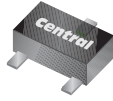


CMUT4401 NPN  
CMUT4403 PNP

**SURFACE MOUNT  
COMPLEMENTARY  
SILICON TRANSISTORS**

**ULTRAmi™**



**SOT-523 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMUT4401 and CMUT4403 are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in a ULTRAmi™ surface mount package, designed for small signal general purpose amplifier and switching applications.

**MARKING CODE: CMUT4401: PC1  
CMUT4403: FC2**

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

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

SYMBOL	CMUT4401	CMUT4403	UNITS
V <sub>CBO</sub>	60	40	V
V <sub>CEO</sub>	40	40	V
V <sub>EBO</sub>	6.0	5.0	V
I <sub>C</sub>		600	mA
P <sub>D</sub>		250	mW
T <sub>J</sub> , T <sub>stg</sub>		-65 to +150	°C
θ <sub>JA</sub>		500	°C/W

**ELECTRICAL CHARACTERISTICS:** (T<sub>A</sub>=25°C)

SYMBOL	TEST CONDITIONS	CMUT4401		CMUT4403		UNITS
		MIN	MAX	MIN	MAX	
I <sub>CEV</sub>	V <sub>CE</sub> =35V, V <sub>EB</sub> =0.4V	-	0.1	-	0.1	μA
I <sub>BEV</sub>	V <sub>CE</sub> =35V, V <sub>EB</sub> =0.4V	-	0.1	-	0.1	μA
BV <sub>CBO</sub>	I <sub>C</sub> =100μA	60	-	40	-	V
BV <sub>CEO</sub>	I <sub>C</sub> =1.0mA	40	-	40	-	V
BV <sub>EBO</sub>	I <sub>E</sub> =100μA	6.0	-	5.0	-	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	-	0.40	-	0.40	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	-	0.75	-	0.75	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.75	0.95	0.75	0.95	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	-	1.2	-	1.3	V
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =0.1mA	20	-	30	-	
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =1.0mA	40	-	60	-	
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =10mA	80	-	100	-	
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =150mA	100	300	-	-	
h <sub>FE</sub>	V <sub>CE</sub> =2.0V, I <sub>C</sub> =150mA	-	-	100	300	
h <sub>FE</sub>	V <sub>CE</sub> =2.0V, I <sub>C</sub> =500mA	40	-	20	-	
f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =20mA, f=100MHz	250	-	200	-	MHz
C <sub>ob</sub>	V <sub>CB</sub> =5.0V, I <sub>E</sub> =0, f=1.0MHz	-	6.5	-	8.5	pF
C <sub>ib</sub>	V <sub>BE</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz	-	30	-	30	pF

R1 (9-February 2010)

CMUT4401 NPN  
 CMUT4403 PNP

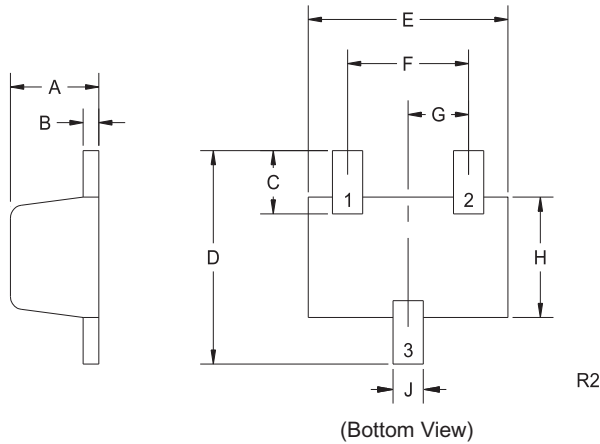
SURFACE MOUNT  
 COMPLEMENTARY  
 SILICON TRANSISTORS



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

SYMBOL	TEST CONDITIONS	CMUT4401		CMUT4403		UNITS
		MIN	MAX	MIN	MAX	
$h_{ie}$	$V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	1.0	15	1.5	15	$k\Omega$
$h_{re}$	$V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	0.1	8.0	0.1	8.0	$\times 10^{-4}$
$h_{fe}$	$V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	40	500	60	500	
$h_{oe}$	$V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	1.0	30	1.0	100	$\mu\text{S}$
$t_d$	$V_{CC}=30\text{V}, V_{BE}=2.0\text{V}, I_C=150\text{mA}, I_{B1}=15\text{mA}$	-	15	-	15	ns
$t_r$	$V_{CC}=30\text{V}, V_{BE}=2.0\text{V}, I_C=150\text{mA}, I_{B1}=15\text{mA}$	-	20	-	20	ns
$t_s$	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$	-	225	-	225	ns
$t_f$	$V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$	-	30	-	30	ns

**SOT-523 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	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:**

CMUT4401: PC1  
 CMUT4403: FC2

R1 (9-February 2010)