

6427525 N E C ELECTRONICS INC

05E 22818 D

BIPOLAR ANALOG INTEGRATED CIRCUIT **μ PC1265G**

T-77-05-05

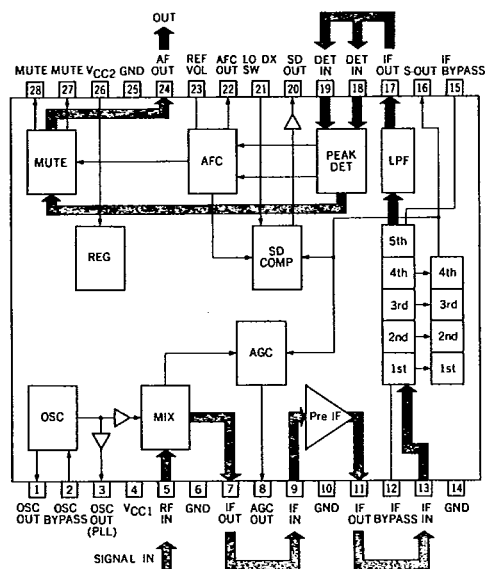
ONE CHIP FM TUNER**DESCRIPTION**

The μ PC1265G is a monolithic integrated circuit used in FM tuner for car radio or car stereo.

The system consists of a mixer, an oscillator, an oscillator buffer, a pre amplifier, a five-stage differential amplifier and a differential peak detector, including AGC for RF, muting circuit, signal meter circuit, AFC for local OSC, and stop function (stations detector) for digital tuning system (DTS) as additional circuits.

FEATURES

- One chip FM tuner (FM front-end + IF system).
- High sensitivity.
- Built in double balanced mixer (D.B.M).
- Built in differential peak detector.
- Few external parts.
- Occupation of minimum area in P.W. board.

BLOCK DIAGRAM (Top View)

6427525 N E C ELECTRONICS INC

 μ PC1265G
05E 22819 D

T-77-05-05

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

DC Supply Voltage	V_{CC}	12	V
Input Voltage	V_I	3	V_{p-p}
Package Dissipation	P_D	470 ($T_a = +75^\circ\text{C}$)	mW
Operating Temperature	T_{opt}	-30 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +125	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITION ($T_a = 25^\circ\text{C}$)

DC Supply Voltage Range	V_{CC}	7.5 to 10 V
-------------------------	----------	-------------

ELECTRICAL CHARACTERISTICS

($T_a = 25^\circ\text{C}$, $V_{CC} = 8.5\text{ V}$, $f = 83\text{ MHz}$, $f_{mod} = 400\text{ Hz}$, $\Delta f = \pm 22.5\text{ kHz}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
Circuit Current	I_{CC}		31	42	mA	No Signal
Limiting Sensitivity	$V_I(\text{limit})$	33	43	53	dB μ V	$V_O = V_{OAF} - 3\text{ dB}$
Signal-to-Noise Ratio	S/N_1	25	30		dB	$V_I = 45\text{ dB}\mu\text{V}$
	S/N_2	58	65		dB	$V_I = 100\text{ dB}\mu\text{V}$
Detector Output Voltage	V_{OAF}	90	140	185	mV _{r.m.s.}	$V_I = 100\text{ dB}\mu\text{V}$
Harmonic Distortion	THD		0.2	1.2	%	$V_I = 100\text{ dB}\mu\text{V}$
AM Rejection	AMR	28	40		dB	$V_I = 100\text{ dB}\mu\text{V}$, AM: 400 Hz, 30 %
Signal Meter Output Voltage	V_{S1}		0.1	0.5	V	$V_I = 40\text{ dB}\mu\text{V}$
	V_{S2}	0.5	2.5	4.2	V	$V_I = 70\text{ dB}\mu\text{V}$
	V_{S3}	2.8	5.0	6.5	V	$V_I = 100\text{ dB}\mu\text{V}$
AGC Output Voltage	V_{AGC1}	7.5			V	$V_I = 50\text{ dB}\mu\text{V}$
	V_{AGC2}			0.5	V	$V_I = 120\text{ dB}\mu\text{V}$
SD Output Voltage	V_{SD1}	6.5			V	$V_I = 0\text{ dB}\mu\text{V}$
	V_{SD2}			0.5	V	$V_I = 100\text{ dB}\mu\text{V}$
Stop Signal Band-width	BW _{SD}	50	85	130	kHz	$V_I = 100\text{ dB}\mu\text{V}$

5

μ PC1265G

6427525 N E C ELECTRONICS INC

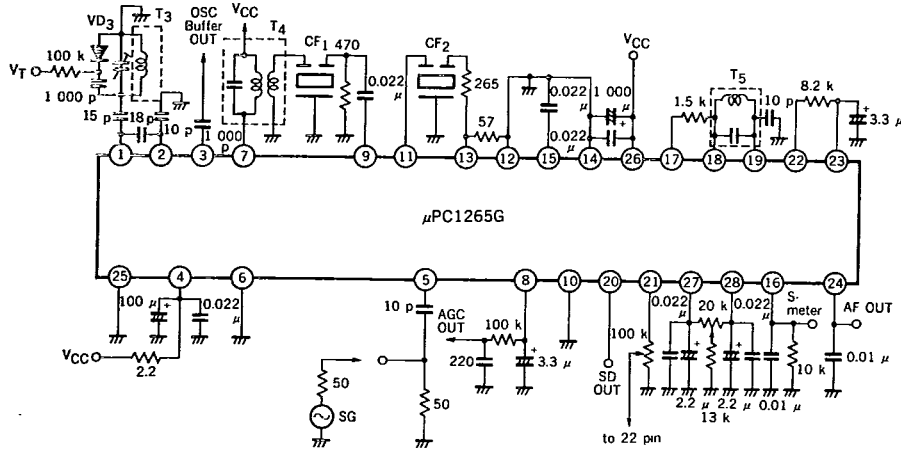
05E 22820 D

TEST CIRCUIT

T-77-05-05

T₃ : E525HNS-100084 (TOKO) T₄ : 119AC-13695A (TOKO) T₅ : 119ACS-14891Z (TOKO)
 CF₁, CF₂ : SFE10.7MS2 (MURATA)

Unit Resistor : Ω
 Capacitor : F



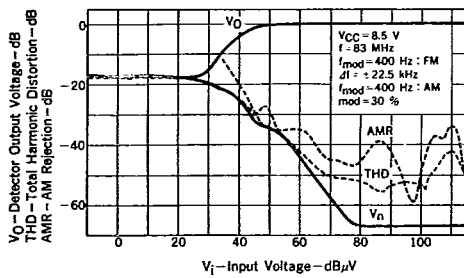
6427525 N E C ELECTRONICS INC

 μ PC1265G
05E 22821 D

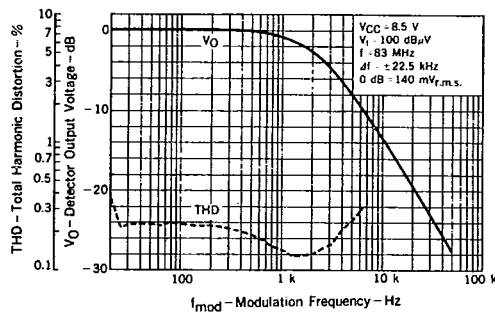
T-77-05-05

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

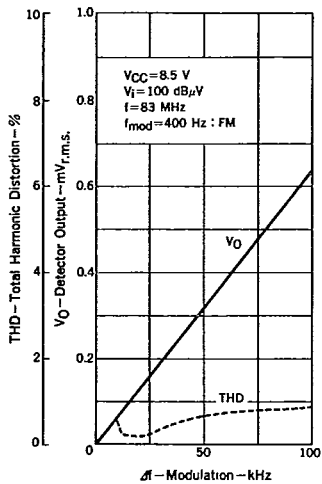
DETECTOR OUTPUT CHARACTERISTIC



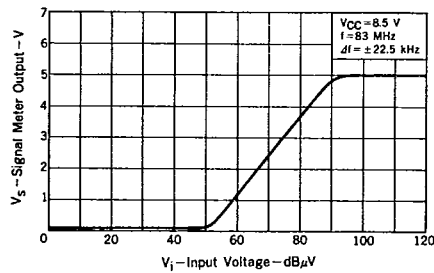
ELECTRICAL FIDELITY



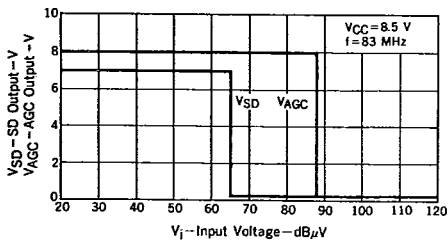
DETECTOR OUTPUT AND TOTAL HARMONIC DISTORTION vs. MODULATION



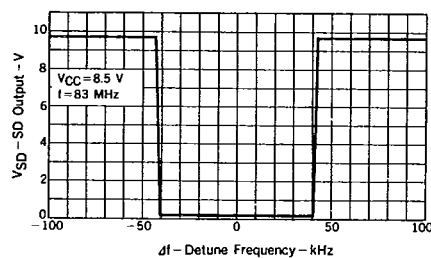
SIGNAL METER OUTPUT vs. INPUT VOLTAGE



AGC OUTPUT AND SD OUTPUT vs. INPUT VOLTAGE



ON CHANNEL BANDWIDTH



5

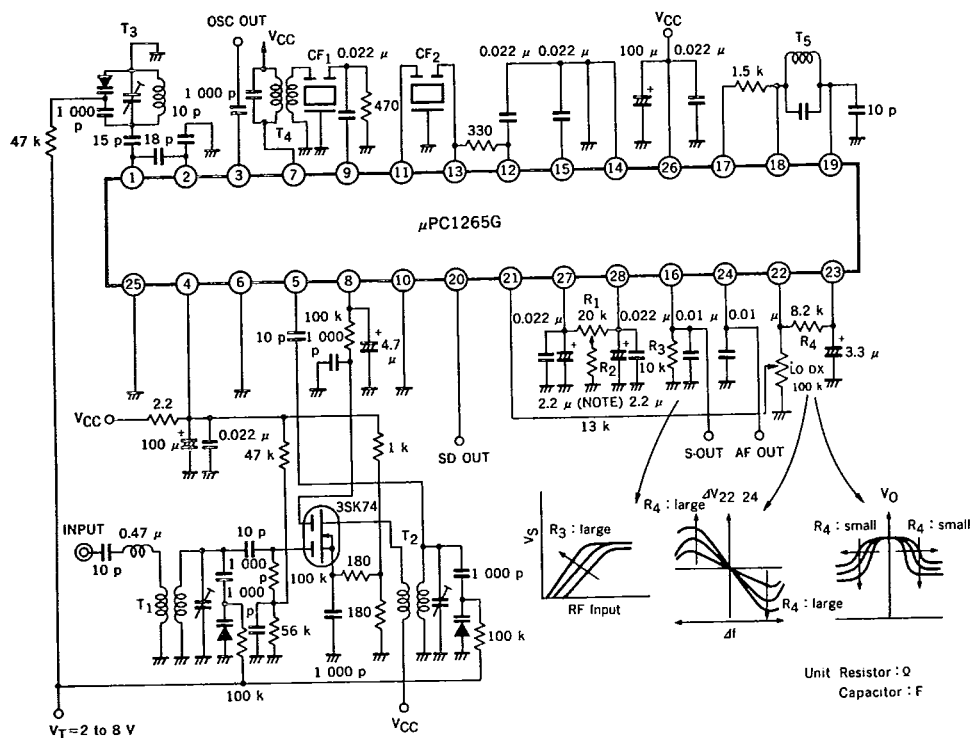
μPC1265G

6427525 N E C ELECTRONICS INC

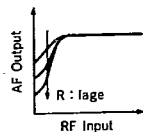
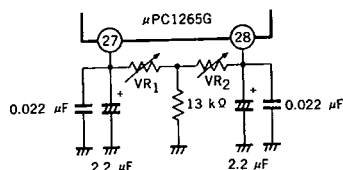
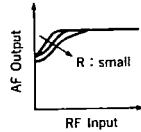
05E 22822 D

μPC1265G ADDITIONAL FUNCTION CHARACTERISTICS**T-77-05-05**

T₁, T₂ : E525HNS-200076 (TOKO) CF₁, CF₂ : SFE10.7MS2 (MURATA)
 T₃ : E525HNS-100084 (TOKO)
 T₄ : 119AC-13695A (TOKO)
 T₅ : 119ACS-14891Z (TOKO)



(NOTE) Limiting Characteristics

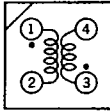
(1) VR₁ : Limiting Attenuation Setting(2) VR₂ : Limiting Sensitivity Setting

6427525 N E C ELECTRONICS INC

05E 22823 ^μPC1265G D

T-77-05-05

COIL DATA (TOKO INC.)

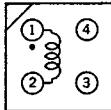
T₁, T₂ : RF Coil

MC-119

E525HNS-200076

①—② ③—④

3 1/4 T 1 1/4 T

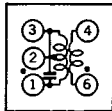
L ≈ 80 nH, Q_u > 110 (f = 100 MHz)T₃ : OSC Coil

MC-119

E525HNS-100084

①—②

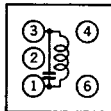
4 1/4 T

L ≈ 120 nH, Q_u > 110 (f = 100 MHz)T₄ : IFT Coil

119AC-13695A

①—③ ①—② ②—③ ⑥—④

14T 3T 11T 2T

f_T = 10.7 MHzQ_u > 77C_T = 47 pFT₅ : DET Coil

119ACS-14891Z

①—③

21T

C_T = 22 pFQ_u > 90

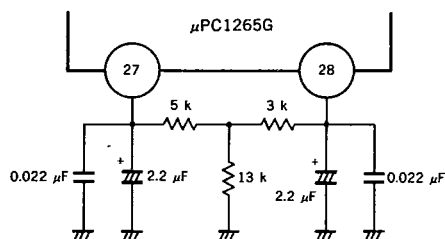
5

CERAMIC FILTER (MURATA)

CF₁, CF₂ : SFE10.7MS2

μPC1265G**6427525 N E C ELECTRONICS INC****05E 22824 D****OVERALL CHARACTERISTICS**(T_a = 25 °C, V_{CC} = 10 V, f = 83 MHz, f_{mod} = 400 Hz, Δf = ±22.5 kHz)**T-77-05-05**

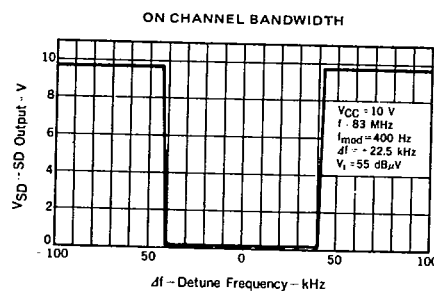
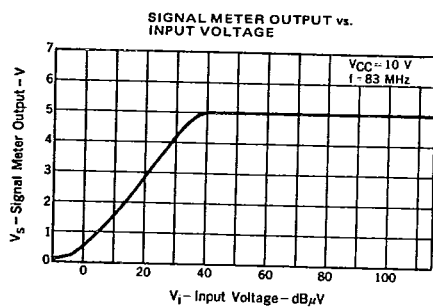
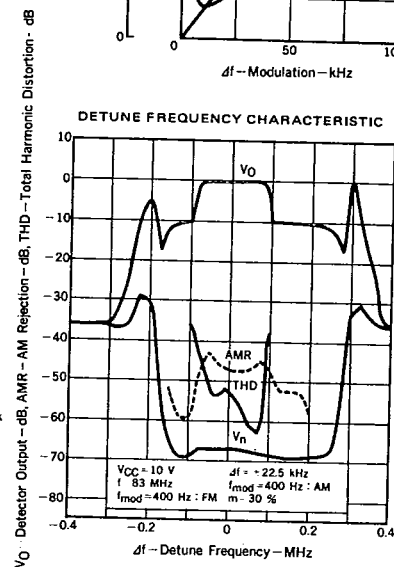
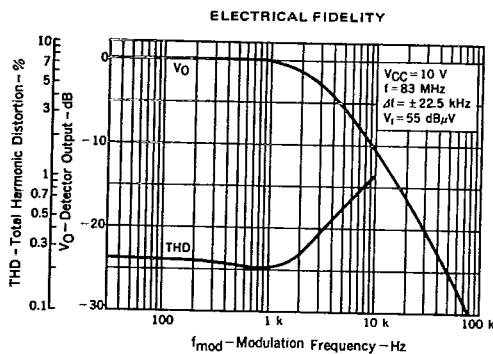
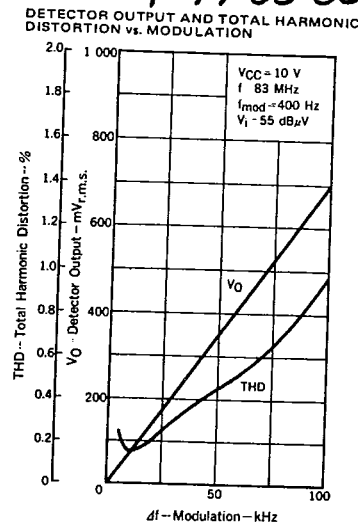
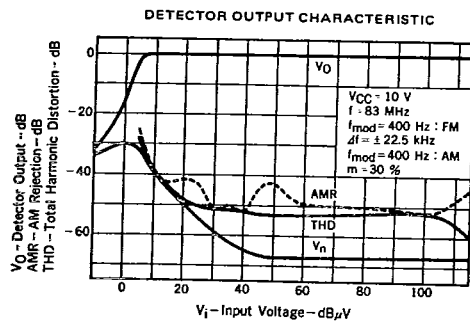
CHARACTERISTIC	SYMBOL	VALUE	UNIT	TEST CONDITION
Limiting Sensitivity	V _i (limit)	4	dBμV	V _o = V _{OAF} - 3 dB
Usable Sensitivity	US	5	dBμV	S/N = 30 dB
Det. Output Voltage	V _{OAF}	140	mV _{r.m.s.}	V _i = 55 dBμV
Signal-to-Noise Ratio	S/N	67	dB	V _i = 55 dBμV
Total Harmonic Distortion	THD ₁	0.23	%	V _i = 55 dBμV
	THD ₂	0.65	%	V _i = 55 dBμV, Δf = ±75 kHz
	THD ₃	0.13	%	V _i = 120 dBμV
AM Rejection	AMR	47	dB	V _i = 55 dBμV, AM: 400 Hz, 30 %
Signal Meter Output	V _{S1}	0.5	V	V _i = 0 dBμV
	V _{S2}	2.9	V	V _i = 20 dBμV
	V _{S3}	5	V	V _i = 100 dBμV
AGC Sensitivity	S _{AGC}	50	dBμV	V _{AGC} = 0.5 V _{CC}
SD Sensitivity	SS	15	dBμV	
SD Bandwidth	BW _{SD}	85	kHz	V _i = 55 dBμV
AFC Voltage	V _{AFC}	5.23	V	
AFC Sensitivity	S _{AFC}	7.9	mV/kHz	
OSC Buffer Output	V _{osc-out}	200	mV _{p-p}	
IF Rejection	IFR	> 127	dB	f = 76 MHz
Image Rejection	IMR	44	dB	f = 90 MHz

Limiting Sensitivity Setting Condition

6427525 N E C ELECTRONICS INC

 μ PC1265G
05E 22825 DTYPICAL ALLOVER CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

T-77-05-05



μ PC1265G

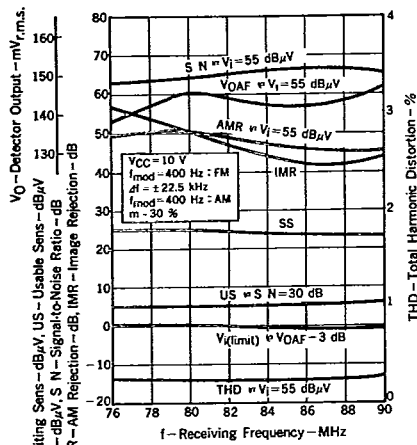
6427525 N E C ELECTRONICS INC

05E 22826

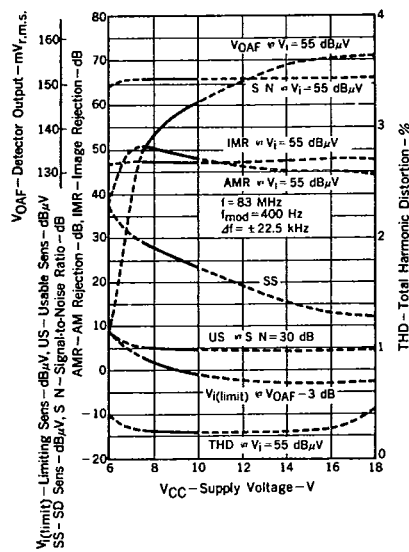
D

T-77-05-05

RECEIVING FREQUENCY CHARACTERISTICS



SUPPLY VOLTAGE CHARACTERISTICS

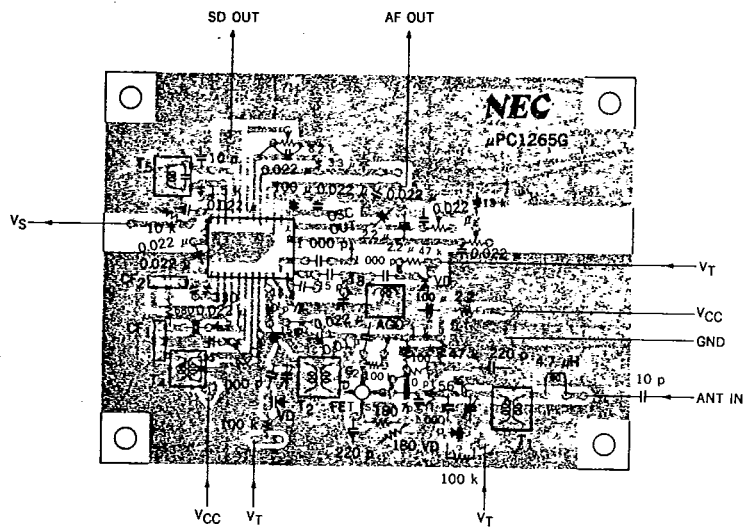


6427525 N E C ELECTRONICS INC

 μ PC1265G
05E 22827 D

PRINTED-CIRCUIT BOARD (Copper side)

T-77-05-05



T₁, T₂ : E525HNS-200076 (TOKO)
 T₃ : E525HNS-100084 (TOKO)
 T₄ : 119AC-13695A (TOKO)
 T₅ : 119ACS-14891Z (TOKO)
 CF₁, CF₂ : SFE10.7MS2 (MURATA)

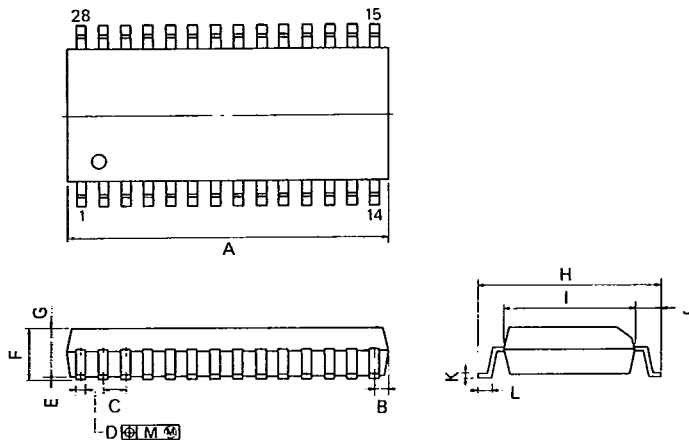
μ PC1265G

6427525 N E C ELECTRONICS INC

05E 22828 D

T-77-05-05

28PIN PLASTIC SOP (375 mil)



P28GM-50-375B

NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	18.07 MAX.	0.712 MAX.
B	0.78 MAX.	0.031 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	0.40 ± 0.08	0.016 ± 0.003
E	0.1 ± 0.1	0.004 ± 0.004
F	2.9 MAX.	0.115 MAX.
G	2.50	0.098
H	10.3 ± 0.3	0.406 ± 0.013
I	7.2	0.283
J	1.6	0.063
K	0.15 ± 0.08	0.006 ± 0.003
L	0.8 ± 0.2	0.031 ± 0.008
M	0.12	0.005