

### Product Features

Frequency: 50MHz ~ 1.5GHz

Gain : 17.7dB@1.4GHz

PdB Compression: 31.9dBm@1.4GHz

OIP3: 42.2dBm@1.4GHz

Psat: 33.8dBm@1.4GHz

Vdd=+5V,  $I_{DQ}$  251mA

Package: SOT89 (plastic seal)

### Application

Wireless Infrastructure

FDD/TDD Base Stations

Test and Measurement Equipment

Commercial and Military Radars

High Power Amplifiers

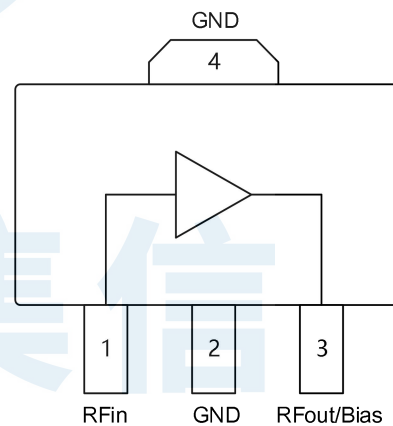
### Ordering Information

Part Number	Package	Description
BR9545TA	SOT89	50MHz to 1.5GHz 1W Drive Amplifier

### General Description

BR9545TA is a high linear monolithic drive amplifier fabricated by GaAs process. The amplifier is housed in SOT89 package. It provides 17.7dB gain at 1.4GHz, the 1dB compression point is greater than 31.9dBm and the OIP3 is greater than 42.2dBm. The product is suitable for wireless communication infrastructure, FDD/TDD base station, radar, high power amplifier driver stage or final stage applications.

### Functional Block Diagram



**Electrical Specifications**

Parameters	Min.	Typ.	Max.	Units	Test Condition
Gain	-	25.8	-	dB	0.22 GHz
	-	17.7	-	dB	1.4 GHz
Input Return Loss	-	-30.0	-	dB	0.22 GHz
	-	-16.2	-	dB	1.4 GHz
Output Return Loss	-	-13.6	-	dB	0.22 GHz
	-	-28.9	-	dB	1.4 GHz
P1dB Compression	-	30.5	-	dBm	0.22 GHz
	-	31.9	-	dBm	1.4 GHz
OIP3	-	40.2	-	dBm	0.22 GHz
	-	42.2	-	dBm	1.4 GHz
Supply Voltage	-	5	-	V	-
Quiescent Current	-	251	-	mA	-

Test Condition: Vdd=+5V, I=251mA, OIP3 spacing=1MHz, Pout=+22dBm/tone@0.22GHz, Pout=+24dBm/tone@1.4GHz, Temp=+25°C

**Absolute Maximum Ratings**

Maximum RF input Power: +28dBm

Maximum Operating Voltage: +8V

**Recommended Operating Conditions**

Power Supply : +5V

Storage Temperature: -65°C ~ +150°C

Operating Temperature: -55°C ~ +125°C

Note: Operation of the device outside the parameter ranges given absolute-maximum-ratings conditions may cause permanent damage, and. exposure to absolute-maximum-ratings conditions for extended periods will affect the reliability.

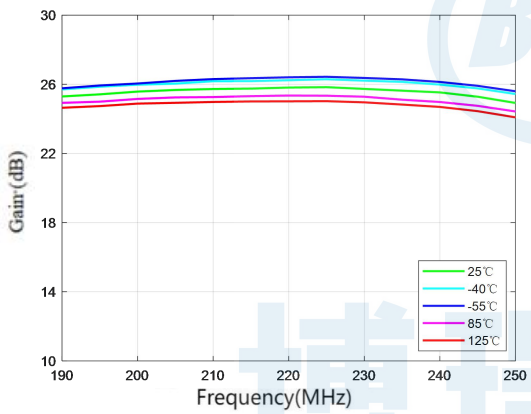
**ESD Warnings**


**ELECTROSTATIC SENSITIVE DEVICE**  
**OBSERVE HANDLING PRECAUTIONS**

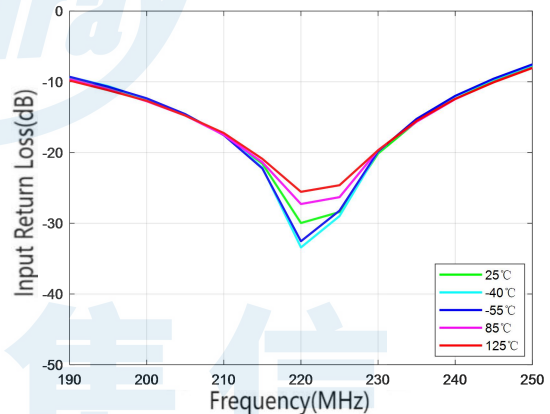
Typical Performance (EVB test results+8V, 200MHz~240MHz)

Parameters	Typ.										Units
	200	205	210	215	220	225	230	235	240		
Frequency	200	205	210	215	220	225	230	235	240	MHZ	
Input Return Loss	-12.5	-14.6	-17.5	-21.6	-30.0	-28.4	-20.1	-15.6	-12.4	dB	
Gain	25.6	25.7	25.7	25.8	25.8	25.8	25.7	25.6	25.5	dB	
Isolation	-31.6	-31.3	-31.2	-31.0	-30.9	-30.9	-30.6	-30.8	-30.9	dB	
Output Return Loss	-16.8	-15.5	-14.4	-13.9	-13.6	-13.9	-14.7	-15.7	-17.4	dB	
P1dB Compression	30.2	30.2	30.3	30.3	30.5	30.6	30.6	30.4	30.2	dBm	
OIP3	41.0	40.8	40.5	40.4	40.2	40.2	39.9	39.4	38.8	dBm	
Psat	31.2	31.4	31.5	31.6	31.7	31.6	31.5	31.3	31.1	dBm	

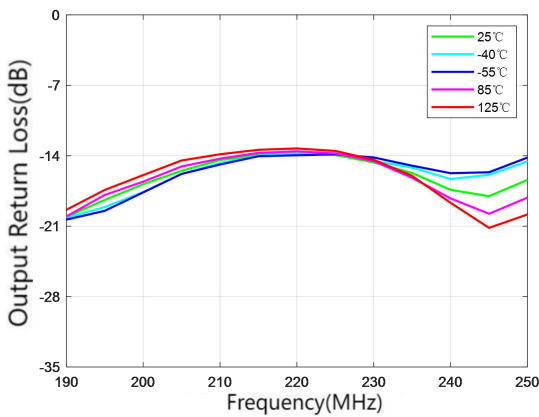
Test Conditions: Vdd=+5V, I=251mA, OIP3 spacing=1MHz, Pout=+22dBm/tone, Temp=+25°C



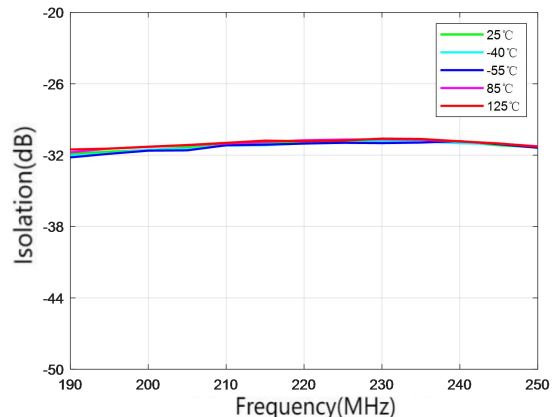
Gain



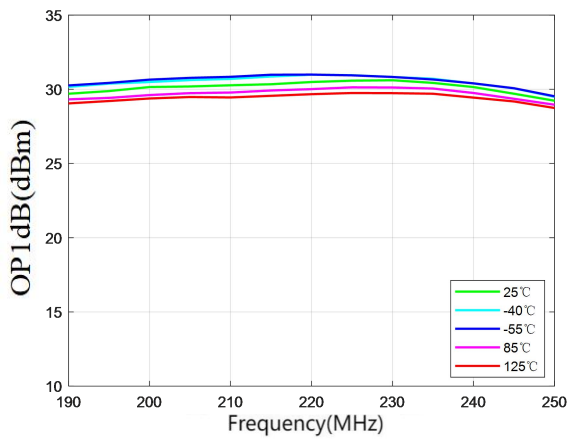
Input Return Loss



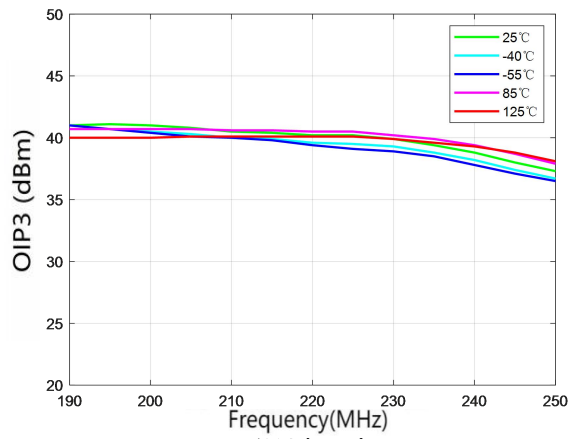
Output Return Loss



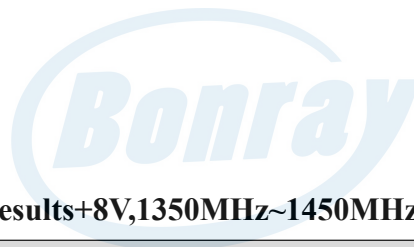
Reverse Isolation



**Output Power for 1dB Compression**



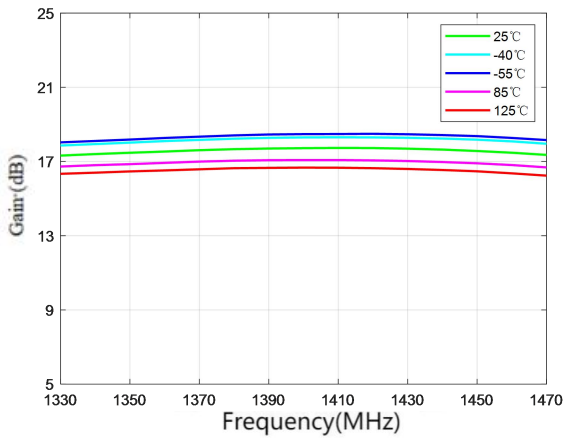
**Output Third-Order Interception**



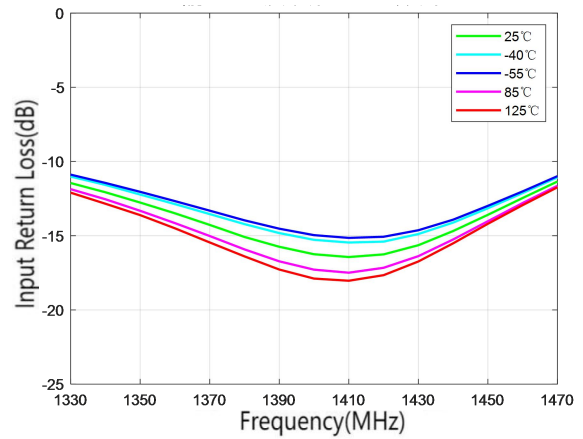
**Typical Performance (EVB test results+8V,1350MHz~1450MHz)**

Parameters	Typ.											Units
	1350	1360	1370	1380	1390	1400	1410	1420	1430	1440	1450	
Frequency	1350	1360	1370	1380	1390	1400	1410	1420	1430	1440	1450	MHZ
Input Return Loss	-12.8	-13.5	-14.3	-15.1	-15.7	-16.2	-16.4	-16.3	-15.6	-14.7	-13.6	dB
Gain	17.5	17.5	17.6	17.7	17.7	17.7	17.7	17.7	17.7	17.6	17.6	dB
Isolation	-27.7	-27.6	-27.5	-27.3	-27.2	-27.1	-27.1	-27.0	-27.0	-27.0	-27.0	dB
Output Return Loss	-17.3	-18.6	-20.2	-22.2	-25.0	-28.9	-32.1	-29.4	-24.7	-21.2	-18.5	dB
P1dB Compression	32.2	32.2	32.2	32.1	32.0	31.9	31.9	31.8	31.7	31.5	31.3	dBm
OIP3	41.9	41.9	41.9	41.9	42.1	42.2	42.2	42.2	42.2	42.1	42.0	dBm
Psat	34.2	34.1	34.0	33.9	33.9	33.8	33.8	33.8	33.7	33.6	33.5	dBm

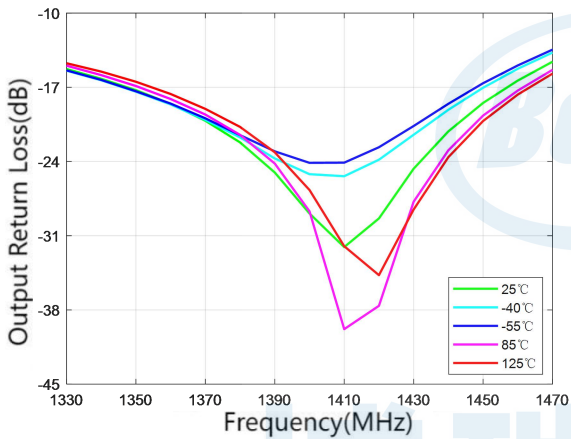
Test Conditions: Vdd=+5V, I=243mA, OIP3 spacing=1MHz, Pout=+24dBm/tone, Temp=+25°C



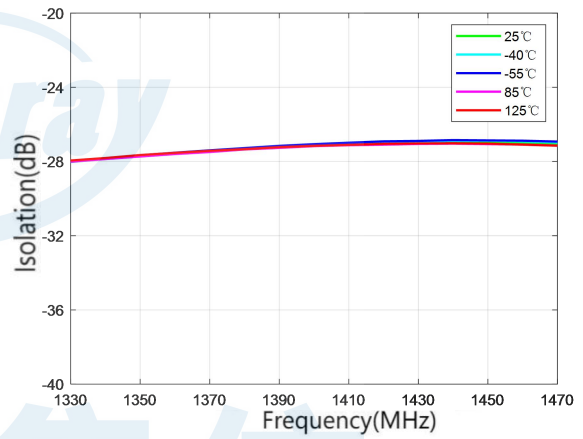
Gain



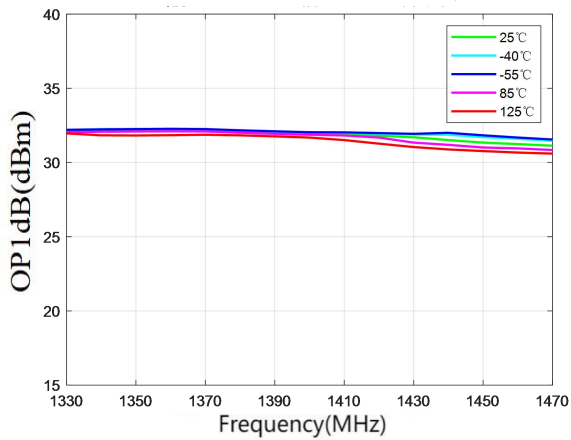
Input Return Loss



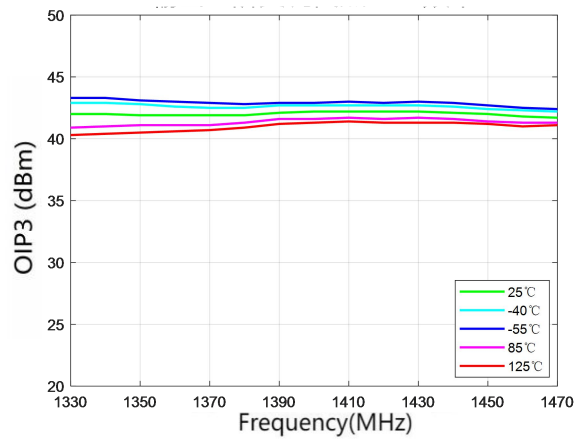
Output Return Loss



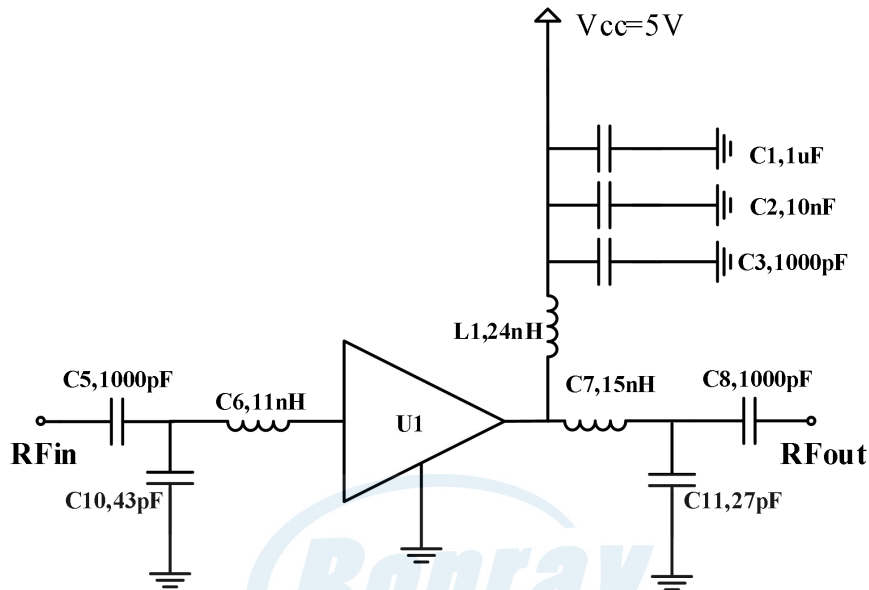
Reverse Isolation



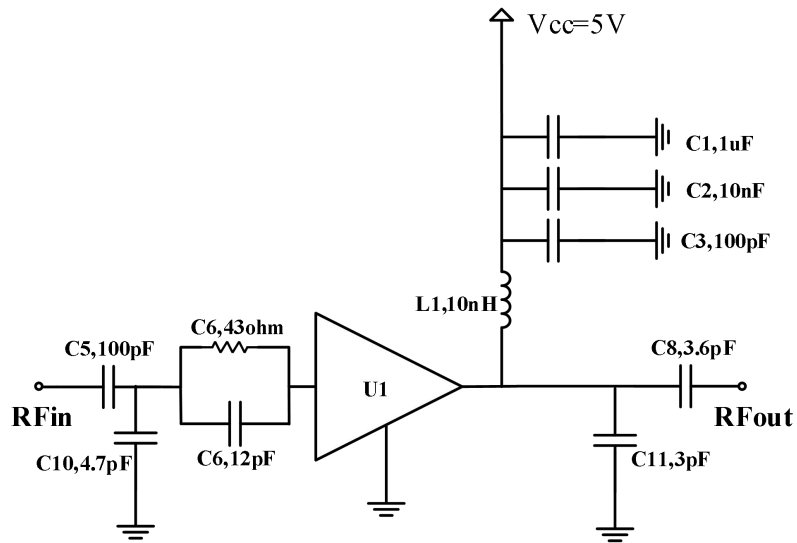
Output Power for 1dB Compression



Output Third-Order Interception

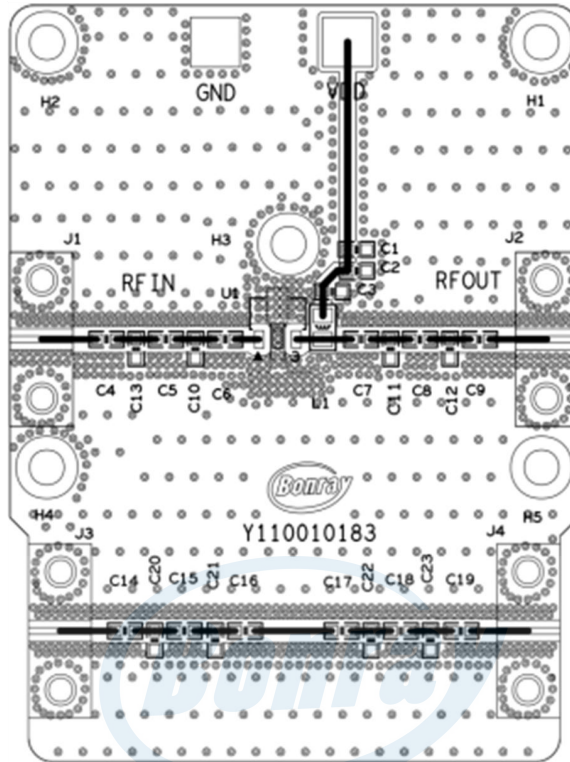
**Application Information**

**Bill of Material**

Designator	Package	Description	Part Number
U1	SOT89	1W high linear drive amplifier	BR9545TA
C1	0603	1uF	GCM188R71C105KA64D
C2	0603	10nF	GRM188R71H103KA01J
C3,C5,C8	0603	1000pF	GRM155R71C102KA88
L1	0603	24nH	0603HP-24NXGRU
C6	0402	11nH	LQW15AN11NG00D
C7	0402	15nH	LQW15AN15NG00D
C10	0402	43pF	GRM1555C1H430JA01D
C11	0402	27pF	GRM1555C1H270JA01D

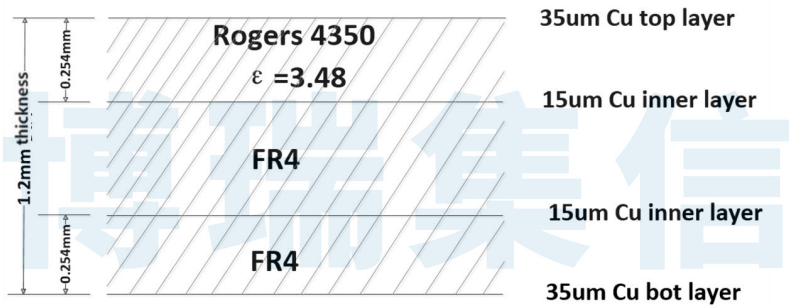

**Bill of Material**

Designator	Package	Description	Part Number
U1	SOT89	1W high linear drive amplifier	BR9545TA
C1	0603	1uF	GRM188R61C105KA93D
C2	0603	10nF	GRM188R71H103KA01J
L1	0603	10nH	0603HP-10NXJEW
C3,C5	0402	100pF	GRM1885C1H101JA01D
C6	0402	43ohm  12pF	RC0402JR-0743RL  GRM1555C1H120JA01D
C8	0402	3.6 pF	GRM1555C1H3R6CA01D
C10	0402	4.7 pF	GRM1555C1H4R7CA01D
C11	0402	3pF	GRM1555C1H3R0WA01

## Evaluation Board

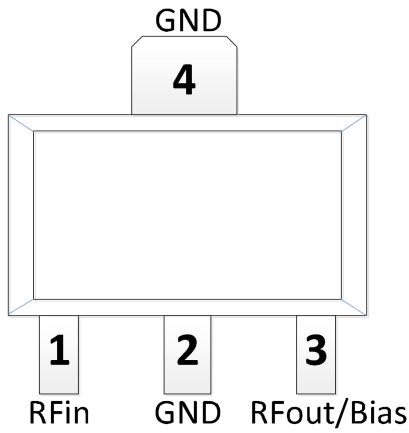


PCB

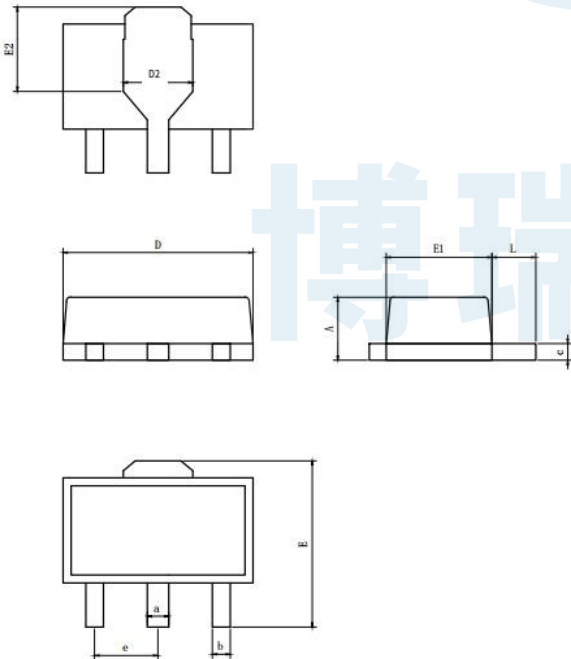


50 ohms Impedance Signal Lines : width=0.53mm,spacing=0.53mm



**Pin layout and Description**


Pin Number	Pin Name	Description
1	RFin	Rf input pins;
2, 4	GND	Ground pin; The pin and package substrate must be connected to the RF/DC ground;
3	RFout/Bias	Rf output pin;

**Package Dimensions (mm)**


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.37	0.42	0.45
c	0.38	--	0.42
a	0.45	0.48	0.51
D	4.40	4.50	4.60
E	4.00	4.10	4.20
E1	2.40	2.50	2.60
e	1.50BSC		
L	0.89	1.045	1.20
D2	1.50	1.60	1.70
E2	2.218	2.318	2.418