Product Characteristics

Operating frequency: 1MHz～1GHz

Small signal gain: 22.1dB@0.5GHz@8V

Output 1dB compressed power: 27.7dBm@0.5GHz@8V

Noise figure: 1.35dB@0.5GHz@8V

Output third-order cross-talk point: 42dBm@0.5GHz@8V

Vdd=+5V, quiescent operating current 129mA

Vdd=+8V, quiescent operating current 220mA

Package: SOT89 (plasticized)

appliance

Communications base stations

Point-to-point communication for

test and measurement equipment

VHF/UHF radio

Recommended working conditions

Power supply voltage: +4.5V～+8.5V

Storage Temperature: -65℃～+150℃

Working temperature: -55℃～+125℃.

Ordering Information

Table 1 Ordering Information

Device Model	Package form	descriptive
CWDR9548	SOT89	1MHz to 1GHz Monolithic Driver Amplifier

Product Overview

The CWDR9548 is a GaAs-based process design.

The high linearity driver amplifier chip. The chip utilizes a table

SMD SOT89 package, +8V supply at

Small signal gain at 500MHz 22.1dB, noise figure

1.35dB, Output Power 1dB Compression Point 27.7dBm, Transmission

The chip has a third-order intermodulation point of 42 dBm over a wide bandwidth range, with a good input and output VSWR and high linearity with a low noise level.

.

Number. **Function Block Diagram**

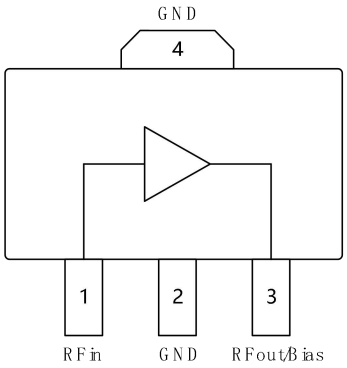


Figure 1 Functional Block Diagram (SOT89 package)

Absolute maximum rating

Maximum operating voltage (Vdd) +10V

Maximum RF input power: +21dBm

Note: Absolute maximum ratings indicate the limits to which the device can be subjected.

Exceeding the absolute maximum rating may result in permanent damage to the device.
Prolonged operation at absolute maximum ratings can affect the reliability of the device.

ESD Warning

This product is a static sensitive device and appropriate ESD precautions should be taken to avoid degradation or loss of function.

technical specification

Table 2 +5V Electrical Performance Parameters

parameters	minimum value	typical value	maximum values	unit (of measure)	test condition
Small Signal Gain	-	23.4	-	dB	1MHz
	-	24.6	-	dB	10MHz
	-	19.7	-	dB	800MHz
Output Power 1dB Compression Point	-	21.4	-	dBm	10MHz
	-	23.2	-	dBm	800MHz
Output power third order intermodulation point	-	40.1	-	dBm	10MHz
	-	35.1	-	dBm	800MHz
coefficient of noise	-	1.26	-	dB	500MHz
Input Echo	-	-11.8	-	dB	500MHz
output echo	-	-15.7	-	dB	500MHz
inverse squareness	-	-26.2	-	dB	500MHz
operating voltage	-	+5	-	V	-
Static operating current	-	129	-	mA	-
Test conditions: Vdd=+5V, I=129mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C					

Table 3 +8V Electrical Performance Parameters

parameters	minimum value	typical value	maximum values	unit (of measure)	test condition
Small Signal Gain	-	23.8	-	dB	1MHz
	-	25	-	dB	10MHz
	-	20.6	-	dB	800MHz
Output Power 1dB Compression Point	-	26.2	-	dBm	10MHz
	-	27	-	dBm	800MHz
Output power third-order intermodulation point	-	42.8	-	dBm	10MHz
	-	42	-	dBm	800MHz
coefficient of noise	-	1.34	-	dB	500MHz
Input Echo	-	-13.1	-	dB	500MHz
output echo	-	-18.8	-	dB	500MHz
inverse squareness	-	-26.3	-	dB	500MHz
operating voltage	-	+8	-	V	-
Static operating current	-	220	-	mA	-
Test conditions: Vdd=+8V, I=220mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C					

Typical operating characteristics (EVB test results)

Table 4 +5V Supply Demo Board Test Results

parameters	typical value							unit (of measure)
frequency	1	10	100	300	500	800	1000	MHz
gain (electronics)	23.43	24.56	22.99	22.36	21.38	19.68	18.1	dB
Input Echo	-6.71	-12.74	-18.24	-14.83	-11.83	-9.7	-8.39	dB
output echo	-7.29	-25.94	-19.01	-20.28	-15.69	-9.7	-7.03	dB
Output Power 1dB Compression Point	21.09	21.42	23.72	23.76	23.59	23.24	22.33	dBm
Output power third order intermodulation point	39.37	40.07	38.23	37.63	36.47	35.07	34.23	dBm
coefficient of noise	-	1.03	1.18	1.23	1.28	1.22	1.24	dB
Test conditions: Vdd=+5V, I=129mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C								

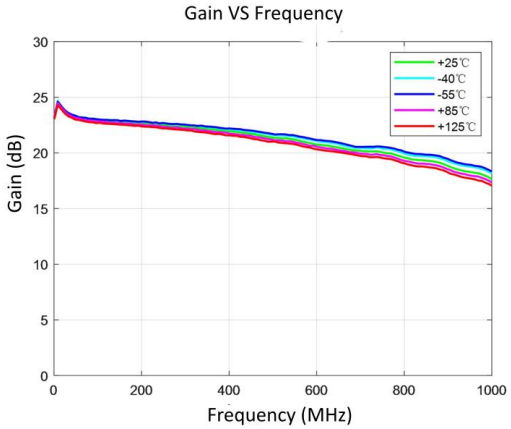


Figure 2 Small Signal Gain Diagram

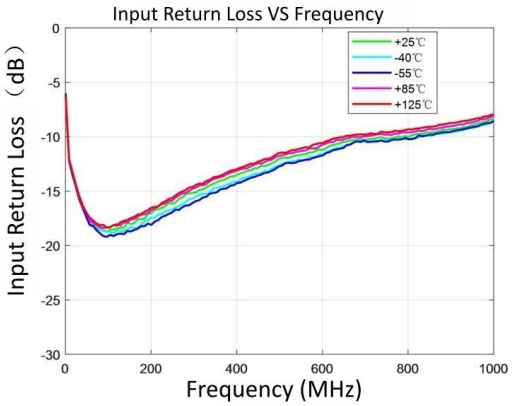


Fig. 3 Input return loss

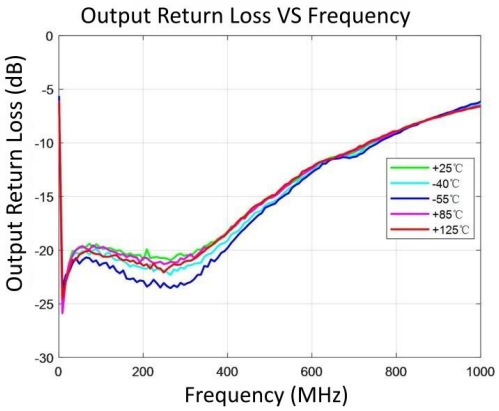


Fig. 4 Output return loss

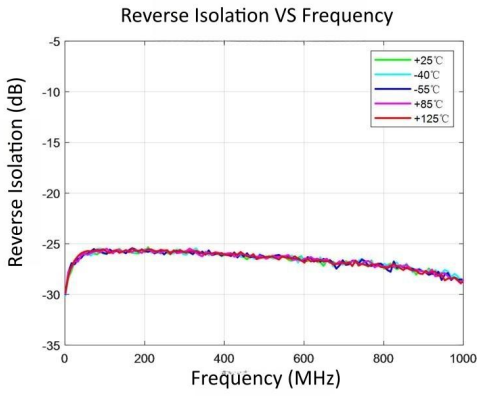


Fig. 5 Reverse isolation

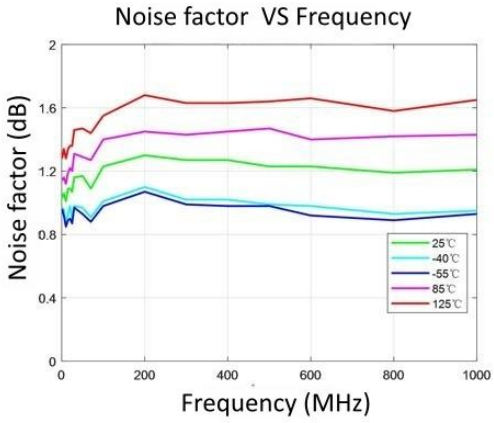


Figure 6 Noise Coefficient

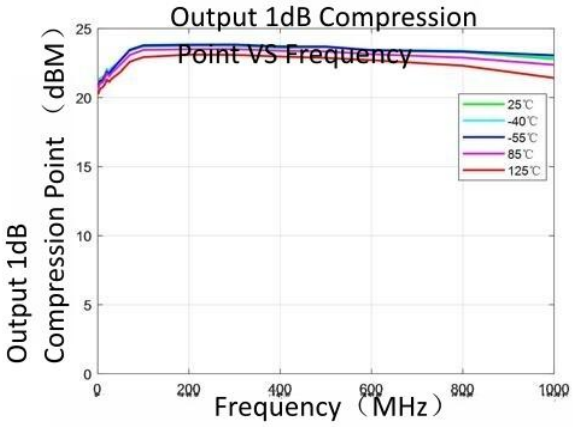


Figure 7 Output 1dB Compression Point

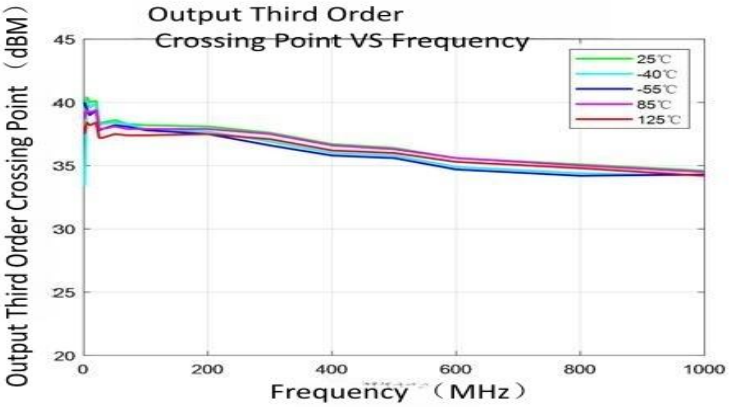


Fig. 8 Output third-order intermodulation point

Typical operating characteristics (EVB test results)

Table 5 +8V Power Supply Demo Board Test Results

parameters	typical value							unit (of measure)
frequency	1	10	100	300	500	800	1000	MHz
gain (electronics)	23.80	24.94	23.29	22.84	22.07	20.57	18.92	dB
Input Echo	-6.95	-13.67	-18.78	-16.33	-13.10	-10.17	-8.55	dB
output echo	-7.18	-25.67	-19.40	-26.59	-18.8	-9.93	-6.84	dB
Output 1dB Compression Point	25.8	26.19	27.72	27.81	27.7	27.04	25.94	dBm
Output third-order intermodulation	42.33	42.8	40.8	42.1	41.97	42.03	41.6	dBm
coefficient of noise	-	1.2	1.26	1.3	1.35	1.31	1.32	dB
Test conditions: Vdd=+8V, I=220mA, OIP3 spacing=0.5MHz, Pout=0dBm/tone, Temp=+25°C								

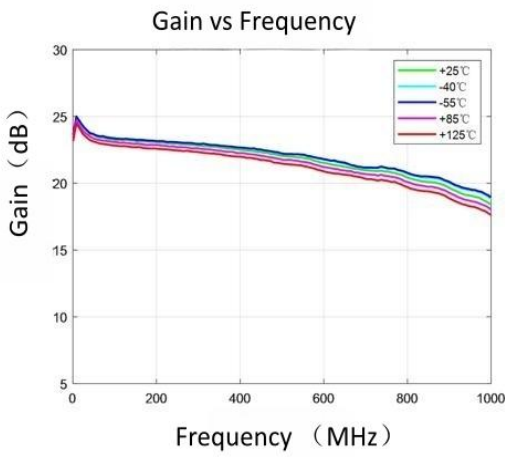


Figure 9 Small Signal Gain

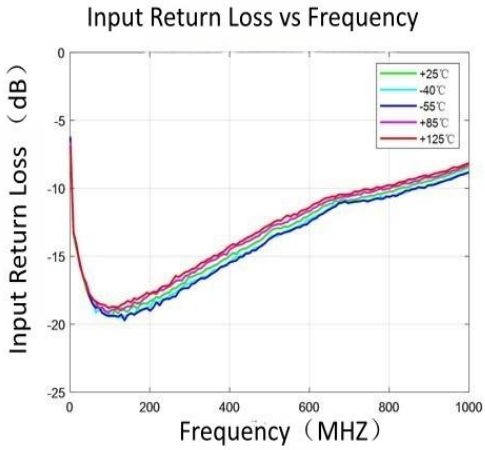


Figure 10 Input Return Loss

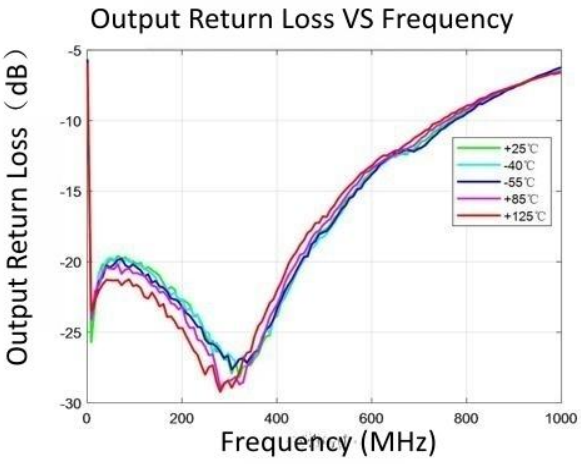


Figure 11 Output Return Loss

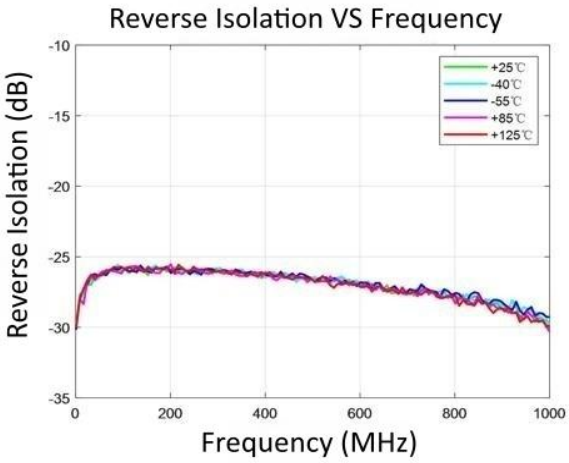


Fig. 12 Reverse isolation

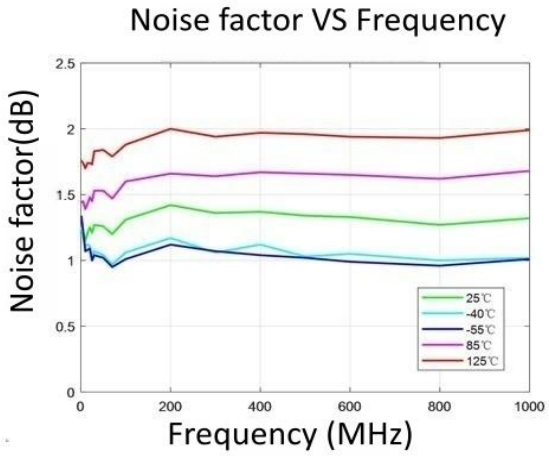


Fig. **13** Noise factor

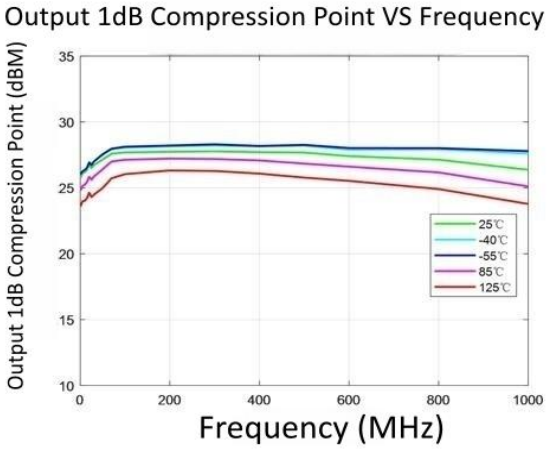


Figure **14** Output **1dB** Compression Point

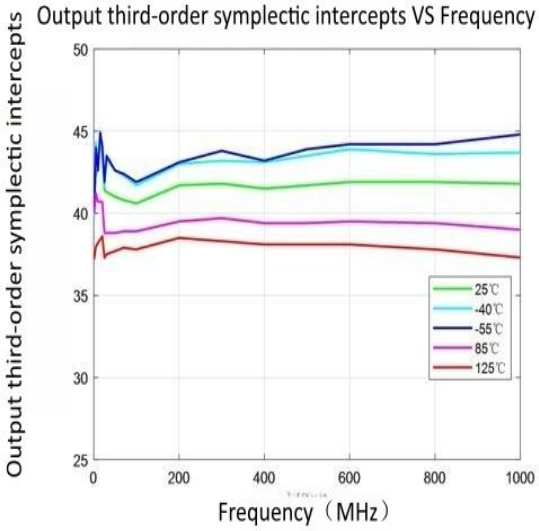


Fig. **15** Output third-order intermodulation point

Typical Application Circuit

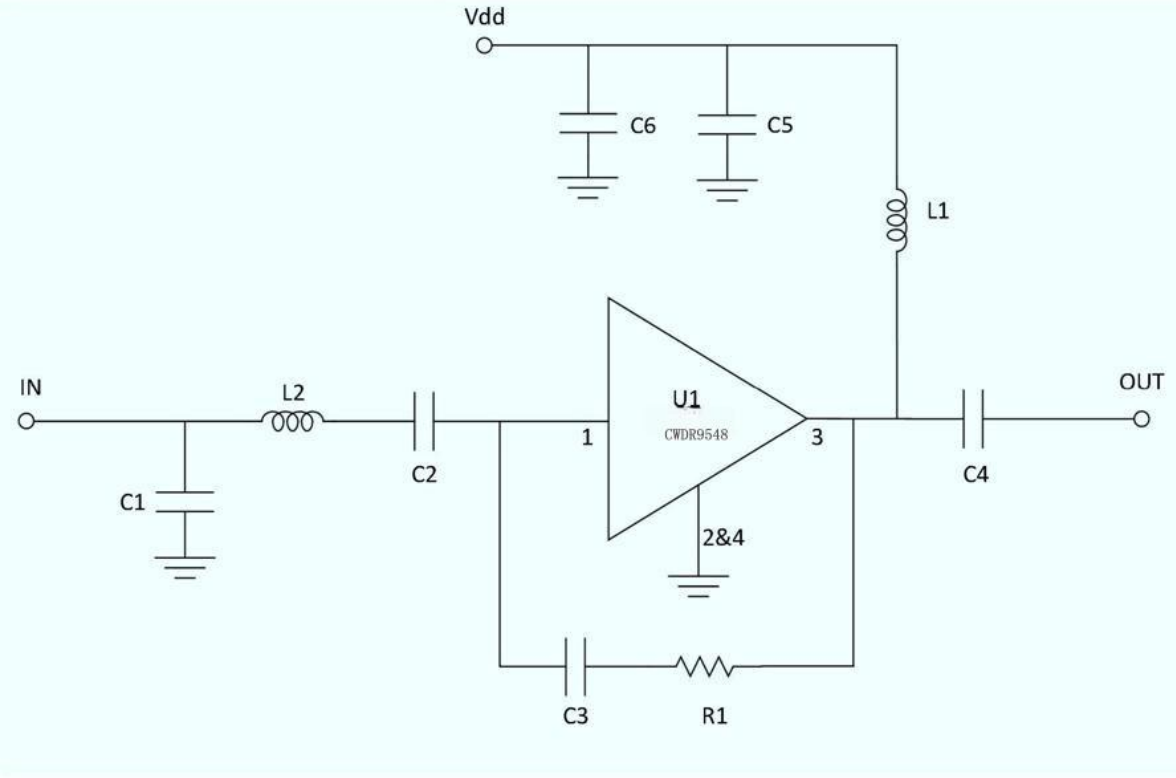
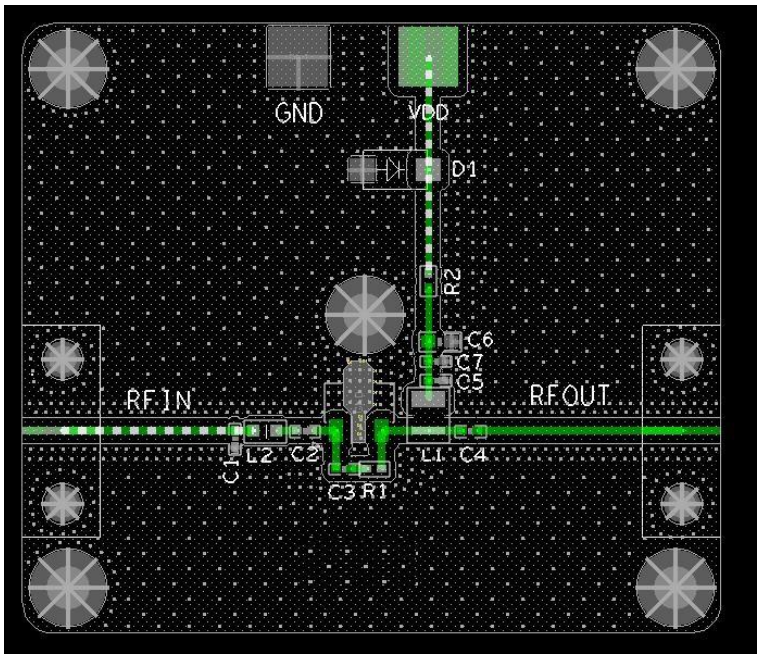


Figure 16 Typical Application Circuit

Table 6 Device Information

component	Package Size	(be) worth	model number
C1	0402	1.5pF	grm1555c1h1r5cz01
C2, C4	0603	2.2μF	grm188r61c225ke15
C3	0402	0.1μF	grm155r71c104ka88
C5	0402	1000pF	grm1555c1h102ja01
C6	0805	10μF	grm21br61c106ke15
L1	1210	15μH	LQH32DN150K53L
L2	0603	5.1nH	0603CS-5N1XJL
R1	0402	1500Ω	RK73H1ET1501F

Evaluation Board Information



PCB Parameter information

50 Ohm Wire： **width=0.53mm,spacing=0.53mm**

Figure 17 Evaluation Board Information

Pin Function Description

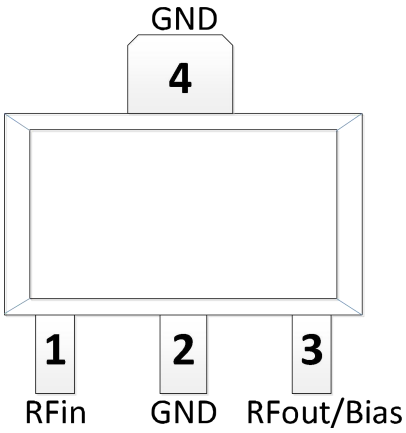
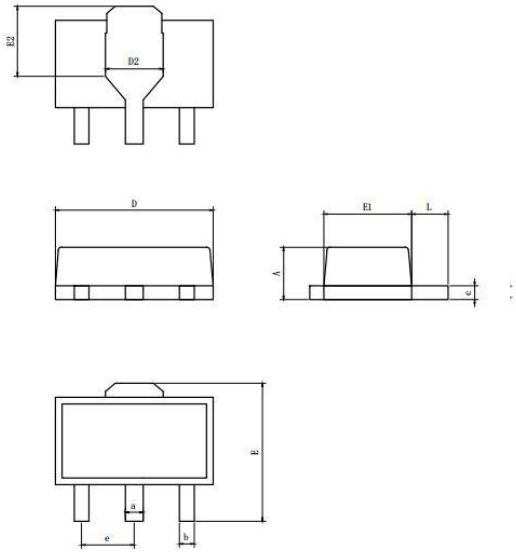


Figure 18 Pin Arrangement

Table 7 Pin Descriptions

Pin Number	Pin Name	descriptive
1	RFin	RF input pins.
2, 4	GND	Ground pin; this pin and the package substrate must be Connect to RF/DC ground.
3	RFout/Bias	RF output pin, also used for external DC powered.

Package Information (Unit: 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

Figure 19 Packaging Infographic