

CMUT3904 NPN
CMUT3906 PNP

ULTRAmiTMSURFACE MOUNT
COMPLEMENTARY
SILICON TRANSISTORS



SOT-523 CASE

CentralTM
Semiconductor Corp.

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMUT3904, CMUT3906 types are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in an ULTRAmiTM surface mount package, designed for small signal general purpose amplifier and switching applications.

Marking code for CMUT3904 is AC1.

Marking code for CMUT3906 is AC2.

MAXIMUM RATINGS: (T_A=25°C)

	SYMBOL	CMUT3904	CMUT3906	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
Collector Current	I _C	200		mA
Power Dissipation	P _D	250		mW
Operating and Storage				
Junction Temperature	T _J , T _{stg}	-65 to +150		°C
Thermal Resistance	Θ _{JA}	500		°C/W

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

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		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		

R0 (30-May 2001)

ULTRAmmini™ SURFACE MOUNT
COMPLEMENTARY
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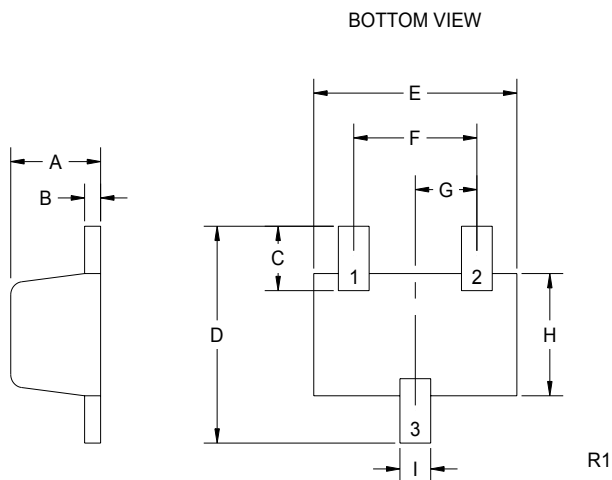
ELECTRICAL CHARACTERISTICS: Continued

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		UNITS
		MIN	MAX	MIN	MAX	
f_T	$V_{CE}=20V, I_C=10mA, f=100MHz$	300		250		MHz
C_{ob}	$V_{CB}=5.0V, I_E=0, f=1.0MHz$		4.0		4.5	pF
C_{ib}	$V_{BE}=0.5V, I_C=0, f=1.0MHz$		8.0		10	pF
h_{ie}	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	1.0	10	2.0	12	k Ω
h_{re}	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	0.5	8.0	0.1	10	$\times 10^{-4}$
h_{fe}	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	100	400	100	400	
h_{oe}	$V_{CE}=10V, I_C=1.0mA, f=1.0kHz$	1.0	40	3.0	60	$\mu mhos$
NF	$V_{CE}=5.0V, I_C=100\mu A, R_S=1.0k\Omega$ $f=10Hz$ to $15.7kHz$		5.0		4.0	dB
t_d	$V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA$		35		35	ns
t_r	$V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA$		35		35	ns
t_s	$V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA$		200		225	ns
t_f	$V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA$		50		75	ns

MECHANICAL OUTLINE - SOT-523

DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.025	0.029	0.63	0.73
B	0.004	0.005	0.10	0.13
C	0.015	0.019	0.39	0.49
D	0.061	0.065	1.55	1.65
E	0.061	0.065	1.55	1.65
F	0.039	0.040	0.98	1.02
G	0.019	0.020	0.48	0.52
H	0.033	0.037	0.83	0.93
I	0.009	0.010	0.23	0.25

SOT-523 (REV: R1)



LEAD CODE:

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

R0 (30-May 2001)