

**CMST2222A**  
**SURFACE MOUNT SILICON**  
**NPN TRANSISTOR**



**SOT-323 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMST2222A is an NPN silicon transistor manufactured by the epitaxial planar process, epoxy molded in a surface mount package, designed for small signal, general purpose and switching applications.

**MARKING CODE: 1PC**

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

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

**SYMBOL**

$V_{CB0}$  75  
 $V_{CEO}$  40  
 $V_{EBO}$  6.0  
 $I_C$  600  
 $P_D$  275  
 $T_J, T_{stg}$  -65 to +150  
 $\Theta_{JA}$  455

**UNITS**

V  
V  
V  
mA  
mW  
 $^{\circ}\text{C}$   
 $^{\circ}\text{C/W}$

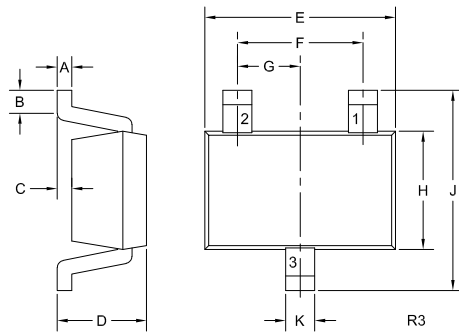
**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| SYMBOL        | TEST CONDITIONS                                       | MIN | MAX | UNITS         |
|---------------|-------------------------------------------------------|-----|-----|---------------|
| $I_{CBO}$     | $V_{CB}=60\text{V}$                                   |     | 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  |     |               |
| $f_T$         | $V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ | 300 |     | MHz           |

R5 (12-October 2021)

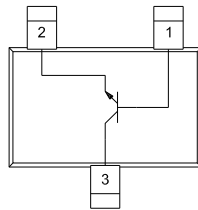
**CMST2222A****SURFACE MOUNT SILICON  
NPN TRANSISTOR****ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| SYMBOL   | TEST CONDITIONS                                                                          | MIN  | MAX  | UNITS            |
|----------|------------------------------------------------------------------------------------------|------|------|------------------|
| $C_{ob}$ | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$                                        |      | 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       | $V_{CE}=10\text{V}$ , $I_C=100\mu\text{A}$ , $R_S=1.0\text{k}\Omega$ , $f=1.0\text{kHz}$ |      | 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-323 CASE - MECHANICAL OUTLINE**

| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | 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)

**PIN CONFIGURATION****LEAD CODE:**

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

**MARKING CODE: 1PC**

R5 (12-October 2021)

## 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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