{CE}=5.0\text{V}$, $I_C=20\mu\text{A}$, $BW=2.0\text{Hz}$ $f=10\text{Hz}$, $R_S=10k\Omega$	-	-	-	8.0	dB

TO-18 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.178	0.195	4.52	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
I	0.036	0.046	0.91	1.17
J	0.028	0.048	0.71	1.22

TO-18 (REV: R1)

LEAD CODE:

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

MARKING:

FULL PART NUMBER

R0 (17-May 2013)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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

DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2nd 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

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).

CONTACT US

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

Worldwide Distributors:
www.centrasemi.com/wwdistributors

For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: www.centrasemi.com/terms