



CMLT4413

**SURFACE MOUNT
COMPLEMENTARY NPN/PNP
SILICON TRANSISTOR**

PICOmini™



SOT-563 CASE

Central™
Semiconductor Corp.

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 PICOmini™ 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_{CBO}	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: ($T_A=25^\circ\text{C}$)

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_{CBO}	$I_C=100\mu\text{A}$	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 4.0 mm²
 (2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0 mm²
 (3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4 mm²

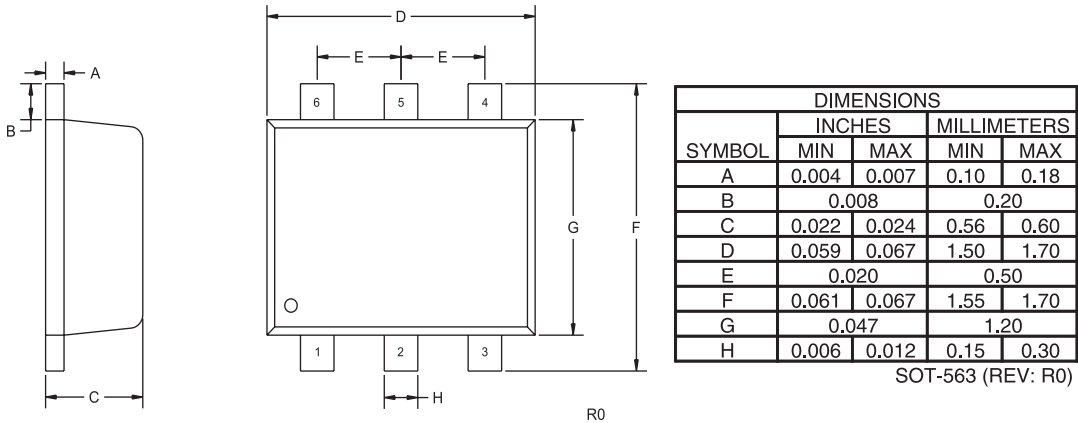
R0 (27-May 2009)

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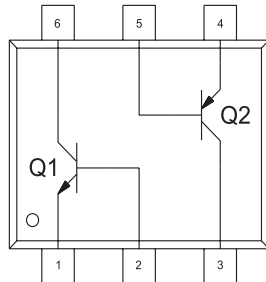
ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$)

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



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