

CMLT4413

**SURFACE MOUNT SILICON
DUAL, COMPLEMENTARY
TRANSISTOR**



SOT-563 CASE



www.centrasemi.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: ($T_A=25^{\circ}\text{C}$)

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Power Dissipation (Note 1)
Power Dissipation (Note 2)
Power Dissipation (Note 3)
Operating and Storage Junction Temperature
Thermal Resistance

SYMBOL	NPN (Q1)	PNP (Q2)	UNITS
V_{CB0}	60	40	V
V_{CEO}	40	40	V
V_{EBO}	6.0	5.0	V
I_C	600		mA
P_D	350		mW
P_D	300		mW
P_D	150		mW
T_J, T_{stg}	-65 to +150		$^{\circ}\text{C}$
Θ_{JA}	357		$^{\circ}\text{C/W}$

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

SYMBOL	TEST CONDITIONS	NPN (Q1)		PNP (Q2)		UNITS
		MIN	MAX	MIN	MAX	
I_{CEV}	$V_{CE}=35\text{V}, V_{EB}=0.4\text{V}$	-	0.1	-	0.1	μA
I_{BEV}	$V_{CE}=35\text{V}, V_{EB}=0.4\text{V}$	-	0.1	-	0.1	μA
BV_{CB0}	$I_C=100\mu\text{A}$	60	-	40	-	V
BV_{CEO}	$I_C=1.0\text{mA}$	40	-	40	-	V
BV_{EBO}	$I_E=100\mu\text{A}$	6.0	-	5.0	-	V
$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	-	0.40	-	0.40	V
$V_{CE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	0.75	-	0.75	V
$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.75	0.95	0.75	0.95	V
$V_{BE(SAT)}$	$I_C=500\text{mA}, I_B=50\text{mA}$	-	1.2	-	1.3	V
h_{FE}	$V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$	20	-	30	-	
h_{FE}	$V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$	40	-	60	-	
h_{FE}	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	80	-	100	-	
h_{FE}	$V_{CE}=1.0\text{V}, I_C=150\text{mA}$	100	300	-	-	
h_{FE}	$V_{CE}=2.0\text{V}, I_C=150\text{mA}$	-	-	100	300	
h_{FE}	$V_{CE}=2.0\text{V}, I_C=500\text{mA}$	40	-	20	-	
f_T	$V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$	250	-	200	-	MHz
C_{ob}	$V_{CB}=5.0\text{V}, I_E=0, f=1.0\text{MHz}$	-	6.5	-	8.5	pF
C_{ib}	$V_{BE}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$	-	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

R3 (29-June 2015)

CMLT4413

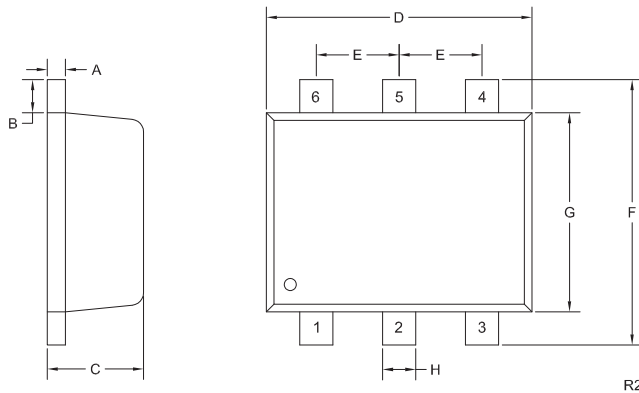
**SURFACE MOUNT SILICON
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$)

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

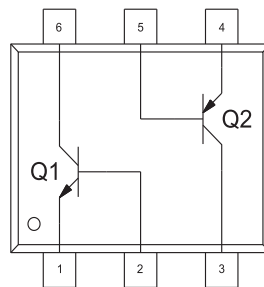
SOT-563 CASE - MECHANICAL OUTLINE



SYMBOL	INCHES		MILLIMETERS	
	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

R3 (29-June 2015)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

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