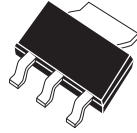


**CZT2222A**  
**SURFACE MOUNT**  
**NPN SILICON TRANSISTOR**



**SOT-223 CASE**

# Central<sup>TM</sup>

**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CZT2222A type is an NPN silicon transistor manufactured by the epitaxial planar process, epoxy molded in a surface mount package, designed for general purpose amplifier and switching applications.

**MARKING CODE: FULL PART NUMBER**

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

	SYMBOL		UNITS
Collector-Base Voltage	$V_{CBO}$	75	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	6.0	V
Collector Current	$I_C$	600	mA
Power Dissipation	$P_D$	2.0	W
Operating and Storage			
Junction Temperature	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$	62.5	$^\circ\text{C/W}$

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

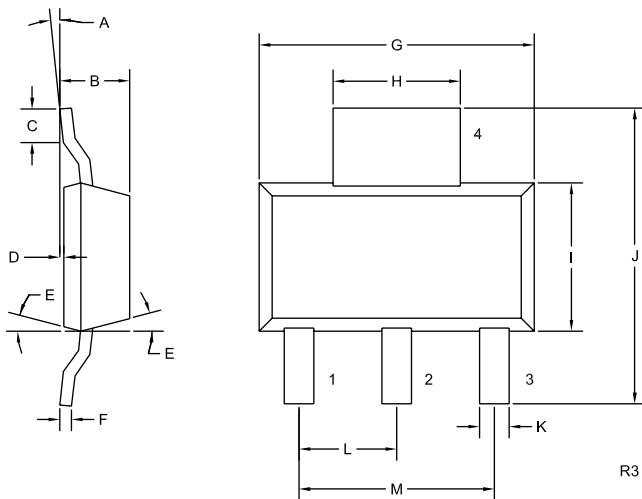
SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_{CBO}$	$V_{CB}=60\text{V}$		10	nA
$I_{CBO}$	$V_{CB}=60\text{V}, T_A=125^\circ\text{C}$		10	$\mu\text{A}$
$I_{EBO}$	$V_{EB}=3.0\text{V}$		10	nA
$I_{CEV}$	$V_{CE}=60\text{V}, V_{EB}=3.0\text{V}$		10	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	75		V
$BV_{CEO}$	$I_C=10\text{mA}$	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		

**SURFACE MOUNT  
NPN SILICON TRANSISTOR**

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  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	$\mu\text{mhos}$
$h_{oe}$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$	25	200	$\mu\text{mhos}$
$rb'C_C$	$V_{CB}=10\text{V}$ , $I_E=20\text{mA}$ , $f=31.8\text{MHz}$		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
$t_d$	$V_{CC}=30\text{V}$ , $V_{BE}=0.5$ , $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$		10	ns
$t_r$	$V_{CC}=30\text{V}$ , $V_{BE}=0.5$ , $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$		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-223 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0°	10°	0°	10°
B	0.059	0.071	1.50	1.80
C	0.018	---	0.45	---
D	0.000	0.004	0.00	0.10
E	15°		15°	
F	0.009	0.014	0.23	0.35
G	0.248	0.264	6.30	6.70
H	0.114	0.122	2.90	3.10
I	0.130	0.146	3.30	3.70
J	0.264	0.287	6.70	7.30
K	0.024	0.033	0.60	0.85
L	0.091		2.30	
M	0.181		4.60	

SOT-223 (REV: R3)

**LEAD CODE:**

- 1) BASE
- 2) COLLECTOR
- 3) EMITTER
- 4) COLLECTOR

**MARKING CODE: FULL  
PART NUMBER**

R4 (17-June 2004)