

CMPT2222AE

**ENHANCED SPECIFICATION
SURFACE MOUNT
NPN SILICON TRANSISTOR**



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SOT-23 CASE

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMPT2222AE is an Enhanced version of the CMPT2222A NPN Switching transistor in a SOT-23 surface mount package, designed for switching applications, interface circuit and driver circuit applications.

MARKING CODE: C1PE

FEATURED ENHANCED SPECIFICATIONS:

- ◆ V_{CB0} from 75V min to 100V min. (145V TYP)
- ◆ V_{CE} from 1.0V max to 0.5V max. (0.12V TYP)
- ◆ h_{FE} from 40 to 60 min. (130 TYP)

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		UNITS
V_{CB0}	100	V
V_{CEO}	45	V
V_{EBO}	6.0	V
I_C	600	mA
P_D	350	mW
T_J, T_{stg}	-65 to +150	$^\circ\text{C}$
Θ_{JA}	357	$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	TYP	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	μA
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_{CB0}	$I_C=10\mu\text{A}$	100	145		V
◆ BV_{CEO}	$I_C=10\text{mA}$	45	53		V
BV_{EBO}	$I_E=10\mu\text{A}$	6.0			V
◆ $V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$		0.92	0.15	V
◆ $V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$		0.12	0.50	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}	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	100	210		
◆ h_{FE}	$V_{CE}=10\text{V}, I_C=1.0\text{mA}$	100	205		
◆ h_{FE}	$V_{CE}=10\text{V}, I_C=10\text{mA}$	100	205		
◆ h_{FE}	$V_{CE}=1.0\text{V}, I_C=150\text{mA}$	75	150		
h_{FE}	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100		300	
◆ h_{FE}	$V_{CE}=10\text{V}, I_C=500\text{mA}$	60	130		
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}	$V_{BE}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$			25	pF

◆ Enhanced specification

R2 (1-February 2010)

CMPT2222AE

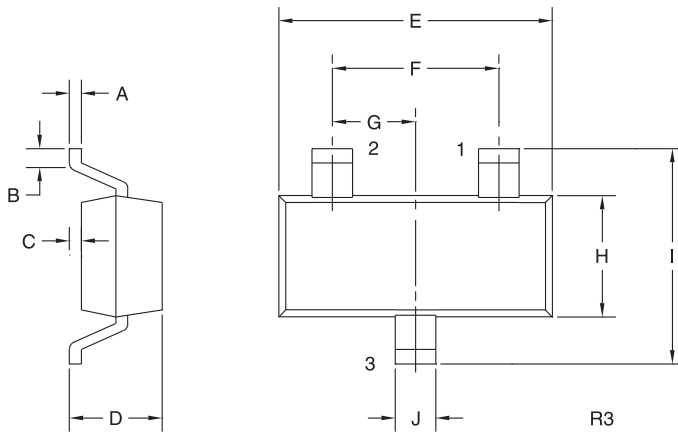
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
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	μS
h_{oe}	$V_{CE}=10\text{V}, I_C=10\text{mA}, f=1.0\text{kHz}$	25	200	μS
$rb'C_c$	$V_{CB}=10\text{V}, I_E=20\text{mA}, f=31.8\text{MHz}$		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-23 CASE - MECHANICAL OUTLINE



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.003	0.007	0.08	0.18
B	0.006	-	0.15	-
C	-	0.005	-	0.13
D	0.035	0.043	0.89	1.09
E	0.110	0.120	2.80	3.05
F	0.075		1.90	
G	0.037		0.95	
H	0.047	0.055	1.19	1.40
I	0.083	0.098	2.10	2.49
J	0.014	0.020	0.35	0.50

SOT-23 (REV: R3)

LEAD CODE:

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

MARKING CODE: C1PE

R2 (1-February 2010)