**CMKT5078 NPN/PNP**
**CMKT5087 PNP/PNP**
**CMKT5088 NPN/NPN**

**SURFACE MOUNT**
**DUAL SILICON TRANSISTORS**

ULTRAmini™


**SOT-363 CASE**

Central Semiconductor Corp.

www.centralsemi.com

**DESCRIPTION:**

The Central Semiconductor CMKT5078 (one each NPN and PNP complementary), CMKT5087 (two single PNP), and CMKT5088 (two single NPN) are combinations of transistors in a space saving SOT-363 ULTRAmini™ package, designed for applications requiring high gain and low noise.

**CMKT5078 MARKING CODE: K78**
**CMKT5087 MARKING CODE: K87**
**CMKT5088 MARKING CODE: K88**

**FEATURES:**

- ULTRAmini™ space saving package
- Two NPN (5088) or Two PNP (5087) Transistors in a single package
- One NPN (5088) and one PNP (5087) complementary Transistor in a single package

| **MAXIMUM RATINGS:** ($T_A$=25°C) | **SYMBOL** | **NPN** | **PNP** | **UNITS** |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 35 | 50 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 30 | 50 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 4.5 | 3.0 | V |
| Continuous Collector Current | $I_C$ | 50 | | mA |
| Power Dissipation | $P_D$ | 350 | | mW |
| Operating and Storage Junction Temperature | $T_J$, $T_{stg}$ | -65 to +150 | | °C |
| Thermal Resistance | $\Theta_{JA}$ | 357 | | °C/W |

**ELECTRICAL CHARACTERISTICS PER TRANSISTOR:** ($T_A$=25°C unless otherwise noted)

| | | **NPN** | | **PNP** | | |
|---|---|---|---|---|---|---|
| **SYMBOL** | **TEST CONDITIONS** | **MIN** | **MAX** | **MIN** | **MAX** | **UNITS** |
| $I_{CBO}$ | $V_{CB}$=10V | - | - | - | 10 | nA |
| $I_{CBO}$ | $V_{CB}$=35V | - | - | - | 50 | nA |
| $I_{CBO}$ | $V_{CB}$=20V | - | 50 | - | - | nA |
| $I_{EBO}$ | $V_{EB}$=3.0V | - | 50 | - | - | nA |
| $BV_{CBO}$ | $I_C$=100μA | 35 | - | 50 | - | V |
| $BV_{CEO}$ | $I_C$=1.0mA | 30 | - | 50 | - | V |
| $BV_{EBO}$ | $I_E$=100μA | 4.5 | - | 3.0 | - | V |
| $V_{CE(SAT)}$ | $I_C$=10mA, $I_B$=1.0mA | - | 0.50 | - | 0.30 | V |
| $V_{BE(SAT)}$ | $I_C$=10mA, $I_B$=1.0mA | - | 0.80 | - | 0.85 | V |
| $h_{FE}$ | $V_{CE}$=5.0V, $I_C$=0.1mA | 300 | 900 | 250 | 800 | |
| $h_{FE}$ | $V_{CE}$=5.0V, $I_C$=1.0mA | 350 | - | 250 | - | |
| $h_{FE}$ | $V_{CE}$=5.0V, $I_C$=10mA | 300 | - | 250 | - | |
| $f_T$ | $V_{CE}$=5.0V, $I_C$=500μA, f=20MHz | 50 | - | 40 | - | MHz |
| $C_{ob}$ | $V_{CB}$=5.0V, $I_E$=0, f=1.0MHz | - | 4.0 | - | 4.0 | pF |
| $C_{ib}$ | $V_{BE}$=0.5V, $I_C$=0, f=1.0MHz | - | 15 | - | - | pF |
| $h_{fe}$ | $V_{CE}$=5.0V, $I_C$=1.0mA, f=1.0kHz | 350 | 1400 | 250 | 900 | |
| NF | $V_{CE}$=5.0V, $I_C$=100μA, $R_S$=10kΩ, f=10Hz to 15.7kHz | - | 3.0 | - | 2.0 | dB |

R4 (13-January 2010)

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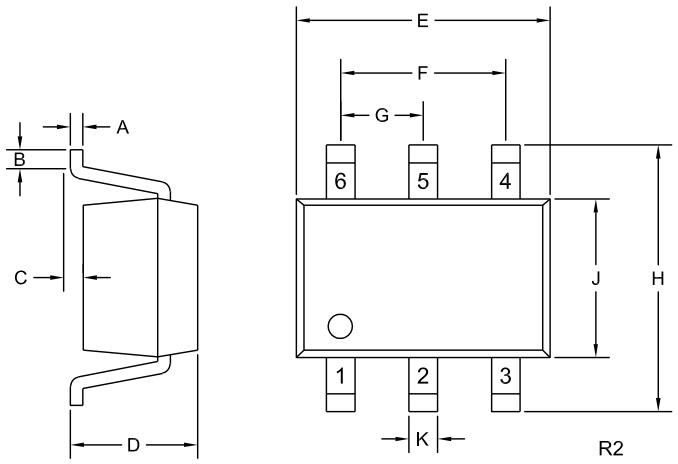
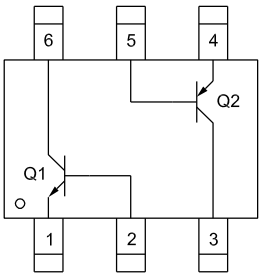
## SOT-363 CASE - MECHANICAL OUTLINE



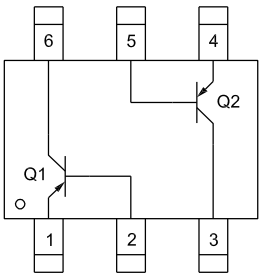

| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.004 | 0.010 | 0.10 | 0.25 |
| B | 0.005 | - | 0.12 | - |
| C | 0.000 | 0.004 | 0.00 | 0.10 |
| D | 0.031 | 0.043 | 0.80 | 1.10 |
| E | 0.071 | 0.087 | 1.80 | 2.20 |
| F | 0.051 | | 1.30 | |
| 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)

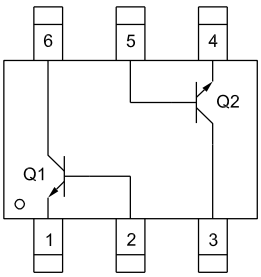
## PIN CONFIGURATIONS




**CMKT5078**
**(NPN/PNP)**
**MARKING CODE: K78**




**CMKT5087**
**(PNP/PNP)**
**MARKING CODE: K87**




**CMKT5088**
**(NPN/NPN)**
**MARKING CODE: K88**

**LEAD CODES:**
1) Emitter Q1
2) Base Q1
3) Collector Q2
4) Emitter Q2
5) Base Q2
6) Collector Q1

R4 (13-January 2010)