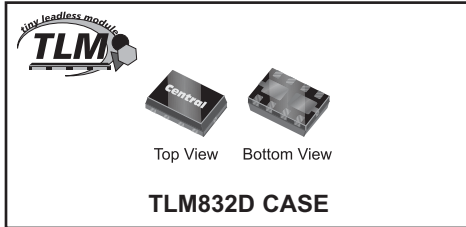


CTLM3410-M832D  
 CTLM7410-M832D  
 CTLM3474-M832D

**SURFACE MOUNT  
 DUAL, LOW  $V_{CE(SAT)}$   
 SILICON TRANSISTORS**



**MARKING CODES:**

**CTLM3410-M832D: CFG**  
**CTLM7410-M832D: CFH**  
**CTLM3474-M832D: CFJ**

**APPLICATIONS**

- Switching Circuits
- DC / DC Converters
- LCD Backlighting
- Battery powered / Portable Equipment applications including Cell Phones, Digital Cameras, Pagers, PDAs, Notebook PCs, etc.

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

Collector-Base Voltage  
 Collector-Emitter Voltage  
 Emitter-Base Voltage  
 Continuous Collector Current  
 Power Dissipation (Note 1)  
 Operating and Storage Junction Temperature  
 Thermal Resistance



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CTLM3410-M832D (Dual NPN), CTLM7410-M832D (Dual PNP), and CTLM3474-M832D (Complementary NPN & PNP) are Low  $V_{CE(SAT)}$  Transistors packaged in the small, thermally efficient, 3x2mm Tiny Leadless Module (TLM™) surface mount case. These devices are designed for applications where small size, operational efficiency, and low energy consumption are the prime requirements. Due to its leadless package design this device is capable of dissipating up to 4 times the power of similar devices in comparable sized surface mount packages.

**FEATURES**

- Dual Chip Device
- High Current (1.0A) Transistors
- Low  $V_{CE(SAT)}$  Transistors (450mV @  $I_C=1.0A$  MAX)
- High Power to Footprint Ratio of 275mW per sq mm (Package Power Dissipation / Package Surface Area)
- Small TLM 3x2mm Leadless Surface Mount Package
- Complementary Devices

**SYMBOL**

| SYMBOL         |             | UNITS         |
|----------------|-------------|---------------|
| $V_{CBO}$      | 40          | V             |
| $V_{CEO}$      | 25          | V             |
| $V_{EBO}$      | 6.0         | V             |
| $I_C$          | 1.0         | A             |
| $P_D$          | 1.65        | W             |
| $T_J, T_{stg}$ | -65 to +150 | $^{\circ}C$   |
| $\theta_{JA}$  | 76          | $^{\circ}C/W$ |

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

| SYMBOL        | TEST CONDITIONS       | TYP |     |     | UNITS  |
|---------------|-----------------------|-----|-----|-----|--------|
|               |                       | MIN | NPN | PNP |        |
| $I_{CBO}$     | $V_{CB}=40V$          |     |     |     | 100 nA |
| $I_{EBO}$     | $V_{EB}=6.0V$         |     |     |     | 100 nA |
| $BV_{CBO}$    | $I_C=100\mu A$        | 40  |     |     | V      |
| $BV_{CEO}$    | $I_C=10mA$            | 25  |     |     | V      |
| $BV_{EBO}$    | $I_E=100\mu A$        | 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  |

Notes: (1) FR-4 Epoxy PCB with copper mounting pad area of 54mm<sup>2</sup>.

R2 (19-February 2010)

CTLM3410-M832D  
 CTLM7410-M832D  
 CTLM3474-M832D

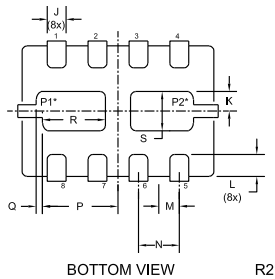
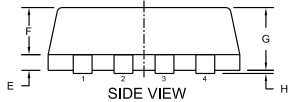
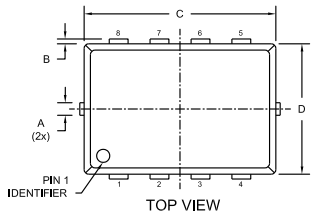
**SURFACE MOUNT  
 DUAL, LOW  $V_{CE(SAT)}$   
 SILICON TRANSISTORS**



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

| SYMBOL        | TEST CONDITIONS  | MIN | TYP |     | MAX | UNITS |
|---------------|--|-----|-----|-----|-----|-------|
|               |  |     | NPN | PNP |     |       |
| $V_{CE(SAT)}$ | $I_C=200\text{mA}$ , $I_B=20\text{mA}$                             |     | 75  | 80  | 150 | mV    |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}$ , $I_B=50\text{mA}$                             |     | 130 | 150 | 250 | mV    |
| $V_{CE(SAT)}$ | $I_C=800\text{mA}$ , $I_B=80\text{mA}$                             |     | 200 | 220 | 400 | mV    |
| $V_{CE(SAT)}$ | $I_C=1.0\text{A}$ , $I_B=100\text{mA}$                             |     | 250 | 275 | 450 | mV    |
| $V_{BE(SAT)}$ | $I_C=800\text{mA}$ , $I_B=80\text{mA}$                             |     |     |     | 1.1 | V     |
| $V_{BE(ON)}$  | $V_{CE}=1.0\text{V}$ , $I_C=10\text{mA}$                           |     |     |     | 0.9 | V     |
| $h_{FE}$      | $V_{CE}=1.0\text{V}$ , $I_C=10\text{mA}$                           | 100 |     |     |     |       |
| $h_{FE}$      | $V_{CE}=1.0\text{V}$ , $I_C=100\text{mA}$                          | 100 |     |     | 300 |       |
| $h_{FE}$      | $V_{CE}=1.0\text{V}$ , $I_C=500\text{mA}$                          | 100 |     |     |     |       |
| $h_{FE}$      | $V_{CE}=1.0\text{V}$ , $I_C=1.0\text{A}$                           | 50  |     |     |     |       |
| $f_T$         | $V_{CE}=10\text{V}$ , $I_C=50\text{mA}$ , $f=100\text{MHz}$        | 100 |     |     |     | MHz   |
| $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$ (CTLM3410-M832D) |     |     |     | 10  | pF    |
| $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$ (CTLM7410-M832D) |     |     |     | 15  | pF    |

**TLM832D CASE - MECHANICAL OUTLINE**



| SYMBOL | DIMENSIONS |       |             |       |
|--------|------------|-------|-------------|-------|
|        | INCHES     |       | MILLIMETERS |       |
| A      | 0.007      | 0.012 | 0.170       | 0.300 |
| B      | -          | 0.005 | -           | 0.125 |
| C      | 0.114      | 0.122 | 2.900       | 3.100 |
| D      | 0.075      | 0.083 | 1.900       | 2.100 |
| E      | 0.006      | 0.010 | 0.150       | 0.250 |
| F      | 0.026      | 0.030 | 0.650       | 0.750 |
| G      | 0.031      | 0.039 | 0.800       | 1.000 |
| H      | 0.000      | 0.002 | 0.000       | 0.050 |
| J      | 0.009      | 0.013 | 0.240       | 0.340 |
| K      | 0.006      | 0.014 | 0.160       | 0.360 |
| L      | 0.008      | 0.018 | 0.200       | 0.450 |
| M      | 0.013      |       | 0.325       |       |
| N      | 0.026      |       | 0.650       |       |
| P      | 0.040      | 0.048 | 1.010       | 1.210 |
| Q      | 0.004      |       | 0.100       |       |
| R      | 0.032      | 0.040 | 0.820       | 1.020 |
| S      | 0.017      | 0.025 | 0.430       | 0.630 |

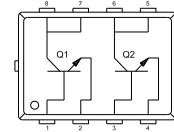
TLM832D (REV: R2)

**LEAD CODES:**

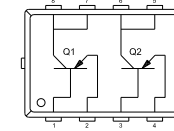
- 1) Base Q1
- 2) Emitter Q1
- 3) Base Q2
- 4) Emitter Q2
- 5) Collector Q2
- 6) Collector Q2
- 7) Collector Q1
- 8) Collector Q1

\* Note:  
 - Exposed pad P1 common to pins 7 and 8  
 - Exposed pad P2 common to pins 5 and 6

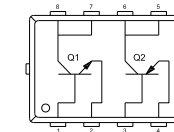
**CTLM3410-M832D  
 Dual NPN  
 Marking Code: CFG**



**CTLM7410-M832D  
 Dual PNP  
 Marking Code: CFH**



**CTLM3474-M832D  
 Complementary NPN & PNP  
 Marking Code: CFJ**



R2 (19-February 2010)