

CMPT3904E NPN
CMPT3906E PNP

**ENHANCED SPECIFICATION
SURFACE MOUNT COMPLEMENTARY
SILICON TRANSISTORS**



SOT-23 CASE

**MARKING CODE: CMPT3904E: C1AE
CMPT3906E: C2AE**



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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_{CB0} from 40V min to 60V min. (CMPT3906E)
- ♦ V_{EB0} 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_{CB0}	60	V
V_{CEO}	40	V
V_{EB0}	6.0	V
I_C	200	mA
P_D	350	mW
T_J, T_{stg}	-65 to +150	$^{\circ}\text{C}$
Θ_{JA}	357	$^{\circ}\text{C/W}$

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_{CB0}	$I_C=10\mu\text{A}$	60	115	90		V
BV_{CEO}	$I_C=1.0\text{mA}$	40	60	55		V
♦ BV_{EB0}	$I_E=10\mu\text{A}$	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

R3 (1-February 2010)

CMPT3904E NPN
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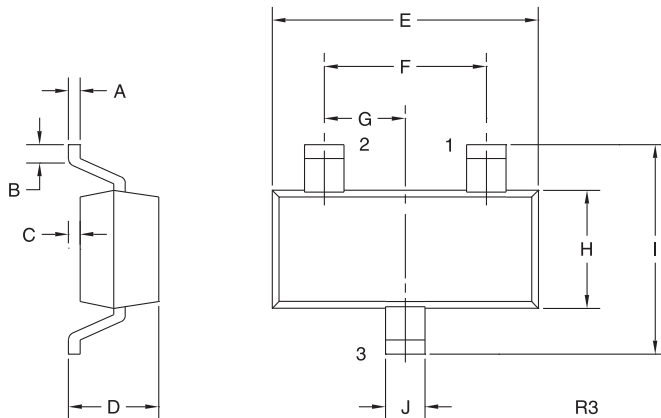
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$)

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}	$V_{BE}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		8.0	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	μS
NF	$V_{CE}=5.0\text{V}$, $I_C=100\mu\text{A}$, $R_S=1.0k\Omega$, $f=10\text{Hz}$ to 15.7kHz		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	DIMENSIONS			
	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:

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