



**THE DATASHEET OF  
CMKT5078 TR PBFREE**



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

**SURFACE MOUNT  
 DUAL SILICON TRANSISTORS**

**ULTRAmi™**



**SOT-363 CASE**



[www.centrasemi.com](http://www.centrasemi.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 ULTRAmi™ package, designed for applications requiring high gain and low noise.

**CMKT5078 MARKING CODE: K78**

**CMKT5087 MARKING CODE: K87**

**CMKT5088 MARKING CODE: K88**

**FEATURES:**

- ULTRAmi™ 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<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	NPN	PNP	UNITS
V <sub>CB0</sub>	35	50	V
V <sub>CEO</sub>	30	50	V
V <sub>EBO</sub>	4.5	3.0	V
I <sub>C</sub>		50	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		PNP		UNITS
		MIN	MAX	MIN	MAX	
I <sub>CB0</sub>	V <sub>CB</sub> =10V	-	-	-	10	nA
I <sub>CB0</sub>	V <sub>CB</sub> =35V	-	-	-	50	nA
I <sub>CB0</sub>	V <sub>CB</sub> =20V	-	50	-	-	nA
I <sub>EBO</sub>	V <sub>EB</sub> =3.0V	-	50	-	-	nA
BV <sub>CB0</sub>	I <sub>C</sub> =100μA	35	-	50	-	V
BV <sub>CEO</sub>	I <sub>C</sub> =1.0mA	30	-	50	-	V
BV <sub>EBO</sub>	I <sub>E</sub> =100μA	4.5	-	3.0	-	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA	-	0.50	-	0.30	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA	-	0.80	-	0.85	V
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =0.1mA	300	900	250	800	
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =1.0mA	350	-	250	-	
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =10mA	300	-	250	-	
f <sub>T</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =500μA, f=20MHz	50	-	40	-	MHz
C <sub>ob</sub>	V <sub>CB</sub> =5.0V, I <sub>E</sub> =0, f=1.0MHz	-	4.0	-	4.0	pF
C <sub>ib</sub>	V <sub>BE</sub> =0.5V, I <sub>C</sub> =0, f=1.0MHz	-	15	-	-	pF
h <sub>fe</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =1.0mA, f=1.0kHz	350	1400	250	900	
NF	V <sub>CE</sub> =5.0V, I <sub>C</sub> =100μA, R <sub>S</sub> =10kΩ, f=10Hz to 15.7kHz	-	3.0	-	2.0	dB

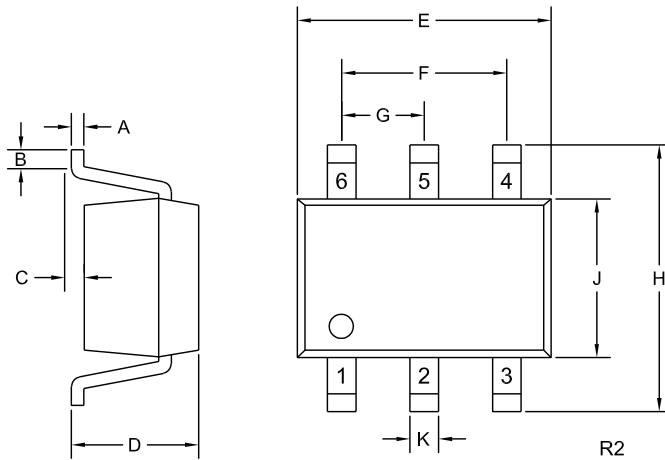
R4 (13-January 2010)

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



**SURFACE MOUNT  
 DUAL SILICON TRANSISTORS**

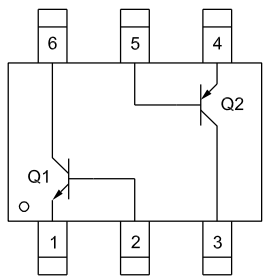
**SOT-363 CASE - MECHANICAL OUTLINE**



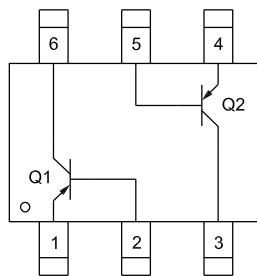
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.010	0.10	0.25
B	0.005	-	0.12	-
C	0.000	0.004	0.00	0.10
D	0.031	0.043	0.80	1.10
E	0.071	0.087	1.80	2.20
F	0.051		1.30	
G	0.026		0.65	
H	0.075	0.091	1.90	2.30
J	0.043	0.055	1.10	1.40
K	0.006	0.012	0.15	0.30

SOT-363 (REV: R2)

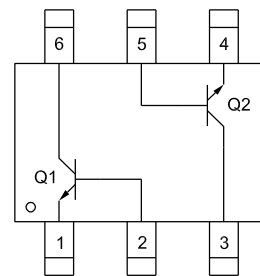
**PIN CONFIGURATIONS**



**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)

## 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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-  Excess Inventory Management