

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:** ( $T_A=25^\circ\text{C}$ )

Collector-Base Voltage  
 Collector-Emitter Voltage  
 Emitter-Base Voltage  
 Continuous Collector Current  
 Power Dissipation  
 Operating and Storage Junction Temperature  
 Thermal Resistance

SYMBOL	NPN	PNP	UNITS
$V_{CB0}$	35	50	V
$V_{CEO}$	30	50	V
$V_{EBO}$	4.5	3.0	V
$I_C$		50	mA
$P_D$		350	mW
$T_J, T_{stg}$	-65 to +150		$^\circ\text{C}$
$\theta_{JA}$	357		$^\circ\text{C}/\text{W}$

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

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

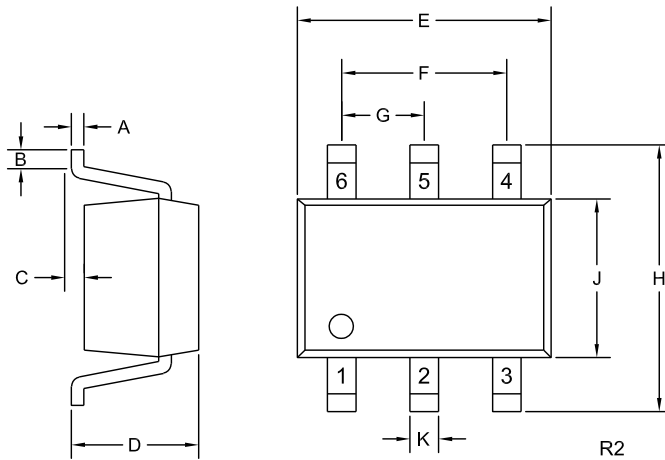
R4 (13-January 2010)

CMKT5078 NPN/PNP  
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**SURFACE MOUNT  
 DUAL SILICON TRANSISTORS**



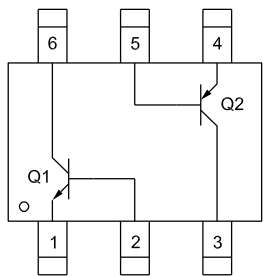
**SOT-363 CASE - MECHANICAL OUTLINE**



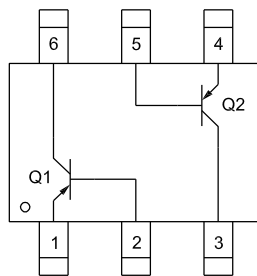
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.004	0.010	0.10	0.25
B	0.005	-	0.12	-
C	0.000	0.004	0.00	0.10
D	0.031	0.043	0.80	1.10
E	0.071	0.087	1.80	2.20
F	0.051		1.30	
G	0.026		0.65	
H	0.075	0.091	1.90	2.30
J	0.043	0.055	1.10	1.40
K	0.006	0.012	0.15	0.30

SOT-363 (REV: R2)

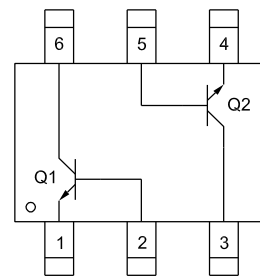
**PIN CONFIGURATIONS**



**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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