

GaAs monolithic integrated digital phase shifter
8~12GHz

Key indicator

- Frequency Range: 8~12GHz
- Phaseshiftaccuracyrootmeansquare:2°
- Low insertion loss: 8dB
- Positive voltage control
- Chip size: 3.8mm×1.25mm×0.1mm

Typical application

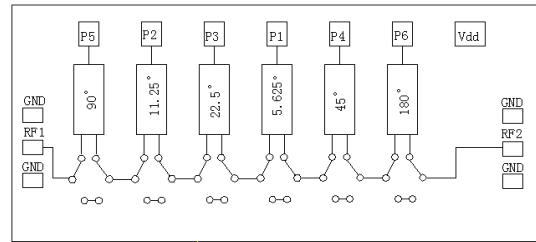
- Electronic Warfare
- Weather & Military Radar
- Satellite Communications
- Wave control module
- Phase modulation

Product Introduction

AY1160 is an X-band six-bit digitally controlled phase shifter chip, made with GaAs 0.5μm-pHEMT process, phase shift step 5.625°, insertion loss less than 8dB, 0/+5V logic level control phase shift.

The chip uses on-chip metal chemical technology to ensure good grounding. It is easy to use and metallized on the back of the chip. It is suitable for eutectic sintering or conductive adhesive bonding processes.

Functional block diagram



Electrical performance (T_A=25°C, V_D=-5V, control level=0/+5V, 50 Ω system)

Index	Minimum	Typical value	Max	Unit
Frequency	8~12			GHz
Input standing wave ratio	-	1.9	-	:1
Output standing wave ratio	-	1.8	-	:1
Insertion loss	-	-8	-	dB
Amplitude fluctuation	-0.6	-	0.6	dB
Phase shift accuracy	-4	-	5	°
Phase shift accuracy root mean square	-	2	-	°

Truth table (0:0V, 1:+5V)

Phase shift	P1	P2	P3	P4	P5	P6
Zero state	0	0	0	0	0	0
-5.625°	1	0	0	0	0	0
-11.25°	0	1	0	0	0	0
-22.5°	0	0	1	0	0	0
-45°	0	0	0	1	0	0
-90°	0	0	0	0	1	0
-180°	0	0	0	0	0	1
-354.375°	1	1	1	1	1	1

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Absolute maximum rating

Maximum input power	+18dBm	Operating temperature	-55°C~+85°C
Maximum input voltage	-8V	Storage temperature	-65°C~+150°C

Control voltage

State	Bias condition
Low	0~0.2V
High	4.5~5.5V

Bias voltage & current

V_D	I_D
-5V	8mA

Typical test curve (bare chip test)

