

CMNT3904E NPN  
CMNT3906E PNP

**ENHANCED SPECIFICATION**  
SURFACE MOUNT  
COMPLEMENTARY  
SILICON TRANSISTOR



[www.centralsemi.com](http://www.centralsemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMNT3904E and CMNT3906E Low  $V_{CE(SAT)}$  NPN and PNP Transistors, respectively, are designed for applications where ultra small size and power dissipation are the prime requirements. Packaged in an SOT-953 package, these components provide performance characteristics suitable for the most demanding size constrained applications.

**MARKING CODES: CMNT3904E: CL  
CMNT3906E: CM**

**FEATURES**

- Very Small Package Size
- Low Package Profile, 0.5mm
- 200mA Collector Current
- Low  $V_{CE(SAT)}$  (0.1V Typ @ 50mA)
- Small, 1 x 0.8mm, SOT-953 Surface Mount Package

**MAXIMUM RATINGS: ( $T_A=25^\circ C$ )**

◆ **Collector-Base Voltage**

Collector-Emitter Voltage

◆ **Emitter-Base Voltage**

Continuous Collector Current

Power Dissipation

Operating and Storage Junction Temperature

Thermal Resistance

**APPLICATIONS**

- DC-DC Converters
- Voltage Clamping
- Protection Circuits
- Battery powered equipment including: Cell Phones, Digital Cameras, Pagers, PDAs, Laptop Computers, etc.

SYMBOL				UNITS
$V_{CBO}$		60		V
$V_{CEO}$		40		V
$V_{EBO}$		6.0		V
$I_C$		200		mA
$P_D$		250		mW
$T_J, T_{stg}$		-65 to +150		°C
$\Theta_{JA}$		500		°C/W

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

SYMBOL	TEST CONDITIONS	NPN		PNP		UNITS
		MIN	TYP	TYP	MAX	
$I_{CEV}$	$V_{CE}=30V, V_{EB}=3.0V$				50	nA
◆ <b><math>BV_{CBO}</math></b>	$I_C=10\mu A$	60	115	90		V
$BV_{CEO}$	$I_C=1.0mA$	40	60	55		V
◆ <b><math>BV_{EBO}</math></b>	$I_E=10\mu A$	6.0	7.5	7.9		V
◆ <b><math>V_{CE(SAT)}</math></b>	$I_C=10mA, I_B=1.0mA$		.057	.05	0.1	V
◆ <b><math>V_{CE(SAT)}</math></b>	$I_C=50mA, I_B=5.0mA$		0.1	0.1	0.2	V
$V_{BE(SAT)}$	$I_C=10mA, I_B=1.0mA$	0.65	0.75	0.75	0.85	V
$V_{BE(SAT)}$	$I_C=50mA, I_B=5.0mA$		0.85	0.85	0.95	V
◆ <b><math>h_{FE}</math></b>	$V_{CE}=1.0V, I_C=0.1mA$	90	240	130		
◆ <b><math>h_{FE}</math></b>	$V_{CE}=1.0V, I_C=1.0mA$	100	235	150		

◆ Enhanced Specification

CMNT3904E NPN  
CMNT3906E PNP

**Central**  
Semiconductor Corp.™

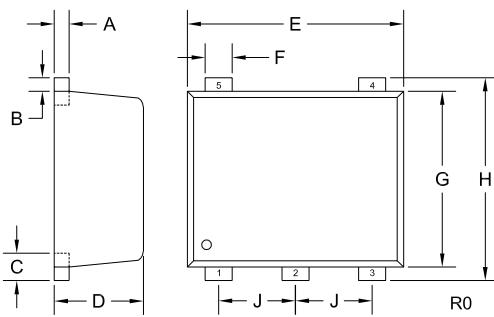
**ENHANCED SPECIFICATION**  
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**ELECTRICAL CHARACTERISTICS - Continued:**

SYMBOL	TEST CONDITIONS	NPN			UNITS
		MIN	TYP	MAX	
$h_{FE}$	$V_{CE}=1.0V, I_C=10mA$	100	215	150	300
♦ $h_{FE}$	♦ $V_{CE}=1.0V, I_C=50mA$	70	110	120	
$h_{FE}$	$V_{CE}=1.0V, I_C=100mA$	30	50	55	
$f_T$	$V_{CE}=20V, I_C=10mA, f=100MHz$	300			MHz
$C_{ob}$	$V_{CB}=5.0V, I_E=0, f=1.0MHz$			4.0	pF
$C_{ib}$	$V_{BE}=0.5V, I_C=0, f=1.0MHz$			12	pF
$h_{ie}$	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	1.0		12	kΩ
$h_{re}$	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	0.1		10	$\times 10^{-4}$
$h_{fe}$	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	100		400	
$h_{oe}$	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	1.0		60	μS
NF	$V_{CE}=5.0V, I_C=100\mu A, R_S = 1.0k\Omega, f=10Hz$ to $15.7kHz$			4.0	dB
$t_d$	$V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA$			35	ns
$t_r$	$V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA$			35	ns
$t_s$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA$			170	ns
$t_f$	$V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA$			80	ns

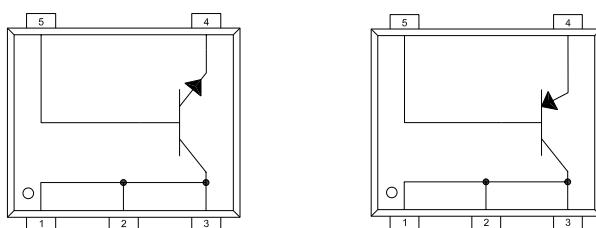
♦ Enhanced Specification

**SOT-953 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.002	0.006	0.050	0.150
B	0.002	0.006	0.050	0.150
C	0.005	0.007	0.125	0.175
D	0.016	0.020	0.400	0.500
E	0.037	0.041	0.950	1.050
F	0.004	0.008	0.100	0.200
G	0.030	0.033	0.750	0.850
H	0.037	0.041	0.950	1.050
J	0.014		0.350	

SOT-953 (REV: R0)



CMNT3904E  
MARKING CODE: CL

CMNT3906E  
MARKING CODE: CM

**LEAD CODE:**

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

## 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

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[www.centralsemi.com/wwreps](http://www.centralsemi.com/wwreps)

#### Worldwide Distributors:

[www.centralsemi.com/wwdistributors](http://www.centralsemi.com/wwdistributors)

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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.centralsemi.com/terms](http://www.centralsemi.com/terms)



<https://www. centralesemi. com>

## Product End of Life Notification

PDN ID:	PDN01272
Notification Date:	11/21/24
Last Buy Date:	5/21/25
Last Shipment Date	11/21/25

Summary: All devices manufactured in the SOT-953 package are discontinued and now classified as End of Life (EOL).

Although Central Semiconductor makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Portfolio Management. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

**\* All Plating types (PBFREE, TIN/LEAD) for each item listed are included in this notice.**

<b>Central Part Number</b>	<b>Suggested Replacement</b>
CMNDM7001 BK	N/A
CMNDM7001 TR	N/A
CMNDM8001 BK	N/A
CMNDM8001 TR	N/A
CMNTVS12V BK	N/A
CMNTVS12V TR	N/A
CMNTVS5V0 BK	N/A
CMNTVS5V0 TR	N/A
CMNT3904E BK	N/A
CMNT3904E TR	N/A
CMNT3906E BK	N/A
CMNT3906E TR	N/A

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. If you would like assistance, please visit <https://my. centralesemi. com/submit-inquiry?type=ER> to submit an online inquiry.

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**DISCLAIMER:** This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.