

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

**ENHANCED SPECIFICATION
 SURFACE MOUNT SILICON
 COMPLEMENTARY TRANSISTORS**



SOT-563 CASE

* Device is **Halogen Free** by design

ENHANCED SPECIFICATIONS:

- ◆ V_{CBO} from 40V MIN to 60V MIN (PNP)
- ◆ V_{EBO} from 5.0V MIN to 6.0V MIN (PNP)

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

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

SYMBOL	TEST CONDITIONS	NPN		PNP		UNITS
		MIN	TYP	TYP	MAX	
I_{CEV}	$V_{CE}=30V, V_{EB}=3.0V$	-	-	-	50	nA
◆ V_{CBO}	$I_C=10\mu A$	60	115	90	-	V
V_{CEO}	$I_C=1.0mA$	40	60	55	-	V
◆ V_{EBO}	$I_E=10\mu A$	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 4.0mm²
 2) FR-4 Epoxy PC Board with copper mounting pad area of 4.0mm²
 3) FR-4 Epoxy PC Board with copper mounting pad area of 1.4mm²



www.centrasemi.com

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

- ◆ h_{FE} from 60 MIN to 70 MIN (NPN/PNP)
- ◆ $V_{CE(SAT)}$ from 0.3V MAX to 0.2V MAX (NPN)
 from 0.4V MAX to 0.2V MAX (PNP)

SYMBOL		UNITS
V_{CBO}	60	V
V_{CEO}	40	V
V_{EBO}	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	$^{\circ}\text{C}$
θ_{JA}	357	$^{\circ}\text{C/W}$

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

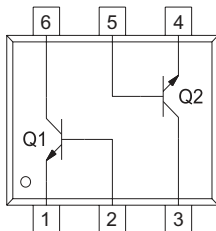
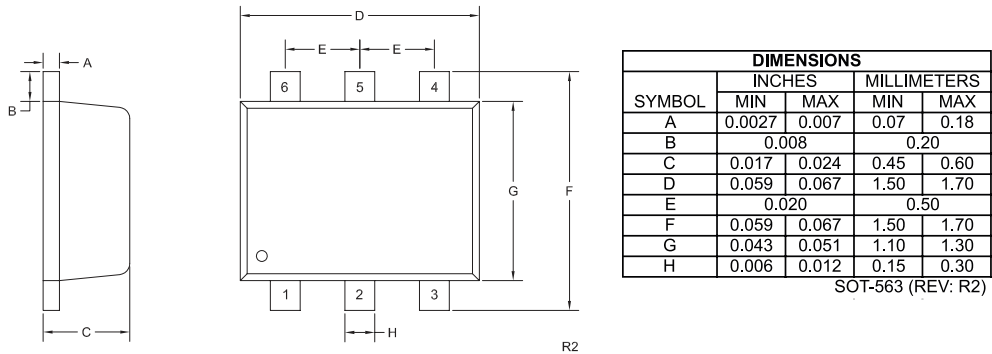
**ENHANCED SPECIFICATION
SURFACE MOUNT SILICON
COMPLEMENTARY TRANSISTORS**



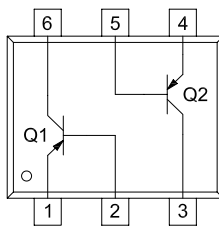
ELECTRICAL CHARACTERISTICS PER TRANSISTOR - Continued: ($T_A=25^\circ\text{C}$)

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}	$V_{BE}=0.5\text{V}$, $I_C=0$, $f=1.0\text{MHz}$		12	pF
h_{ie}	$V_{CE}=10\text{V}$, $I_C=1.0\text{mA}$, $f=1.0\text{kHz}$	1.0	12	k Ω
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	$V_{CE}=5.0\text{V}$, $I_C=100\mu\text{A}$, $R_S=1.0\text{k}\Omega$ $f=10\text{Hz}$ 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	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		170	ns
t_f	$V_{CC}=3.0\text{V}$, $I_C=10\text{mA}$, $I_{B1}=I_{B2}=1.0\text{mA}$		80	ns

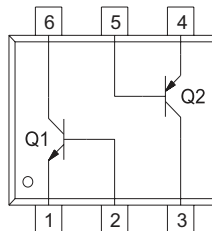
SOT-563 CASE - MECHANICAL OUTLINE



**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

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

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

Worldwide Distributors:
www.centrasemi.com/wwdistributors

For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: www.centrasemi.com/terms