

CMST3904 NPN
CMST3906 PNP

SURFACE MOUNT
SUPERmini™
COMPLEMENTARY
SILICON TRANSISTOR

SUPERmini™



SOT-323 CASE

Central™

Semiconductor Corp.

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMST3904, CMST3906 types are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in a SUPERmini™ surface mount package, designed for small signal general purpose amplifier and switching applications.

MARKING CODES:

CMST3904: 1AC

CMST3906: 2AC

MAXIMUM RATINGS: (T_A=25°C)

	SYMBOL	CMST3904	CMST3906	UNITS
Collector-Base Voltage	V _{CBO}	60	40	V
Collector-Emitter Voltage	V _{CEO}	40	40	V
Emitter-Base Voltage	V _{EBO}	6.0	5.0	V
Continuous Collector Current	I _C	200		mA
Power Dissipation	P _D	275		mW
Operating and Storage				
Junction Temperature	T _J , T _{stg}	-65 to +150		°C
Thermal Resistance	θ _{JA}	455		°C/W

ELECTRICAL CHARACTERISTICS: (T_A=25°C unless otherwise noted)

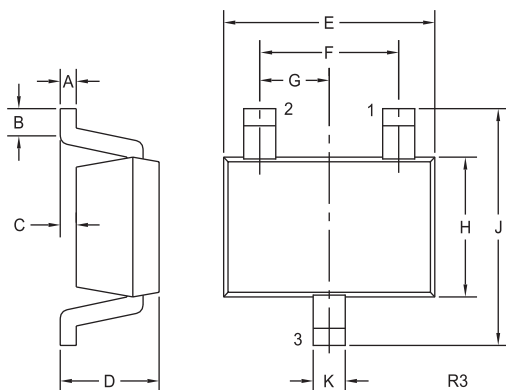
SYMBOL	TEST CONDITIONS	CMST3904		CMST3906		UNITS
		MIN	MAX	MIN	MAX	
I _{CEV}	V _{CE} =30V, V _{EB} =3.0V		50		50	nA
BV _{CBO}	I _C =10μA		60		40	V
BV _{CEO}	I _C =1.0mA		40		40	V
BV _{EBO}	I _E =10μA		6.0		5.0	V
V _{CE} (SAT)	I _C =10mA, I _B =1.0mA		0.20		0.25	V
V _{CE} (SAT)	I _C =50mA, I _B =5.0mA		0.30		0.40	V
V _{BE} (SAT)	I _C =10mA, I _B =1.0mA	0.65	0.85	0.65	0.85	V
V _{BE} (SAT)	I _C =50mA, I _B =5.0mA		0.95		0.95	V
h _{FE}	V _{CE} =1.0V, I _C =0.1mA	40		60		
h _{FE}	V _{CE} =1.0V, I _C =1.0mA	70		80		
h _{FE}	V _{CE} =1.0V, I _C =10mA	100	300	100	300	
h _{FE}	V _{CE} =1.0V, I _C =50mA	60		60		
h _{FE}	V _{CE} =1.0V, I _C =100mA	30		30		
f _T	V _{CE} =20V, I _C =10mA, f=100MHz	300		250		MHz

R3 (4-January 2004)

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

SYMBOL	TEST CONDITIONS	CMST3904		CMST3906		UNITS
		MIN	MAX	MIN	MAX	
C_{ob}	$V_{CB}=5.0\text{V}$, $I_E=0$, $f=1.0\text{MHz}$		4.0		4.5	pF
C_{ib}	$V_{BE}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		8.0		10	pF
h_{ie}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	1.0	10	2.0	12	$k\Omega$
h_{re}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	0.5	8.0	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	100	400	
h_{oe}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	1.0	40	3.0	60	μmhos
NF	$V_{CE}=5.0\text{V}$, $I_C=100\text{mA}$, $R_S=1.0k\Omega$ $f=10\text{Hz}$ to 15.7kHz		5.0		4.0	dB
t_d	$V_{CC}=3.0\text{V}$, $V_{BE}=0.5$, $I_C=10\text{mA}$, $I_{B1}=1.0\text{mA}$		35		35	ns
t_r	$V_{CC}=3.0\text{V}$, $V_{BE}=0.5$, $I_C=10\text{mA}$, $I_{B1}=1.0\text{mA}$		35		35	ns
t_s	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		200		225	ns
t_f	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		50		75	ns

SOT-323 CASE - MECHANICAL OUTLINE



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.002	0.008	0.05	0.20
B	0.004	-	0.10	-
C	-	0.004	-	0.10
D	0.031	0.043	0.80	1.10
E	0.071	0.087	1.80	2.20
F	0.051		1.30	
G	0.026		0.65	
H	0.045	0.053	1.15	1.35
J	0.079	0.087	2.00	2.20
K	0.008	0.016	0.20	0.40

SOT-323 (REV: R3)

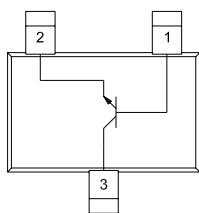
LEAD CODE:

- 1) BASE
- 2) EMITTER
- 3) COLLECTOR

MARKING CODES:

CMST3904: 1AC
CMST3906: 2AC

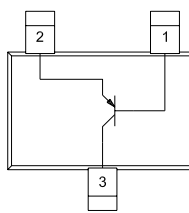
CMST3904 NPN



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R3 (4-January 2004)