

CMKT2207

**SURFACE MOUNT  
COMPLEMENTARY SILICON  
TRANSISTORS**

ULTRAmulti™



SOT-363 CASE



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMKT2207 consists of one 2222A NPN transistor and an individually isolated complementary 2907A PNP transistor, manufactured by the epitaxial planar process and epoxy molded in an SOT-363 surface mount package. This ULTRAmulti™ device has been designed for small signal general purpose and switching applications.

**MARKING CODE: K70**

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

|  |                                   |             |     |      |
|--|-----------------------------------|-------------|-----|------|
| Collector-Base Voltage                     | V <sub>CBO</sub>                  | 75          | 60  | V    |
| Collector-Emitter Voltage                  | V <sub>CEO</sub>                  | 40          | 60  | V    |
| Emitter-Base Voltage                       | V <sub>EBO</sub>                  | 6.0         | 5.0 | V    |
| Continuous Collector Current               | I <sub>C</sub>                    | 600         |     | mA   |
| Power Dissipation                          | P <sub>D</sub>                    | 350         |     | mW   |
| Operating and Storage Junction Temperature | T <sub>J</sub> , T <sub>stg</sub> | -65 to +150 |     | °C   |
| Thermal Resistance                         | θ <sub>JA</sub>                   | 357         |     | °C/W |

| SYMBOL                            | NPN (Q1)    | PNP (Q2) | UNITS |
|-----------------------------------|-------------|----------|-------|
| V <sub>CBO</sub>                  | 75          | 60       | V     |
| V <sub>CEO</sub>                  | 40          | 60       | V     |
| V <sub>EBO</sub>                  | 6.0         | 5.0      | V     |
| I <sub>C</sub>                    | 600         |          | mA    |
| P <sub>D</sub>                    | 350         |          | mW    |
| T <sub>J</sub> , T <sub>stg</sub> | -65 to +150 |          | °C    |
| θ <sub>JA</sub>                   | 357         |          | °C/W  |

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

| SYMBOL               | TEST CONDITIONS                                      | NPN (Q1) |     | PNP (Q2) |     | UNITS |
|----------------------|--|----------|-----|----------|-----|-------|
|                      |  | MIN      | MAX | MIN      | MAX |       |
| I <sub>CBO</sub>     | V <sub>CB</sub> =60V                                 | -        | 10  | -        | -   | nA    |
| I <sub>CBO</sub>     | V <sub>CB</sub> =50V                                 | -        | -   | -        | 10  | nA    |
| I <sub>CBO</sub>     | V <sub>CB</sub> =60V, T <sub>A</sub> =125°C          | -        | 10  | -        | -   | nA    |
| I <sub>CBO</sub>     | V <sub>CB</sub> =50V, T <sub>A</sub> =125°C          | -        | -   | -        | 10  | nA    |
| I <sub>EBO</sub>     | V <sub>EB</sub> =3.0V                                | -        | 10  | -        | -   | nA    |
| I <sub>CEV</sub>     | V <sub>CE</sub> =60V, V <sub>EB(OFF)</sub> =3.0V     | -        | 10  | -        | -   | nA    |
| I <sub>CEV</sub>     | V <sub>CE</sub> =30V, V <sub>EB(OFF)</sub> =500mV    | -        | -   | -        | 50  | nA    |
| BV <sub>CBO</sub>    | I <sub>C</sub> =10μA                                 | 75       | -   | 60       | -   | V     |
| BV <sub>CEO</sub>    | I <sub>C</sub> =10mA                                 | 40       | -   | 60       | -   | V     |
| BV <sub>EBO</sub>    | I <sub>E</sub> =10μA                                 | 6.0      | -   | 5.0      | -   | V     |
| V <sub>CE(SAT)</sub> | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA          | -        | 0.3 | -        | 0.4 | V     |
| V <sub>CE(SAT)</sub> | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA          | -        | 1.0 | -        | 1.6 | V     |
| V <sub>BE(SAT)</sub> | I <sub>C</sub> =150mA, I <sub>B</sub> =15mA          | 0.6      | 1.2 | -        | 1.3 | V     |
| V <sub>BE(SAT)</sub> | I <sub>C</sub> =500mA, I <sub>B</sub> =50mA          | -        | 2.0 | -        | 2.6 | V     |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =0.1mA          | 35       | -   | 75       | -   |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA          | 50       | -   | 100      | -   |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =10mA           | 75       | -   | 100      | -   |       |
| h <sub>FE</sub>      | V <sub>CE</sub> =10V, I <sub>C</sub> =150mA          | 100      | 300 | 100      | 300 |       |
| 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> =500mA          | 40       | -   | 50       | -   |       |
| f <sub>T</sub>       | V <sub>CE</sub> =20V, I <sub>C</sub> =20mA, f=100MHz | 300      | -   | -        | -   | MHz   |
| f <sub>T</sub>       | V <sub>CE</sub> =20V, I <sub>C</sub> =50mA, f=100MHz | -        | -   | 200      | -   | MHz   |
| C <sub>ob</sub>      | V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1.0MHz    | -        | 8.0 | -        | 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)

**CMKT2207**

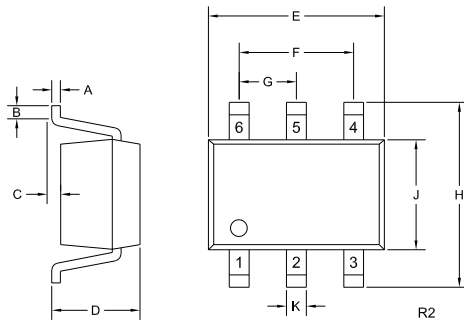
**SURFACE MOUNT  
COMPLEMENTARY SILICON  
TRANSISTORS**



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

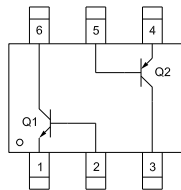
| SYMBOL    | TEST CONDITIONS  | NPN (Q1) |      | PNP (Q2) |     | UNITS            |
|-----------|--|----------|------|----------|-----|------------------|
|           |  | MIN      | MAX  | MIN      | MAX |                  |
| $C_{ib}$  | $V_{EB}=2.0V, I_C=0, f=1.0\text{MHz}$                                    | -        | -    | -        | 30  | pF               |
| $h_{ie}$  | $V_{CE}=10V, I_C=1.0\text{mA}, f=1.0\text{kHz}$                          | 2.0      | 8.0  | -        | -   | k $\Omega$       |
| $h_{ie}$  | $V_{CE}=10V, I_C=10\text{mA}, f=1.0\text{kHz}$                           | 0.25     | 1.25 | -        | -   | k $\Omega$       |
| $h_{re}$  | $V_{CE}=10V, I_C=1.0\text{mA}, f=1.0\text{kHz}$                          | -        | 8.0  | -        | -   | $\times 10^{-4}$ |
| $h_{re}$  | $V_{CE}=10V, I_C=10\text{mA}, f=1.0\text{kHz}$                           | -        | 4.0  | -        | -   | $\times 10^{-4}$ |
| $h_{fe}$  | $V_{CE}=10V, I_C=1.0\text{mA}, f=1.0\text{kHz}$                          | 50       | 300  | -        | -   |                  |
| $h_{fe}$  | $V_{CE}=10V, I_C=10\text{mA}, f=1.0\text{kHz}$                           | 75       | 375  | -        | -   |                  |
| $h_{oe}$  | $V_{CE}=10V, I_C=1.0\text{mA}, f=1.0\text{kHz}$                          | 5.0      | 35   | -        | -   | $\mu\text{S}$    |
| $h_{oe}$  | $V_{CE}=10V, I_C=10\text{mA}, f=1.0\text{kHz}$                           | 25       | 200  | -        | -   | $\mu\text{S}$    |
| $rb'c_c$  | $V_{CB}=10V, I_E=20\text{mA}, f=31.8\text{MHz}$                          | -        | 150  | -        | -   | ps               |
| NF        | $V_{CE}=10V, I_C=100\mu\text{A}, R_S=1.0\text{k}\Omega, f=1.0\text{kHz}$ | -        | 4.0  | -        | -   | dB               |
| $t_{on}$  | $V_{CC}=30V, V_{BE}=0.5V, I_C=150\text{mA}, I_{B1}=15\text{mA}$          | -        | -    | -        | 45  | ns               |
| $t_d$     | $V_{CC}=30V, V_{BE}=0.5V, I_C=150\text{mA}, I_{B1}=15\text{mA}$          | -        | 10   | -        | 10  | ns               |
| $t_r$     | $V_{CC}=30V, V_{BE}=0.5V, I_C=150\text{mA}, I_{B1}=15\text{mA}$          | -        | 25   | -        | 40  | ns               |
| $t_{off}$ | $V_{CC}=6.0V, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$               | -        | -    | -        | 100 | ns               |
| $t_s$     | $V_{CC}=30V, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$                | -        | 225  | -        | -   | ns               |
| $t_s$     | $V_{CC}=6.0V, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$               | -        | -    | -        | 80  | ns               |
| $t_f$     | $V_{CC}=30V, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$                | -        | 60   | -        | -   | ns               |
| $t_f$     | $V_{CC}=6.0V, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$               | -        | -    | -        | 30  | 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: K70**

R4 (13-January 2010)