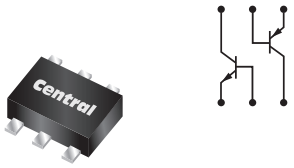
**CMLT4413**

**SURFACE MOUNT SILICON DUAL, COMPLEMENTARY TRANSISTOR**



**SOT-563 CASE**

www.centralsemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMLT4413 consists of one isolated 2N4401 NPN silicon transistor and one complementary isolated 2N4403 PNP silicon transistor, manufactured by the epitaxial planar process and epoxy molded in an SOT-563 surface mount package. This device is designed for small signal general purpose amplifier and switching applications.

**MARKING CODE: PC3**

• Device is ***Halogen Free*** by design

| **MAXIMUM RATINGS:** ($T_A$=25°C) | **SYMBOL** | **NPN (Q1)** | **PNP (Q2)** | **UNITS** |
|---|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | 40 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 40 | 40 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6.0 | 5.0 | V |
| Continuous Collector Current | $I_C$ | 600 | | mA |
| Power Dissipation (Note 1) | $P_D$ | 350 | | mW |
| Power Dissipation (Note 2) | $P_D$ | 300 | | mW |
| Power Dissipation (Note 3) | $P_D$ | 150 | | mW |
| Operating and Storage Junction Temperature | $T_J$, $T_{stg}$ | -65 to +150 | | °C |
| Thermal Resistance | $\Theta_{JA}$ | 357 | | °C/W |

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

| | | **NPN (Q1)** | | **PNP (Q2)** | | |
|---|---|---|---|---|---|---|
| **SYMBOL** | **TEST CONDITIONS** | **MIN** | **MAX** | **MIN** | **MAX** | **UNITS** |
| $I_{CEV}$ | $V_{CE}$=35V, $V_{EB}$=0.4V | - | 0.1 | - | 0.1 | µA |
| $I_{BEV}$ | $V_{CE}$=35V, $V_{EB}$=0.4V | - | 0.1 | - | 0.1 | µA |
| $BV_{CBO}$ | $I_C$=100µA | 60 | - | 40 | - | V |
| $BV_{CEO}$ | $I_C$=1.0mA | 40 | - | 40 | - | V |
| $BV_{EBO}$ | $I_E$=100µA | 6.0 | - | 5.0 | - | V |
| $V_{CE(SAT)}$ | $I_C$=150mA, $I_B$=15mA | - | 0.40 | - | 0.40 | V |
| $V_{CE(SAT)}$ | $I_C$=500mA, $I_B$=50mA | - | 0.75 | - | 0.75 | V |
| $V_{BE(SAT)}$ | $I_C$=150mA, $I_B$=15mA | 0.75 | 0.95 | 0.75 | 0.95 | V |
| $V_{BE(SAT)}$ | $I_C$=500mA, $I_B$=50mA | - | 1.2 | - | 1.3 | V |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=0.1mA | 20 | - | 30 | - | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=1.0mA | 40 | - | 60 | - | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=10mA | 80 | - | 100 | - | |
| $h_{FE}$ | $V_{CE}$=1.0V, $I_C$=150mA | 100 | 300 | - | - | |
| $h_{FE}$ | $V_{CE}$=2.0V, $I_C$=150mA | - | - | 100 | 300 | |
| $h_{FE}$ | $V_{CE}$=2.0V, $I_C$=500mA | 40 | - | 20 | - | |
| $f_T$ | $V_{CE}$=10V, $I_C$=20mA, f=100MHz | 250 | - | 200 | - | MHz |
| $C_{ob}$ | $V_{CB}$=5.0V, $I_E$=0, f=1.0MHz | - | 6.5 | - | 8.5 | pF |
| $C_{ib}$ | $V_{BE}$=0.5V, $I_C$=0, f=1.0MHz | - | 30 | - | 30 | pF |

Notes: (1) Ceramic or aluminum core PC Board with copper mounting pad area of 4.0mm$^2$
(2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm$^2$
(3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm$^2$

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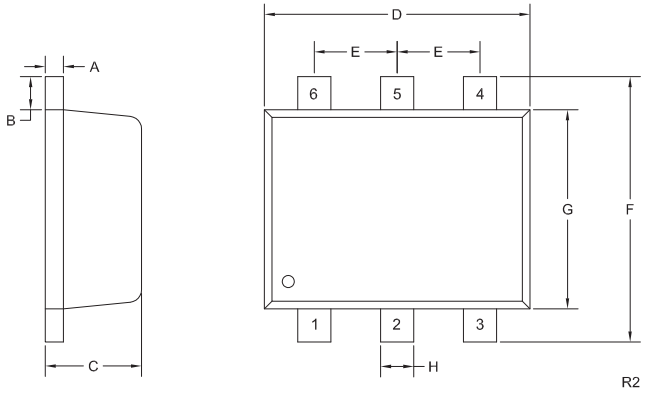
**ELECTRICAL CHARACTERISTICS - Continued:** ($T_A$=25°C)

| | | NPN (Q1) | | PNP (Q2) | | |
|---|---|---|---|---|---|---|
| **SYMBOL** | **TEST CONDITIONS** | **MIN** | **MAX** | **MIN** | **MAX** | **UNITS** |
| $h_{ie}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 1.0 | 15 | 1.5 | 15 | kΩ |
| $h_{re}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 0.1 | 8.0 | 0.1 | 8.0 | $x10^{-4}$ |
| $h_{fe}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 40 | 500 | 60 | 500 | |
| $h_{oe}$ | $V_{CE}$=10V, $I_C$=1.0mA, f=1.0kHz | 1.0 | 30 | 1.0 | 100 | μS |
| $t_d$ | $V_{CC}$=30V, $V_{BE}$=2.0V, $I_C$=150mA, $I_{B1}$=15mA | - | 15 | - | 15 | ns |
| $t_r$ | $V_{CC}$=30V, $V_{BE}$=2.0V, $I_C$=150mA, $I_{B1}$=15mA | - | 20 | - | 20 | ns |
| $t_s$ | $V_{CC}$=30V, $I_C$=150mA, $I_{B1}$=$I_{B2}$=15mA | - | 225 | - | 225 | ns |
| $t_f$ | $V_{CC}$=30V, $I_C$=150mA, $I_{B1}$=$I_{B2}$=15mA | - | 30 | - | 30 | ns |

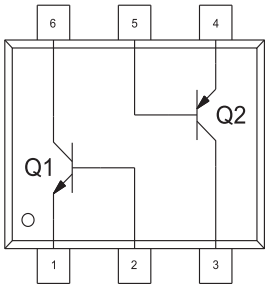
## SOT-563 CASE - MECHANICAL OUTLINE




| DIMENSIONS | | | | |
|---|---|---|---|---|
| | INCHES | | MILLIMETERS | |
| SYMBOL | MIN | MAX | MIN | MAX |
| A | 0.0027 | 0.007 | 0.07 | 0.18 |
| B | 0.008 | | 0.20 | |
| C | 0.017 | 0.024 | 0.45 | 0.60 |
| D | 0.059 | 0.067 | 1.50 | 1.70 |
| E | 0.020 | | 0.50 | |
| F | 0.059 | 0.067 | 1.50 | 1.70 |
| G | 0.043 | 0.051 | 1.10 | 1.30 |
| H | 0.006 | 0.012 | 0.15 | 0.30 |

SOT-563 (REV: R2)

**PIN CONFIGURATION**




**LEAD CODE:**
1) Emitter Q1
2) Base Q1
3) Collector Q2
4) Emitter Q2
5) Base Q2
6) Collector Q1

**MARKING CODE: PC3**

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