



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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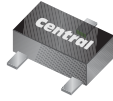
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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**CMUT2222A**  
**SURFACE MOUNT**  
**NPN SILICON TRANSISTOR**

**ULTRAmi<sup>TM</sup>**



**SOT-523 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMUT2222A type is an NPN silicon transistor manufactured by the epitaxial planar process, epoxy molded in an ULTRAmi<sup>TM</sup> surface mount package, designed for small signal general purpose and switching applications.

**MARKING CODE: PC1**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$ )

|  | <b>SYMBOL</b>  |             | <b>UNITS</b>              |
|--|----------------|-------------|---------------------------|
| Collector-Base Voltage                     | $V_{CBO}$      | 75          | V                         |
| Collector-Emitter Voltage                  | $V_{CEO}$      | 40          | V                         |
| Emitter-Base Voltage                       | $V_{EBO}$      | 6.0         | V                         |
| Continuous Collector Current               | $I_C$          | 600         | mA                        |
| Power Dissipation                          | $P_D$          | 250         | mW                        |
| Operating and Storage Junction Temperature | $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$          |
| Thermal Resistance                         | $\Theta_{JA}$  | 500         | $^\circ\text{C}/\text{W}$ |

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

| <b>SYMBOL</b> | <b>TEST CONDITIONS</b>                     | <b>MIN</b> | <b>MAX</b> | <b>UNITS</b>  |
|---------------|--|------------|------------|---------------|
| $I_{CBO}$     | $V_{CB}=60\text{V}$                        |            | 10         | nA            |
| $I_{CBO}$     | $V_{CB}=60\text{V}, T_A=125^\circ\text{C}$ |            | 10         | $\mu\text{A}$ |
| $I_{CEV}$     | $V_{CE}=60\text{V}, V_{EB}=3.0\text{V}$    |            | 10         | nA            |
| $I_{EBO}$     | $V_{EB}=3.0\text{V}$                       |            | 10         | nA            |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$                        | 75         |            | V             |
| $BV_{CEO}$    | $I_C=10\text{mA}$                          | 40         |            | V             |
| $BV_{EBO}$    | $I_E=10\mu\text{A}$                        | 6.0        |            | V             |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$        |            | 0.3        | V             |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$        |            | 1.0        | V             |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$        | 0.6        | 1.2        | V             |
| $V_{BE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$        |            | 2.0        | V             |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=0.1\text{mA}$      | 35         |            |               |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=1.0\text{mA}$      | 50         |            |               |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=10\text{mA}$       | 75         |            |               |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=150\text{mA}$      | 100        | 300        |               |
| $h_{FE}$      | $V_{CE}=1.0\text{V}, I_C=150\text{mA}$     | 50         |            |               |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=500\text{mA}$      | 40         |            |               |

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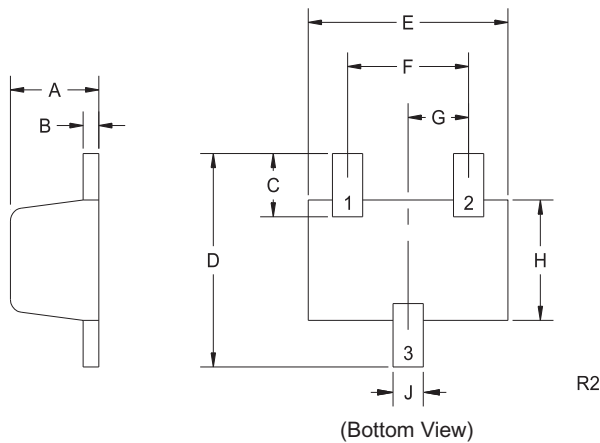
**CMUT2222A**  
**SURFACE MOUNT**  
**NPN SILICON TRANSISTOR**



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

| SYMBOL   | TEST CONDITIONS  | MIN  | MAX  | UNITS            |
|----------|--|------|------|------------------|
| $f_T$    | $V_{CE}=20\text{V}$ , $I_C=20\text{mA}$ , $f=100\text{MHz}$                            | 300  |      | MHz              |
| $C_{ob}$ | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$                                      |      | 8.0  | pF               |
| $C_{ib}$ | $V_{EB}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$                                     |      | 25   | pF               |
| $h_{ie}$ | $V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$                           | 2.0  | 8.0  | $k\Omega$        |
| $h_{ie}$ | $V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$                            | 0.25 | 1.25 | $k\Omega$        |
| $h_{re}$ | $V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$                           |      | 8.0  | $\times 10^{-4}$ |
| $h_{re}$ | $V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$                            |      | 4.0  | $\times 10^{-4}$ |
| $h_{fe}$ | $V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$                           | 50   | 300  |                  |
| $h_{fe}$ | $V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$                            | 75   | 375  |                  |
| $h_{oe}$ | $V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$                           | 5.0  | 35   | $\mu\text{S}$    |
| $h_{oe}$ | $V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$                            | 25   | 200  | $\mu\text{S}$    |
| $rb'C_c$ | $V_{CB}=10\text{V}$ , $I_E=20\text{mA}$ , $f=31.8\text{MHz}$                           |      | 150  | ps               |
| NF       | $V_{CE}=10\text{V}$ , $I_C=100\mu\text{A}$ , $R_S=1.0k\Omega$ , $f=1.0\text{kHz}$      |      | 4.0  | dB               |
| $t_d$    | $V_{CC}=30\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$ |      | 10   | ns               |
| $t_r$    | $V_{CC}=30\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$ |      | 25   | ns               |
| $t_s$    | $V_{CC}=30\text{V}$ , $I_C=150\text{mA}$ , $I_{B1}=I_{B2}=15\text{mA}$                 |      | 225  | ns               |
| $t_f$    | $V_{CC}=30\text{V}$ , $I_C=150\text{mA}$ , $I_{B1}=I_{B2}=15\text{mA}$                 |      | 60   | 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 CODE: PC1**

R3 (9-February 2010)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### 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

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### DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2<sup>nd</sup> 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

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### 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).

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### CONTACT US

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