CMLT3904E NPN
CMLT3906E PNP
CMLT3946E NPN/PNP

ENHANCED SPECIFICATION
COMPLEMENTARY PICOmini™
SILICON TRANSISTORS

ENHANCED E SPECIFICATION

PICOmini™

SOT-563 CASE

MARKING CODES: **CMLT3904E: L04**
CMLT3906E: L06
CMLT3946E: L46

Central™
Semiconductor Corp.

DESCRIPTION:

The Central Semiconductor CMLT3904E (two single NPN), CMLT3906E (two single PNP), and CMLT3946E (one each NPN and PNP complementary) are combinations of enhanced specification transistors in a space saving SOT-563 package, designed for small signal general purpose amplifier and switching applications.

ENHANCED SPECIFICATIONS:

- BV_{CBO} from 40V min to 60V min. (PNP)
- BV_{EBO} from 5.0V min to 6.0V min. (PNP)
- $V_{CE(SAT)}$ from 0.3V max to 0.2V max. (NPN), from 0.4V max to 0.2V max. (PNP)
- h_{FE} from 60 min to 70 min. (NPN/PNP)

	MAXIMUM RATINGS: (T_A=25°C)	**SYMBOL**		**UNITS**
♦	**Collector-Base Voltage**	**V_{CBO}**	**60**	**V**
	Collector-Emitter Voltage	V_{CEO}	40	V
♦	**Emitter-Base Voltage**	**V_{EBO}**	**6.0**	**V**
	Collector Current	I_C	200	mA
	Power Dissipation	P_D	350	mW (Note 1)
	Power Dissipation	P_D	300	mW (Note 2)
	Power Dissipation	P_D	150	mW (Note 3)
	Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150	°C
	Thermal Resistance	Θ_{JA}	357	°C/W

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

				NPN	**PNP**		
	SYMBOL	**TEST CONDITIONS**	**MIN**	**TYP**	**TYP**	**MAX**	**UNITS**
	I_{CEV}	V_{CE}=30V, V_{EB}=3.0V	-	-	-	50	nA
♦	**BV_{CBO}**	**I_C=10µA**	**60**	**115**	**90**	**-**	**V**
	BV_{CEO}	I_C=1.0mA	40	60	55	-	V
♦	**BV_{EBO}**	**I_E=10µA**	**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**		

♦ Enhanced specification.

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

R2 (13-December 2003)

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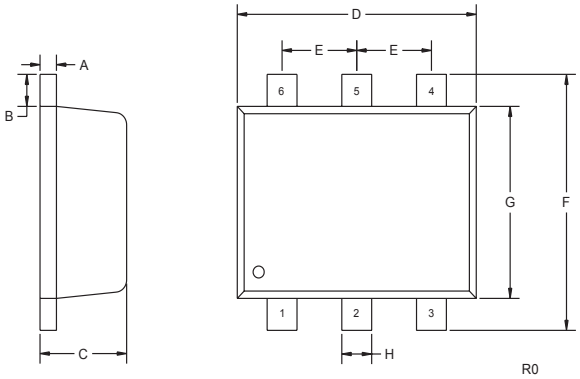
ENHANCED SPECIFICATION
COMPLEMENTARY PICOmini™ SILICON TRANSISTORS

ELECTRICAL CHARACTERISTICS (continued)

SYMBOL	TEST CONDITIONS	MIN	NPN TYP	PNP TYP	MAX	UNITS
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		
f_T	V_{CE}=20V, I_C=10mA, f=100MHz	300				MHz
C_{ob}	V_{CB}=5.0V, I_E=0, f=1.0MHz				4.0	pF
C_{ib}	V_{BE}=0.5V, I_C=0, f=1.0MHz				8.0	pF
h_{ie}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	1.0			12	kΩ
h_{re}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	0.1			10	$X10^{-4}$
h_{fe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	100			400	
h_{oe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	1.0			60	μmhos
NF	V_{CE}=5.0V,I_C=100μA, R_S =1.0KΩ, f=10Hz to 15.7kHz				4.0	dB
t_d	V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA				35	ns
t_r	V_{CC}=3.0V, V_{BE}=0.5V, I_C=10mA, I_{B1}=1.0mA				35	ns
t_s	V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA				200	ns
t_f	V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA				50	ns

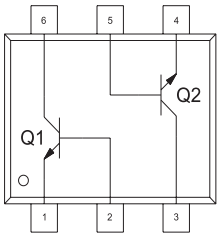
♦ Enhanced specification.

SOT-563 - MECHANICAL OUTLINE

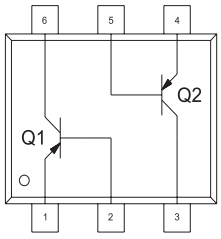


DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.004	0.007	0.10	0.18
B	0.008		0.20	
C	0.022	0.024	0.56	0.60
D	0.059	0.067	1.50	1.70
E	0.020		0.50	
F	0.061	0.067	1.55	1.70
G	0.047		1.20	
H	0.006	0.012	0.15	0.30

SOT-563 (REV: R0)



CMLT3904E
MARKING CODE: L04



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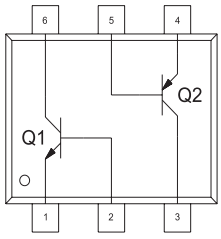
MARKING CODE: L06



CMLT3946E
MARKING CODE: L46

LEAD CODE:
1) EMITTER Q1
2) BASE Q1
3) COLLECTOR Q2
4) EMITTER Q2
5) BASE Q2
6) COLLECTOR Q1

R2 (13-December 2003)