

CMPT3904E NPN  
CMPT3906E PNP

**ENHANCED SPECIFICATION  
SURFACE MOUNT SILICON  
COMPLEMENTARY TRANSISTORS**



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SOT-23 CASE

MARKING CODE: CMPT3904E: C1AE  
CMPT3906E: C2AE

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMPT3904E and CMPT3906E are Enhanced versions of the CMPT3904 and CMPT3906 complementary switching transistors in a SOT-23 surface mount package, designed for small signal switching applications, interface circuit & driver circuit applications.

**ENHANCED SPECIFICATIONS:**

- ◆  $V_{CBO}$  from 40V min to 60V min. (CMPT3906E)
- ◆  $V_{EBO}$  from 5.0V min to 6.0V min. (CMPT3906E)
- ◆  $V_{CE(SAT)}$  from 0.3V max to 0.2V max. (CMPT3904E)  
from 0.4V max to 0.2V max. (CMPT3906E)
- ◆  $h_{FE}$  from 60 min to 70 min. (CMPT3904E) (CMPT3906E)

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

- ◆ **Collector-Base Voltage**  
Collector-Emitter Voltage
- ◆ **Emitter-Base Voltage**  
Continuous Collector Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

**SYMBOL**

SYMBOL	UNITS
$V_{CBO}$	60 V
$V_{CEO}$	40 V
$V_{EBO}$	6.0 V
$I_C$	200 mA
$P_D$	350 mW
$T_J, T_{stg}$	-65 to +150 °C
$\theta_{JA}$	357 °C/W

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

SYMBOL	TEST CONDITIONS	CMPT3904E		CMPT3906E	MAX	UNITS
		MIN	TYP	TYP		
$I_{CEV}$	$V_{CE}=30\text{V}, V_{EB}=3.0\text{V}$				50	nA
◆ $BV_{CBO}$	$I_C=10\mu\text{A}$	60	115	90		V
$BV_{CEO}$	$I_C=1.0\text{mA}$	40	60	55		V
◆ $BV_{EBO}$	$I_E=10\mu\text{A}$	6.0	7.5	7.9		V
◆ $V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.057	0.050	0.100	V
◆ $V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$		0.100	0.100	0.200	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	0.65	0.75	0.75	0.85	V
$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$		0.85	0.85	0.95	V
◆ $h_{FE}$	$V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$	90	240	130		
◆ $h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$	100	235	150		
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	100	215	150	300	
◆ $h_{FE}$	$V_{CE}=1.0\text{V}, I_C=50\text{mA}$	70	110	120		
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	30	50	55		

◆ Enhanced specification

R4 (21-September 2018)

CMPT3904E NPN  
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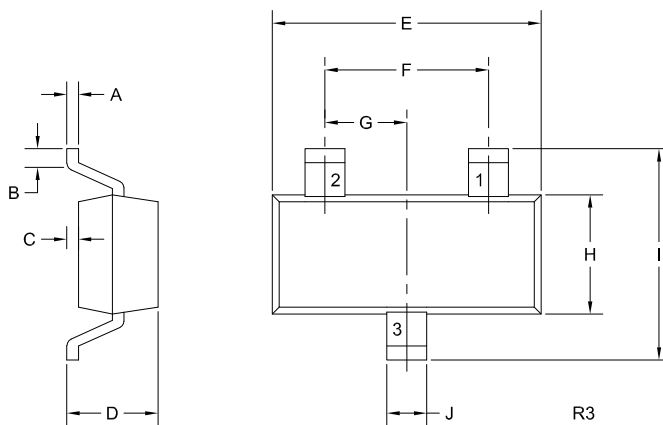


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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$ )

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$f_T$	$V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	300		MHz
$C_{ob}$	$V_{CB}=5.0\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$		4.0	pF
$C_{ib}$	$V_{BE}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$		12	pF
$h_{ie}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	12	$k\Omega$
$h_{re}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	0.1	10	$\times 10^{-4}$
$h_{fe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	100	400	
$h_{oe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	60	$\mu\text{S}$
NF	$V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ , $R_S=1.0\text{k}\Omega$ , $f=10\text{Hz}$ to $15.7\text{kHz}$		4.0	dB
$t_d$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$		35	ns
$t_r$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$		35	ns
$t_s$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		200	ns
$t_f$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$		50	ns

**SOT-23 CASE - MECHANICAL OUTLINE**



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075		1.90	
G	0.037		0.95	
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

SOT-23 (REV: R3)

**LEAD CODE:**

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

**MARKING CODES:**

CMPT3904E: C1AE  
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R4 (21-September 2018)

## 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

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](http://www.centrasemi.com)

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