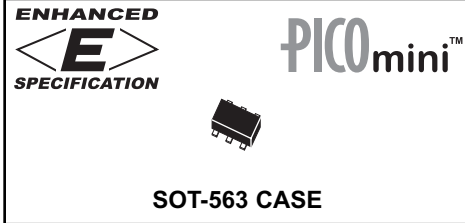




CMLT3904E CMLT3904EG* NPN
 CMLT3906E CMLT3906EG* PNP
 CMLT3946E CMLT3946EG* NPN/PNP

**ENHANCED SPECIFICATION
 COMPLEMENTARY PICOmini™
 SILICON TRANSISTORS**



Central™

Semiconductor Corp.

DESCRIPTION:

These CENTRAL SEMICONDUCTOR devices are combinations of dual, enhanced specification transistors in a space saving SOT-563 package, designed for small signal general purpose amplifier and switching applications.

MARKING CODES:	CMLT3904E:	L04
	CMLT3906E:	L06
	CMLT3946E:	L46
	CMLT3904EG*:	C4G
	CMLT3906EG*:	C6G
	CMLT3946EG*:	46G

* Device is **Halogen Free** by design

ENHANCED SPECIFICATIONS:

- ◆ V_{CB0} from 40V MIN to 60V MIN (PNP)
- ◆ V_{EB0} from 5.0V MIN to 6.0V MIN (PNP)
- ◆ h_{FE} from 60 MIN to 70 MIN (NPN/PNP)

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

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

- ◆ $V_{CE(SAT)}$ from 0.3V MAX to 0.2V MAX (NPN)
from 0.4V MAX to 0.2V MAX (PNP)

SYMBOL		UNITS
V_{CB0}	60	V
V_{CEO}	40	V
V_{EB0}	6.0	V
I_C	200	mA
P_D	350	mW
P_D	300	mW
P_D	150	mW
T_J, T_{stg}	-65 to +150	°C
Θ_{JA}	357	°C/W

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

SYMBOL	TEST CONDITIONS	NPN		PNP		UNITS
		MIN	TYP	TYP	MAX	
I_{CEV}	$V_{CE}=30V, V_{EB}=3.0V$	-	-	-	50	nA
◆ BV_{CB0}	$I_C=10\mu A$	60	115	90	-	V
BV_{CEO}	$I_C=1.0mA$	40	60	55	-	V
◆ BV_{EB0}	$I_E=10\mu A$	6.0	7.5	7.9	-	V
◆ $V_{CE(SAT)}$	$I_C=10mA, I_B=1.0mA$	-	0.057	0.050	0.100	V
◆ $V_{CE(SAT)}$	$I_C=50mA, I_B=5.0mA$	-	0.100	0.100	0.200	V
$V_{BE(SAT)}$	$I_C=10mA, I_B=1.0mA$	0.65	0.75	0.75	0.85	V
$V_{BE(SAT)}$	$I_C=50mA, I_B=5.0mA$	-	0.85	0.85	0.95	V
◆ h_{FE}	$V_{CE}=1.0V, I_C=0.1mA$	90	240	130	-	
◆ h_{FE}	$V_{CE}=1.0V, I_C=1.0mA$	100	235	150	-	
h_{FE}	$V_{CE}=1.0V, I_C=10mA$	100	215	150	300	
◆ h_{FE}	$V_{CE}=1.0V, I_C=50mA$	70	110	120	-	
h_{FE}	$V_{CE}=1.0V, I_C=100mA$	30	50	55	-	

◆ Enhanced Specification

- 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

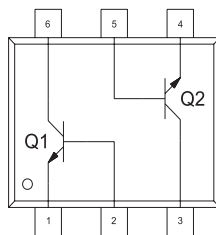
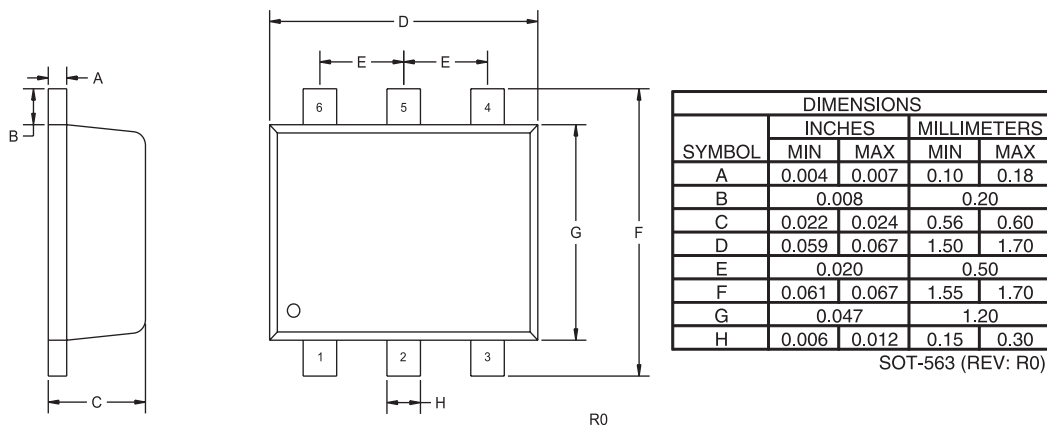
R3 (23-January 2009)

**ENHANCED SPECIFICATION
 COMPLEMENTARY PICOMini™
 SILICON TRANSISTORS**

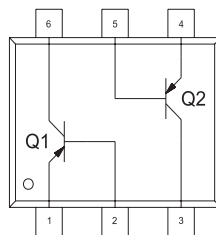
ELECTRICAL CHARACTERISTICS PER TRANSISTOR - Continued: ($T_A=25^\circ\text{C}$)

SYMBOL	TEST CONDITIONS	MIN	MAX	UNITS
f_T	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	300		MHz
C_{ob}	$V_{CB}=5.0\text{V}$, $I_E=0$, $f=1.0\text{MHz}$		4.0	pF
C_{ib}	$V_{BE}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		8.0	pF
h_{ie}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	1.0	12	$k\Omega$
h_{re}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	0.1	10	$\times 10^{-4}$
h_{fe}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	100	400	
h_{oe}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	1.0	60	μS
NF	$V_{CE}=5.0\text{V}$, $I_C=100\mu\text{A}$, $R_S=1.0k\Omega$ $f=10\text{Hz}$ to 15.7kHz		4.0	dB
t_d	$V_{CC}=3.0\text{V}$, $V_{BE}=0.5\text{V}$, $I_C=10\text{mA}$, $I_{B1}=1.0\text{mA}$		35	ns
t_r	$V_{CC}=3.0\text{V}$, $V_{BE}=0.5\text{V}$, $I_C=10\text{mA}$, $I_{B1}=1.0\text{mA}$		35	ns
t_s	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		200	ns
t_f	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		50	ns

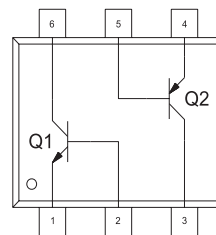
SOT-563 CASE - MECHANICAL OUTLINE



**CMLT3904E
 CMLT3904EG***



**CMLT3906E
 CMLT3906EG***



**CMLT3946E
 CMLT3946EG***

LEAD CODE:

- 1) EMITTER Q1
- 2) BASE Q1
- 3) COLLECTOR Q2
- 4) EMITTER Q2
- 5) BASE Q2
- 6) COLLECTOR Q1

* Device is *Halogen Free* by design