

CMKT2222A

**SURFACE MOUNT  
DUAL NPN SMALL SIGNAL  
SILICON SWITCHING  
TRANSISTORS**

ULTRAm<sup>TM</sup>ini



**SOT-363 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMKT2222A consists of two individually isolated 2222A NPN silicon transistors, manufactured by the epitaxial planar process and epoxy molded in an SOT-363 surface mount package. This ULTRAm<sup>TM</sup>ini device has been designed for small signal general purpose and switching applications.

**MARKING CODE: K22**

**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**

V<sub>CBO</sub> 75  
V<sub>CEO</sub> 40  
V<sub>EBO</sub> 6.0  
I<sub>C</sub> 600  
P<sub>D</sub> 350  
T<sub>J</sub>, T<sub>stg</sub> -65 to +150  
θ<sub>JA</sub> 357

**UNITS**

V  
V  
V  
mA  
mW  
°C  
°C/W

**ELECTRICAL CHARACTERISTICS PER TRANSISTOR:** (T<sub>A</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
I <sub>CBO</sub>	V <sub>CB</sub> =60V		10	nA
I <sub>CBO</sub>	V <sub>CB</sub> =60V, T <sub>A</sub> =125°C		10	µA
I <sub>CEV</sub>	V <sub>CE</sub> =60V, V <sub>EB</sub> =3.0V		10	nA
I <sub>EBO</sub>	V <sub>EB</sub> =3.0V		10	nA
BV <sub>CBO</sub>	I <sub>C</sub> =10µA	75		V
BV <sub>CEO</sub>	I <sub>C</sub> =10mA	40		V
BV <sub>EBO</sub>	I <sub>E</sub> =10µA	6.0		V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA		0.3	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA		1.0	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	0.6	1.2	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA		2.0	V
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =0.1mA	35		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA	50		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =10mA	75		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =150mA	50		
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =150mA	100	300	
h <sub>FE</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =500mA	40		
f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =20mA, f=100MHz	300		MHz
C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1.0MHz		8.0	pF
C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz		25	pF

R4 (13-January 2010)

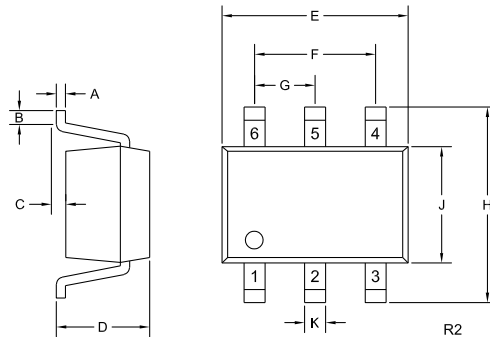
**CMKT2222A**  
**SURFACE MOUNT**  
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**SILICON SWITCHING**  
**TRANSISTORS**



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

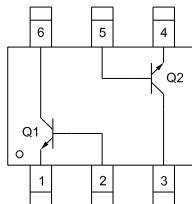
SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$h_{ie}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	2.0	8.0	$k\Omega$
$h_{ie}$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$	0.25	1.25	$k\Omega$
$h_{re}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$		8.0	$\times 10^{-4}$
$h_{re}$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$		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	$\mu\text{S}$
$h_{oe}$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=1.0\text{kHz}$	25	200	$\mu\text{S}$
$r_b/C_c$	$V_{CB}=10\text{V}$ , $I_E=20\text{mA}$ , $f=31.8\text{MHz}$		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-363 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.010	0.10	0.25
B	0.005	-	0.12	-
C	0.000	0.004	0.00	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	0.075	0.091	1.90	2.30
J	0.043	0.055	1.10	1.40
K	0.006	0.012	0.15	0.30

SOT-363 (REV: R2)



**LEAD CODE:**

- 1) Emitter Q1
- 2) Base Q1
- 3) Collector Q2
- 4) Emitter Q2
- 5) Base Q2
- 6) Collector Q1

**MARKING CODE: K22**

R4 (13-January 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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