CMUT3904 NPN
CMUT3906 PNP

SURFACE MOUNT SILICON COMPLEMENTARY TRANSISTORS



SOT-523 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMUT3904 and CMUT3906 are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in an SOT-523 surface mount package, designed for small signal general purpose amplifier and switching applications.

MARKING CODES: CMUT3904: AC1
CMUT3906: 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
Continuous 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)

		CMUT3904		**CMUT3906**		
SYMBOL	**TEST CONDITIONS**	**MIN**	**MAX**	**MIN**	**MAX**	**UNITS**
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	-	

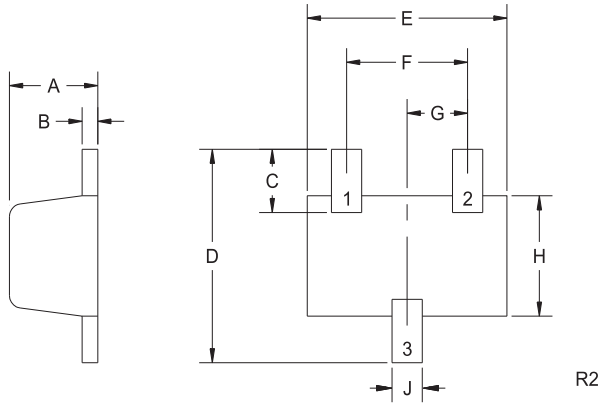
CMUT3904 NPN
CMUT3906 PNP

SURFACE MOUNT SILICON COMPLEMENTARY TRANSISTORS

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

		CMUT3904		CMUT3906		
SYMBOL	**TEST CONDITIONS**	**MIN**	**MAX**	**MIN**	**MAX**	**UNITS**
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	-	12	-	12	pF
h_{ie}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	1.0	10	2.0	12	kΩ
h_{re}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	0.5	8.0	0.1	10	$x10^{-4}$
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	µS
NF	V_{CE}=5.0V, I_C=100µA, R_S=1.0kΩ					
	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

SOT-523 CASE - MECHANICAL OUTLINE



R2

(Bottom View)

DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.023	0.031	0.58	0.78
B	0.002	0.008	0.04	0.20
C	0.013	0.021	0.34	0.54
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020		0.50	
H	0.031	0.039	0.78	0.98
J	0.010	0.014	0.25	0.35

SOT-523 (REV: R2)

LEAD CODE:
1) Base
2) Emitter
3) Collector

MARKING CODES:
CMUT3904: AC1
CMUT3906: AC2

R5 (7-October 2021)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES

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

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd 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

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).

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.centralsemi.com

Worldwide Field Representatives:
www.centralsemi.com/wwreps

Worldwide Distributors:
www.centralsemi.com/wwdistributors

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