

**CMKT5089M10**  
**SURFACE MOUNT**  
**ULTRAmi™**  
**DUAL NPN SILICON**  
**MATCHED  $h_{FE}$  TRANSISTORS**



# Central™

**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMKT5089M10 consists of two (2) individual, isolated 5089 NPN silicon transistors with matched  $h_{FE}$ . This ULTRAmi™ device is manufactured by the epitaxial planar process and epoxy molded in an SOT-363 surface mount package. The CMKT5089M10 has been designed for applications requiring high gain and low noise.

**MARKING CODE: C9M0**

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

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

**SYMBOL**

$V_{CB0}$	30
$V_{CEO}$	25
$V_{EBO}$	4.5
$I_C$	50
$P_D$	350
$T_J, T_{stg}$	-65 to +150
$\theta_{JA}$	357

**UNITS**

V
V
V
mA
mW
$^\circ\text{C}$
$^\circ\text{C/W}$

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

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$I_{CBO}$	$V_{CB}=15\text{V}$		50	nA
$I_{EBO}$	$V_{EB}=4.5\text{V}$		100	nA
$BV_{CBO}$	$I_C=100\mu\text{A}$	30		V
$BV_{CEO}$	$I_C=1.0\text{mA}$	25		V
$BV_{EBO}$	$I_E=100\mu\text{A}$	4.5		V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.5	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$		0.8	V
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=0.1\text{mA}$	400	1200	
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$	450		
$h_{FE}$	$V_{CE}=5.0\text{V}, I_C=10\text{mA}$	400		
$f_T$	$V_{CE}=5.0\text{V}, I_C=500\mu\text{A}, f=20\text{MHz}$	50		MHz
$C_{ob}$	$V_{CB}=5.0\text{V}, I_E=0, f=1.0\text{MHz}$		4.0	pF
$C_{ib}$	$V_{BE}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$		10	pF
$h_{fe}$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$	450	1800	
NF	$V_{CE}=5.0\text{V}, I_C=100\mu\text{A}, R_S=10\text{k}\Omega$ $f=10\text{Hz to } 15.7\text{kHz}$		2.0	dB

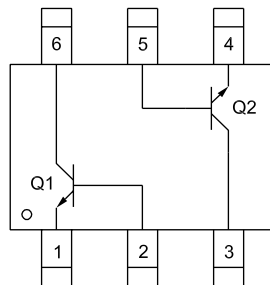
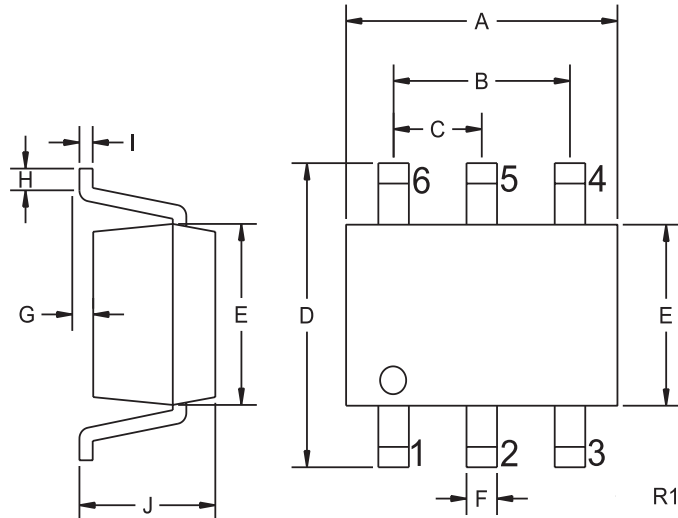
**MATCHING CHARACTERISTICS:**

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
$h_{FE1}/h_{FE2}^*$	$V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$	0.9	1.0	
$ V_{BEON1}-V_{BEON2} $	$V_{CE}=5.0\text{V}, I_C=100\mu\text{A}$		5.0	mV

\* The lowest  $h_{FE}$  reading is taken as  $h_{FE1}$ .

R2 (7-August 2003)

**SOT-363 CASE - MECHANICAL OUTLINE**



DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.073	0.085	1.85	2.15
B	0.051		1.30	
C	0.026		0.65	
D	0.075	0.091	1.90	2.30
E	0.043	0.055	1.10	1.40
F	0.006	0.012	0.15	0.30
G	0.000	0.004	0.00	0.10
H	0.010	-	0.25	-
I	0.004	0.010	0.10	0.25
J	0.031	0.039	0.80	1.00

SOT-363 (REV: R1)

**LEAD CODE:**

- 1) EMITTER Q1
- 2) BASE Q1
- 3) COLLECTOR Q2
- 4) EMITTER Q2
- 5) BASE Q2
- 6) COLLECTOR Q1

**MARKING CODE: C9M0**

R2 (7-August 2003)