**CTLT3410-M521 (NPN)**
**CTLT7410-M521 (PNP)**
**SURFACE MOUNT**
**COMPLEMENTARY SILICON**
**LOW $V_{CE\ (SAT)}$ TRANSISTORS**


Top View Bottom View

**TLM521**

**CTLT3410-M521 (NPN) Marking Code: CB**
**CTLT7410-M521 (PNP) Marking Code: CD**

**Central™**
**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CTLT3410-M521 and CTLT7410-M521 are Low $V_{CE\ (SAT)}$ transistors in a very small leadless 1x2mm surface mount package, designed for applications where small size, operational efficiency, and low energy consumption are prime requirements. Due to the leadless package design these devices are capable of dissipating up to 3 times the power of similar devices in comparable sized surface mount packages.

**FEATURES:**

- High Operational Efficiency
- High Power to Footprint Ratio
- $V_{CE(SAT)}$ @ 1.0A = 250mV (Typ)
- High Collector Current
- Small TLM 1x2mm case

**APPLICATIONS:**

- DC/DC Converters
- Switching Circuits
- LCD Backlighting
- Battery Powered Portable Equipment

**MAXIMUM RATINGS:** ($T_A$=25°C)

| | SYMBOL | | UNITS |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 40 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 25 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6.0 | V |
| Collector Current | $I_C$ | 1.0 | A |
| Collector Current (Peak) | $I_{CM}$ | 1.5 | A |
| Power Dissipation | $P_D$ | 0.9 | W * |
| Operating and Storage Junction Temperature | $T_J, T_{stg}$ | -65 to +150 | °C |
| Thermal Resistance | $\Theta_{JA}$ | 139 | °C/W * |

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

| SYMBOL | TEST CONDITIONS | MIN | TYP NPN | TYP PNP | MAX | UNITS |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | $V_{CB}$=40V | | | | 100 | nA |
| $I_{EBO}$ | $V_{EB}$=6.0V | | | | 100 | nA |
| $BV_{CBO}$ | $I_C$=100μA | 40 | | | | V |
| $BV_{CEO}$ | $I_C$=10mA | 25 | | | | V |
| $BV_{EBO}$ | $I_E$=100μA | 6.0 | | | | V |
| $V_{CE(SAT)}$ | $I_C$=50mA, $I_B$=5.0mA | | 20 | 25 | 50 | mV |
| $V_{CE(SAT)}$ | $I_C$=100mA, $I_B$=10mA | | 35 | 40 | 75 | mV |
| $V_{CE(SAT)}$ | $I_C$=200mA, $I_B$=20mA | | 75 | 80 | 150 | mV |
| $V_{CE(SAT)}$ | $I_C$=500mA, $I_B$=50mA | | 130 | 150 | 250 | mV |
| $V_{CE(SAT)}$ | $I_C$=800mA, $I_B$=80mA | | 200 | 220 | 400 | mV |
| $V_{CE(SAT)}$ | $I_C$=1.0A, $I_B$=100mA | | 250 | 275 | 450 | mV |
| $V_{BE(SAT)}$ | $I_C$=800mA, $I_B$=80mA | | | | 1.1 | V |
| $V_{BE(ON)}$ | $V_{CE}$=1.0V, $I_C$=10mA | | | | 0.9 | V |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=10mA | 100 | | | | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=100mA | 100 | | | 300 | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=500mA | 100 | | | | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=1.0A | 50 | | | | |

* FR-4 Epoxy PCB with copper mounting pad area of 33mm$^2$

continued on next page

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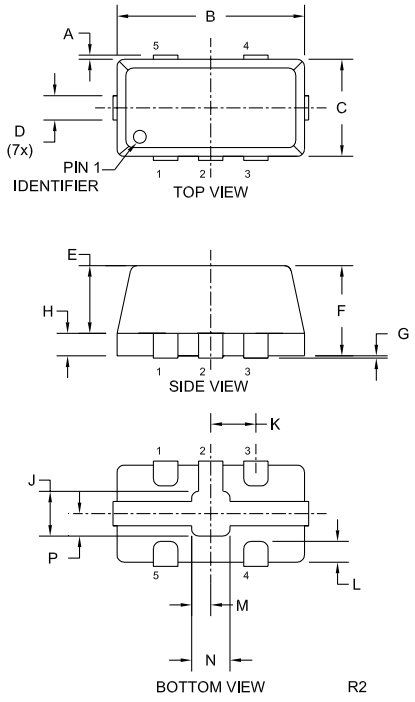
**Semiconductor Corp.**

# CTLT3410-M521 (NPN)
# CTLT7410-M521 (PNP)
# SURFACE MOUNT
# COMPLEMENTARY SILICON
# LOW $V_{CE\ (SAT)}$ TRANSISTORS

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

| SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|
| $f_T$ | $V_{CE}$=10V, $I_C$=50mA, f=100MHz | 100 | | | MHz |
| $C_{ob}$ | $V_{CB}$=10V, $I_E$=0, f=1.0MHz (CTLT3410-M521) | | | 10 | pF |
| $C_{ob}$ | $V_{CB}$=10V, $I_E$=0, f=1.0MHz (CTLT7410-M521) | | | 15 | pF |

## TLM521 CASE - MECHANICAL OUTLINE

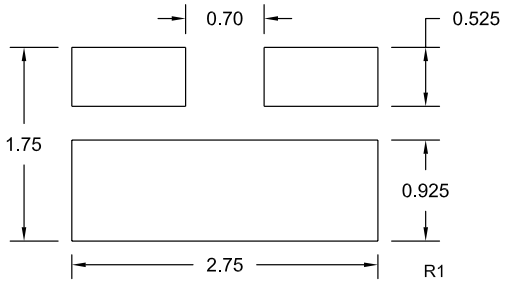



| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | — | 0.005 | — | 0.125 |
| B | 0.075 | 0.083 | 1.900 | 2.100 |
| C | 0.035 | 0.043 | 0.900 | 1.100 |
| D | 0.007 | 0.012 | 0.170 | 0.300 |
| E | 0.026 | 0.030 | 0.650 | 0.750 |
| F | 0.031 | 0.039 | 0.800 | 1.000 |
| G | 0.000 | 0.002 | 0.000 | 0.050 |
| H | 0.006 | 0.010 | 0.150 | 0.250 |
| J | 0.013 | 0.021 | 0.330 | 0.530 |
| K | 0.020 | | 0.500 | |
| L | 0.004 | 0.014 | 0.100 | 0.350 |
| M | 0.002 | 0.010 | 0.060 | 0.260 |
| N | 0.009 | 0.017 | 0.220 | 0.420 |
| P | 0.005 | 0.013 | 0.120 | 0.320 |

TLM521 (REV: R2)

**LEAD CODE:**
1) COLLECTOR
2) COLLECTOR
3) COLLECTOR
4) BASE
5) EMITTER

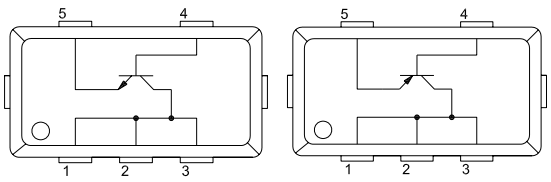
Suggested mounting pad layout
for maximum power dissipation
(Dimensions in mm)




For standard mounting refer
to TLM521 Package Details

## PIN CONFIGURATION

CTLT3410-M521 (NPN) CTLT7410-M521 (PNP)

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R1 (27-April 2006)