

CMKT3904 NPN/NPN
 CMKT3906 PNP/PNP
 CMKT3946 NPN/PNP

**SURFACE MOUNT
 DUAL SMALL SIGNAL SILICON
 SWITCHING TRANSISTORS**

ULTRAmi™



SOT-363 CASE



www.centrasemi.com

DESCRIPTION:

The Central Semiconductor CMKT3904 (two single NPN), CMKT3906 (two single PNP), and CMKT3946 (one each NPN and PNP complementary) are combinations of transistors in a space saving SOT-363 ULTRAmi™ package, designed for small signal general purpose amplifier and switching applications.

CMKT3904 MARKING CODE: K04

CMKT3906 MARKING CODE: K06

CMKT3946 MARKING CODE: K46

FEATURES:

- ULTRAmi™ space saving package
- Two NPN (3904) or Two PNP (3906) Transistors in a single package
- One NPN (3904) and one PNP (3906) complementary Transistor in a single package

MAXIMUM RATINGS: (T_A=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 _{CBO} | 60 | 40 | V |
| V _{CEO} | 40 | 40 | V |
| V _{EBO} | 6.0 | 5.0 | V |
| I _C | 200 | | mA |
| P _D | 350 | | mW |
| T _J , T _{stg} | -65 to +150 | | °C |
| θ _{JA} | 357 | | °C/W |

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

| SYMBOL | TEST CONDITIONS | NPN | | PNP | | UNITS |
|----------------------|--|------|------|------|------|-------|
| | | MIN | MAX | MIN | MAX | |
| I _{CEV} | V _{CE} =30V, V _{EB} =3.0V | - | 50 | - | 50 | nA |
| I _{BL} | V _{CE} =30V, V _{EB} =3.0V | - | 50 | - | - | nA |
| BV _{CBO} | I _C =10μA | 60 | - | 40 | - | nA |
| BV _{CEO} | I _C =1.0mA | 40 | - | 40 | - | nA |
| BV _{EBO} | I _E =10μA | 6.0 | - | 5.0 | - | nA |
| V _{CE(SAT)} | I _C =10mA, I _B =1.0mA | - | 0.20 | - | 0.25 | V |
| V _{CE(SAT)} | I _C =50mA, I _B =5.0mA | - | 0.30 | - | 0.40 | V |
| V _{BE(SAT)} | I _C =10mA, I _B =1.0mA | 0.65 | 0.85 | 0.65 | 0.85 | V |
| V _{BE(SAT)} | I _C =50mA, I _B =5.0mA | - | 0.95 | - | 0.95 | V |
| h _{FE} | V _{CE} =1.0V, I _C =0.1mA | 40 | - | 60 | - | |
| h _{FE} | V _{CE} =1.0V, I _C =1.0mA | 70 | - | 80 | - | |
| h _{FE} | V _{CE} =1.0V, I _C =10mA | 100 | 300 | 100 | 300 | |
| h _{FE} | V _{CE} =1.0V, I _C =50mA | 60 | - | 60 | - | |
| h _{FE} | V _{CE} =1.0V, I _C =100mA | 30 | - | 30 | - | |
| f _T | V _{CE} =20V, I _C =10mA, f=100MHz | 300 | - | 250 | - | MHz |
| C _{ob} | V _{CB} =5.0V, I _E =0, f=1.0MHz | - | 4.0 | - | 4.5 | pF |
| C _{ib} | V _{BE} =0.5V, I _C =0, f=1.0MHz | - | 8.0 | - | 10 | pF |

R4 (13-January 2010)

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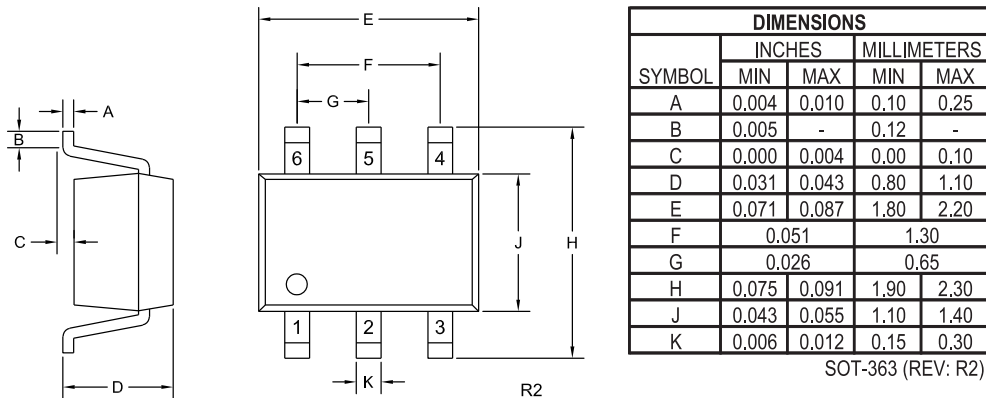


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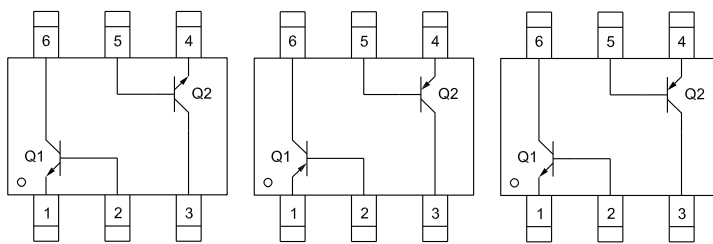
ELECTRICAL CHARACTERISTICS PER TRANSISTOR - Continued: ($T_A=25^\circ\text{C}$)

| SYMBOL | TEST CONDITIONS | NPN | | PNP | | UNITS |
|----------|---|-----|-----|-----|-----|------------------|
| | | MIN | MAX | MIN | MAX | |
| h_{ie} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 1.0 | 10 | 2.0 | 12 | $k\Omega$ |
| h_{re} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 0.5 | 8.0 | 0.1 | 10 | $\times 10^{-4}$ |
| h_{fe} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 100 | 400 | 100 | 400 | |
| h_{oe} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 1.0 | 40 | 3.0 | 60 | μS |
| NF | $V_{CE}=5.0\text{V}, I_C=100\mu\text{A}, R_S=1.0\text{k}\Omega, f=10\text{Hz to } 15.7\text{kHz}$ | - | 5.0 | - | 4.0 | dB |
| t_d | $V_{CC}=3.0\text{V}, V_{BE}=0.5\text{V}, I_C=10\text{mA}, I_{B1}=1.0\text{mA}$ | - | 35 | - | 35 | ns |
| t_r | $V_{CC}=3.0\text{V}, V_{BE}=0.5\text{V}, I_C=10\text{mA}, I_{B1}=1.0\text{mA}$ | - | 35 | - | 35 | ns |
| t_s | $V_{CC}=3.0\text{V}, I_C=10\text{mA}, I_{B1}=I_{B2}=1.0\text{mA}$ | - | 200 | - | 225 | ns |
| t_f | $V_{CC}=3.0\text{V}, I_C=10\text{mA}, I_{B1}=I_{B2}=1.0\text{mA}$ | - | 50 | - | 75 | ns |

SOT-363 CASE - MECHANICAL OUTLINE



PIN CONFIGURATIONS



LEAD CODES:

- 1) Emitter Q1
- 2) Base Q1
- 3) Collector Q2
- 4) Emitter Q2
- 5) Base Q2
- 6) Collector Q1

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