



MC4558

WIDE BANDWIDTH DUAL BIPOLAR OPERATIONAL AMPLIFIER

- INTERNALLY COMPENSATED
- SHORT-CIRCUIT PROTECTION
- GAIN AND PHASE MATCH BETWEEN AMPLIFIER
- LOW POWER CONSUMPTION
- PIN TO PIN COMPATIBLE WITH MC1458/LM358
- GAIN BANDWIDTH PRODUCT (at 100kHz) 5.5MHz

DESCRIPTION

The MC4558 is a high performance monolithic dual operational amplifier.

The circuit combines all the outstanding features of the MC1458 and, in addition possesses three times the unity gain bandwidth of the industry standard.

ORDER CODE

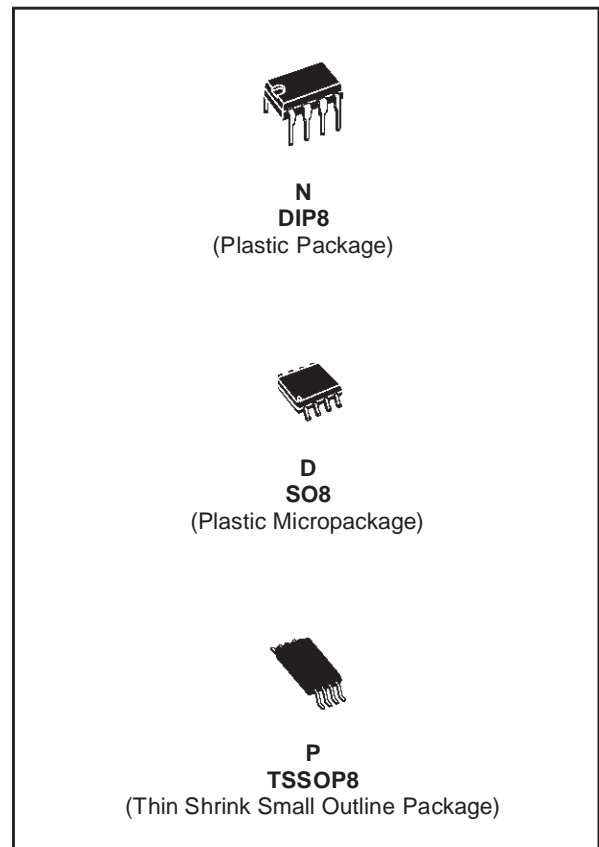
Part Number	Temperature Range	Package		
		N	D	P
MC4558C	0°C, +70°C	•	•	•
MC4558I	-40°C, +105°C	•	•	•

Example : MC4558CN

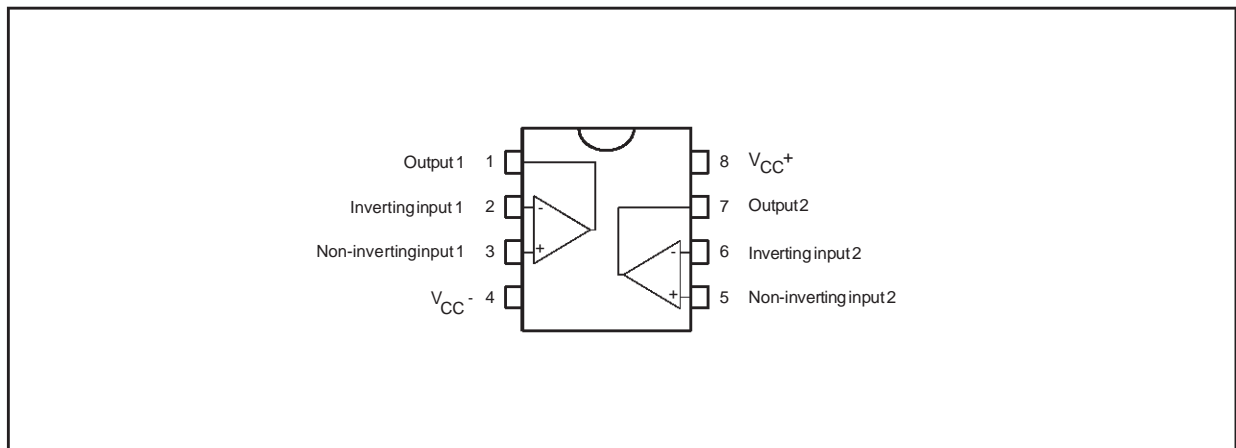
N = Dual in Line Package (DIP)

D = Small Outline Package (SO) - also available in Tape & Reel (DT)

P = Thin Shrink Small Outline Package (TSSOP) - only available in Tape & Reel (PT)

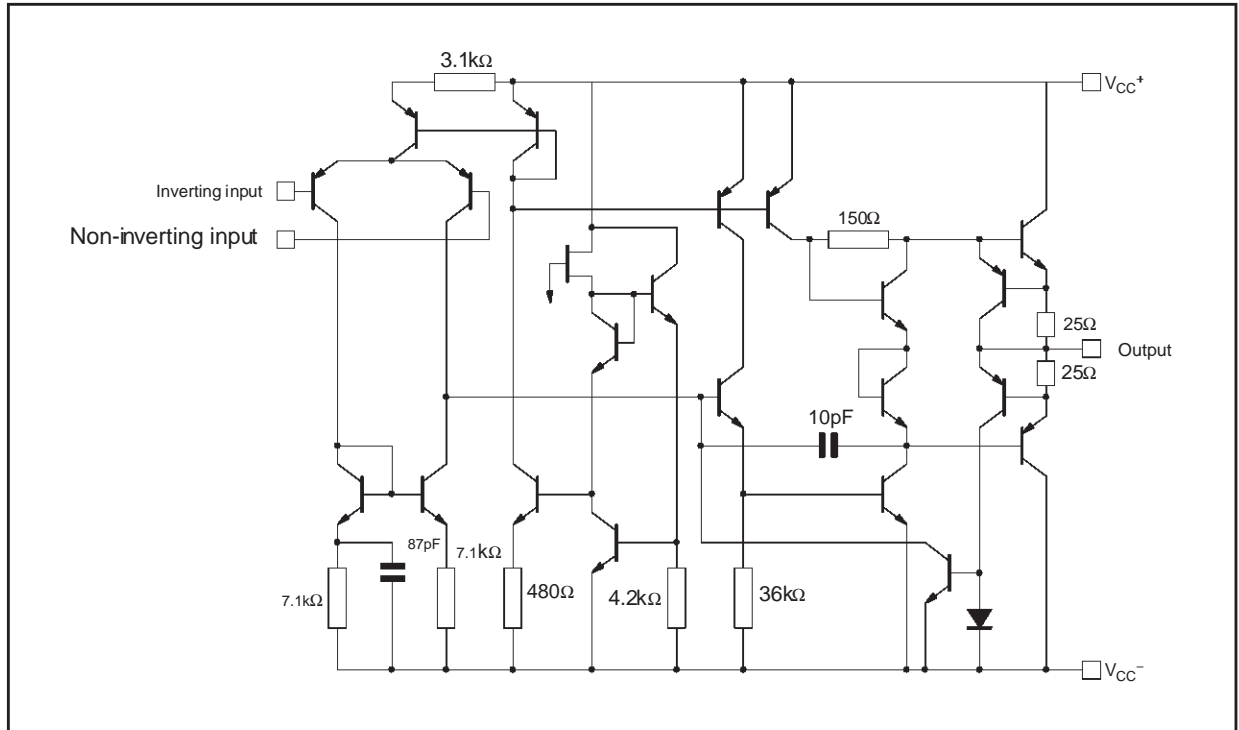


PIN CONNECTIONS (top view)



MC4558

SCHEMATIC DIAGRAM (1/2 MC4558)



ABSOLUTE MAXIMUM RATINGS

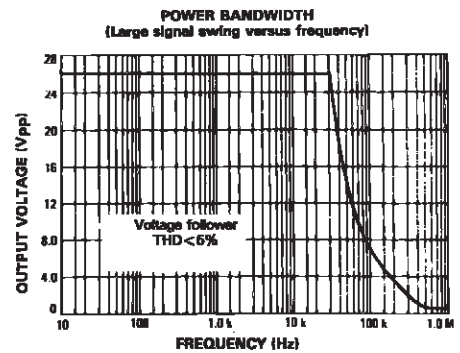
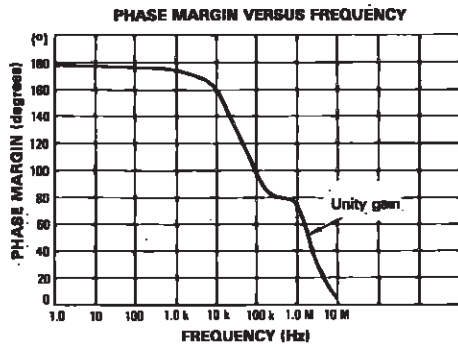
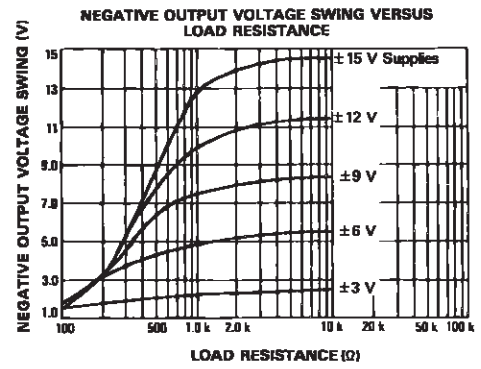
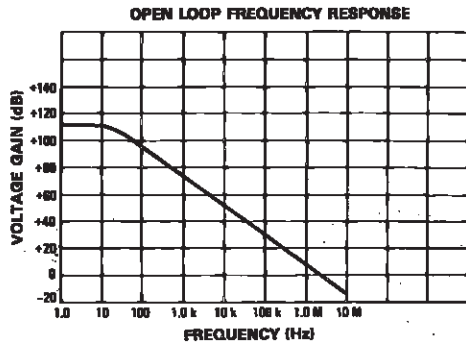
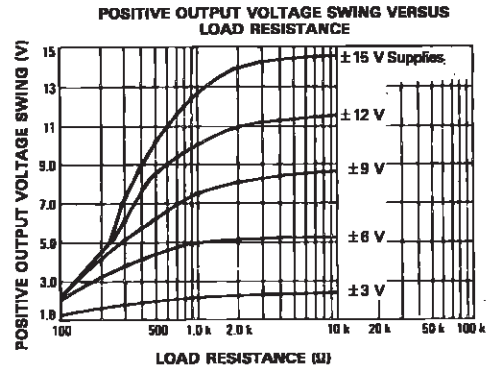
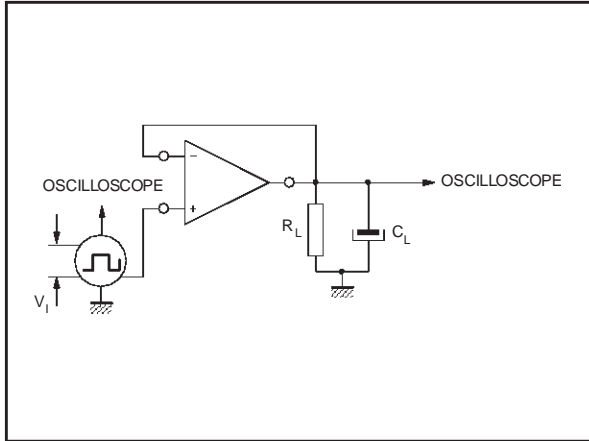
Symbol	Parameter	MC4558I	MC4558C	Unit
V_{CC}	Supply Voltage	±22		V
V_i	Input Voltage	±30		V
V_{id}	Differential Input Voltage	±15		V
P_{tot}	Power Dissipation ¹⁾	680		mW
	Output Short Circuit Duration	Infinite		
T_{oper}	Operating Free-Air Temperature Range	-40 to +105	0 to +70	°C
T_{stg}	Storage Temperature	-65 to +150		°C

1. Power dissipation must be considered to ensure maximum junction temperature (T_j) is not exceeded.

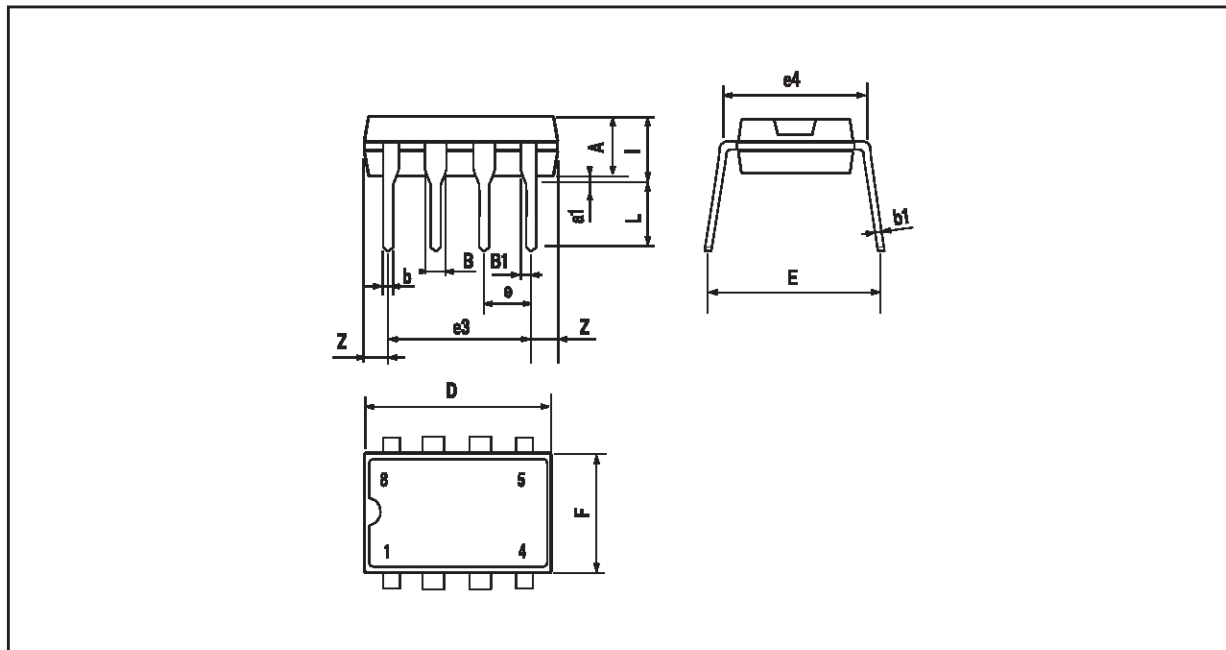
ELECTRICAL CHARACTERISTICS $V_{CC} = \pm 15V$, $T_{amb} = 25^{\circ}C$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{io}	Input Offset Voltage ($R_s \leq 10k\Omega$) $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		1	5 6	mV
I_{io}	Input Offset Current $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		20	100 200	nA
I_{ib}	Input Bias Current $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		50	400 500	nA
A_{vd}	Large Signal Voltage Gain ($R_L = 2k\Omega$, $V_o = \pm 10V$) $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	50 25	200		V/mV
SVR	Supply Voltage Rejection Ratio ($R_s \leq 10k\Omega$) $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	77 77	90		dB
I_{CC}	Supply Current, all amplifiers, no load $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$		2.3	4.5 6	mA
V_{icm}	Input Common Mode Voltage Range $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	± 12 ± 12			V
CMR	Common-mode Rejection Ratio ($R_s \leq 10k\Omega$) $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	70 70	90		dB
I_{os}	Output Short Circuit Current	10	20	40	mA
V_o	Output Voltage Swing $T_{amb} = +25^{\circ}C$ $T_{min.} \leq T_{amb} \leq T_{max.}$	± 12 ± 10 ± 12 ± 10	± 14 ± 13		V
SR	Slew Rate ($V_i = \pm 10$, $R_L = 2k\Omega$, $C_L = 100pF$, $T_{amb} = 25^{\circ}C$, unity gain)	1.5	2.2		V/ μs
t_r	Rise Time ($V_i = \pm 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, $T_{amb} = 25^{\circ}C$, unity gain)		0.3		μs
K_{OV}	Overshoot ($V_i = \pm 20mV$, $R_L = 2k\Omega$, $C_L = 100pF$, $T_{amb} = 25^{\circ}C$, unity gain)		15		%
R_i	Input Resistance	0.3	2		M Ω
C_i	Input Capacitance		1.4		pF
R_o	Output Resistance		75		Ω
B	Unity Gain Bandwidth		2.8		MHz
GBP	Gain Bandwidth Product ($V_i = 10mV$, $R_L = 2k\Omega$, $C_L = 100pF$, $f = 100kHz$, $T_{amb} = 25^{\circ}C$)		5.5		MHz
THD	Total Harmonic Distortion ($f = 1kHz$, $A_v = 20dB$, $R_L = 2k\Omega$, $V_o = 2V_{pp}$, $C_L = 100pF$, $T_{amb} = 25^{\circ}C$)		0.008		%
e_n	Equivalent Input Noise Voltage ($R_s = 100\Omega$, $f = 1kHz$)		12		$\frac{nV}{\sqrt{Hz}}$
V_{O1}/V_{O2}	Channel Separation		120		dB

TRANSIENT RESPONSE TEST CIRCUIT



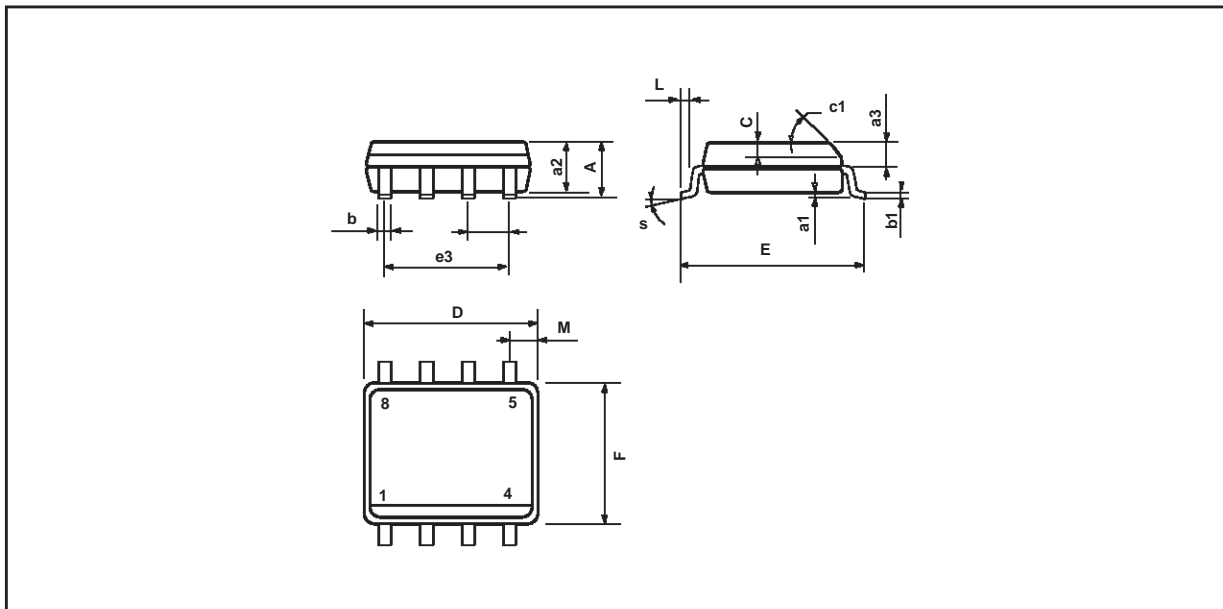
PACKAGE MECHANICAL DATA
8 PINS - PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.32			0.131	
a1	0.51			0.020		
B	1.15		1.65	0.045		0.065
b	0.356		0.55	0.014		0.022
b1	0.204		0.304	0.008		0.012
D			10.92			0.430
E	7.95		9.75	0.313		0.384
e		2.54			0.100	
e3		7.62			0.300	
e4		7.62			0.300	
F			6.6			0.260
i			5.08			0.200
L	3.18		3.81	0.125		0.150
Z			1.52			0.060

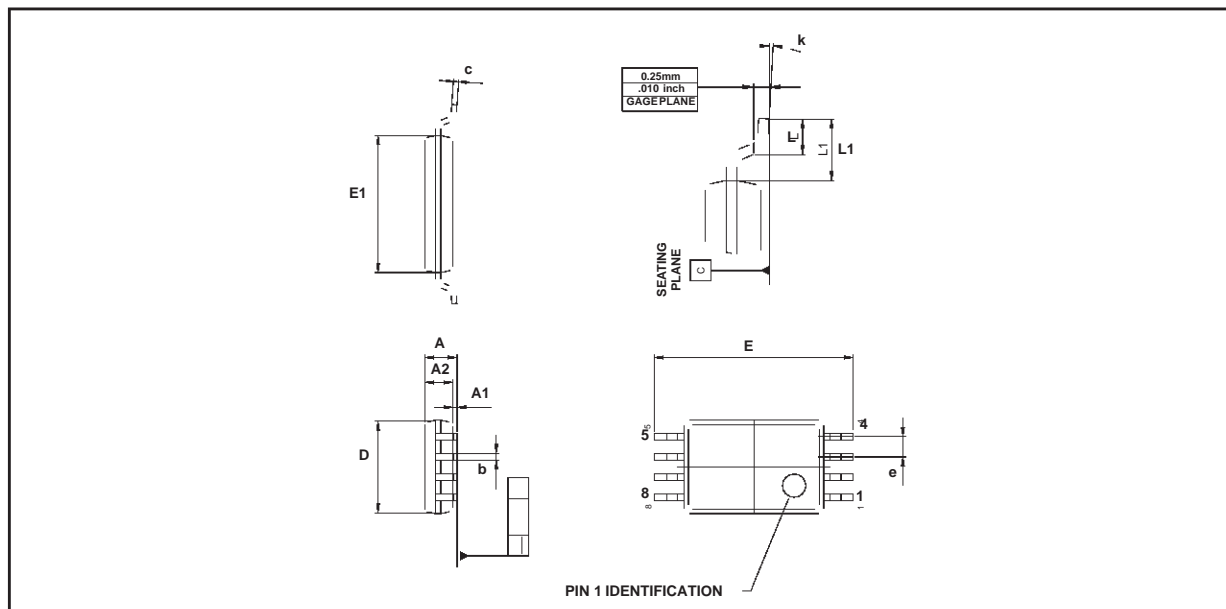
MC4558

PACKAGE MECHANICAL DATA 8 PINS - PLASTIC MICROPACKAGE (SO)



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
a3	0.65		0.85	0.026		0.033
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.020
c1	45° (typ.)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.150		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max.)					

PACKAGE MECHANICAL DATA
8 PINS - THIN SHRINK SMALL OUTLINE PACKAGE



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.20			0.05
A1	0.05		0.15	0.01		0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
b	0.19		0.30	0.007		0.15
c	0.09		0.20	0.003		0.012
D	2.90	3.00	3.10	0.114	0.118	0.122
E		6.40			0.252	
E1	4.30	4.40	4.50	0.169	0.173	0.177
e		0.65			0.025	
k	0°		8°	0°		8°
l	0.50	0.60	0.75	0.09	0.0236	0.030
L	0.45	0.600	0.75	0.018	0.024	0.030
L1		1.000			0.039	

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