2000–8000 MHz 6-Bit GaAs MMIC Digital Phase Shifter Die

LCI-PS-2000-8000-6B is a 6-bit GaAs pHEMT digital phase-shifter bare die for 2000–8000 MHz, providing stepped RF phase control.

RMS phase error: 2.2 ° (typical) / 3 ° (maximum); Insertion loss: 10 dB (typical) / 11.5 dB (maximum); Phase shift range: 5.625 ° (minimum) / 354.375 ° (maximum). Die dimensions: 5 × 1.75 × 0.1 mm.



RF characteristics

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	-	2000	-	8000	MHz
Insertion loss	-	-	10	11.5	dB
Phase shift range	-	5.625	-	354.375	°
RMS phase error	-	-	2.2	3	°
Phase-induced amplitude variation	-	-	±0.6	-	dB
Input VSWR	-	-	1.8	-	-
Output VSWR	-	-	1.6	-	-

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Value	Unit
Negative supply voltage	-	-5.3	-5	-4.7	-	V
Negative-supply quiescent current	-	-	0.003	-	-	A
Input drive current	-	-	0.2	-	VIH = +5 V; TTL	mA
High-level input voltage	-	3	-	5	-	V
Low-level input voltage	-	0	-	0.4	-	V
Phase step	-	-	-	-	5.625	°

Absolute limits

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Minimum negative supply voltage	-	-6	-	-	V
Maximum control voltage	-	-	-	6	V
Input drive current	-	-	-	0.3	mA
Maximum input power	-	-	-	25	dBm

Environmental specifications

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Storage temperature	-	-65	-	150	°C
Operating temperature	-	-55	-	85	°C

Bond-pad assignments

Pins	Symbol	Function	Notes
1	RF_in	RF input	-
2	RF_out	RF output	-
3, 4, 5, 6	GND	Ground; no wire bond required	-
7, 14	VEE	DC bias	–5 V
8	P1	Phase control	0 / +5 V
9	P2	Phase control	0 / +5 V
10	P3	Phase control	0 / +5 V
11	P4	Phase control	0 / +5 V
12	P5	Phase control	0 / +5 V
13	P6	Phase control	0 / +5 V

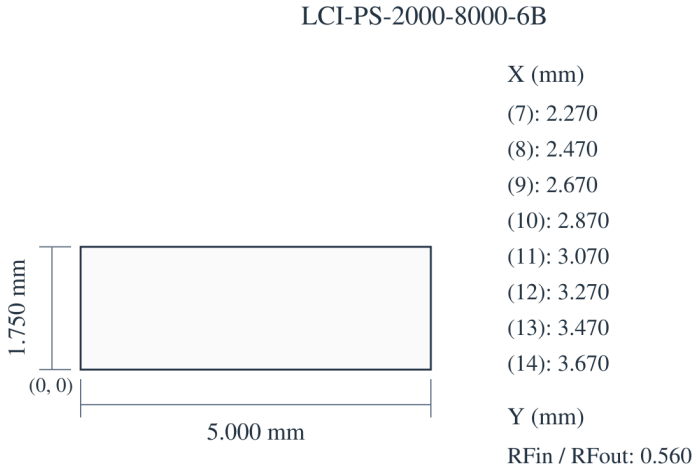
Control truth table

State	P6	P5	P4	P3	P2	P1
Reference state	0 V	0 V	0 V	0 V	0 V	0 V
5.625°	0 V	0 V	0 V	0 V	0 V	5 V
11.25°	0 V	0 V	0 V	0 V	5 V	0 V
22.5°	0 V	0 V	0 V	5 V	0 V	0 V
45°	0 V	0 V	5 V	0 V	0 V	0 V
90°	0 V	5 V	0 V	0 V	0 V	0 V
180°	5 V	0 V	0 V	0 V	0 V	0 V

Die dimensions

Parameter	Value	Unit
Die dimensions	5 × 1.75 × 0.1	mm

Reference drawing showing selected dimensions in mm. Use complete drawings for fabrication and wire bonding.



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Die integration and bias sequencing

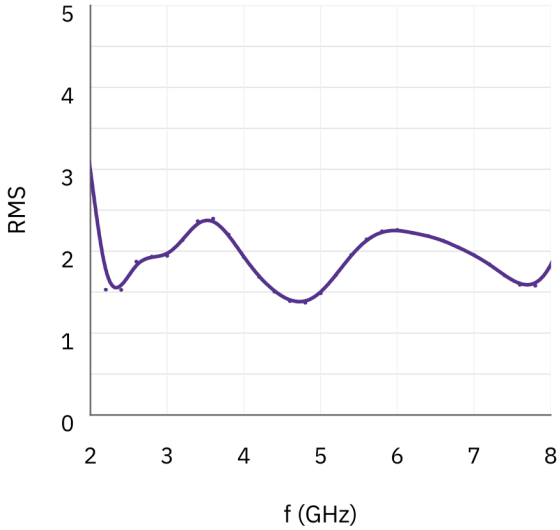
Control interface: Parallel TTL control.

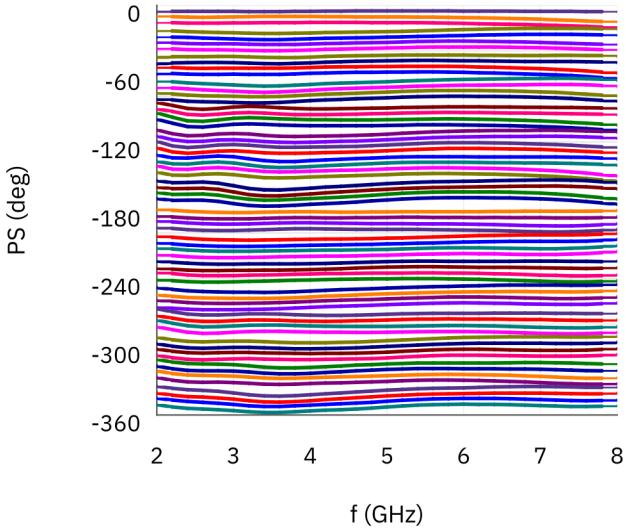
Performance curves

Read each figure with its stated operating conditions.

RMS phase error; Phase shift.

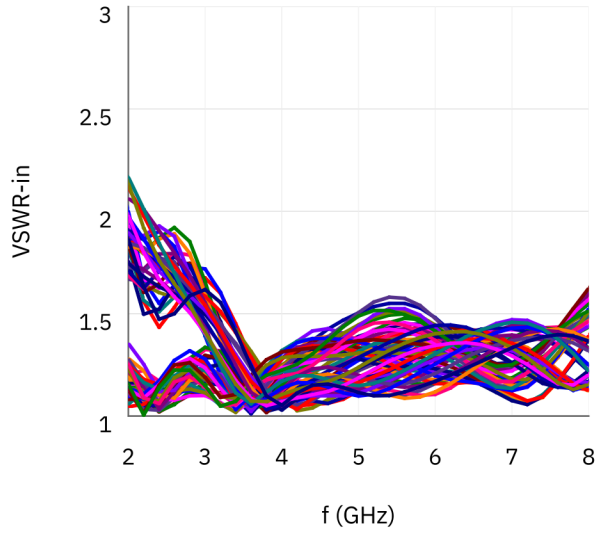
Readings are approximate. The RMS axis has no specified unit.

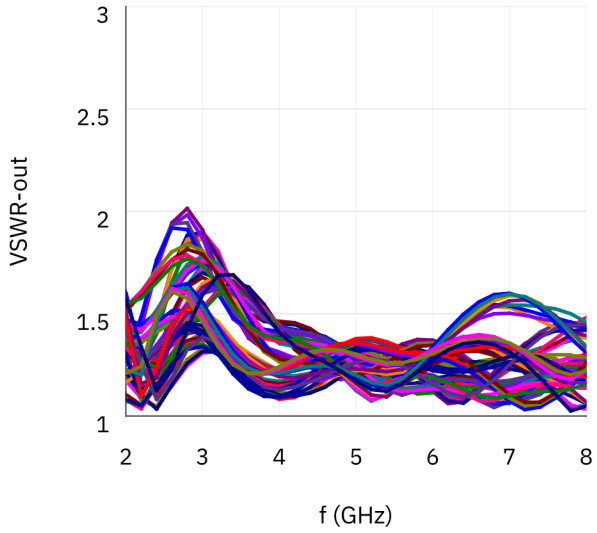


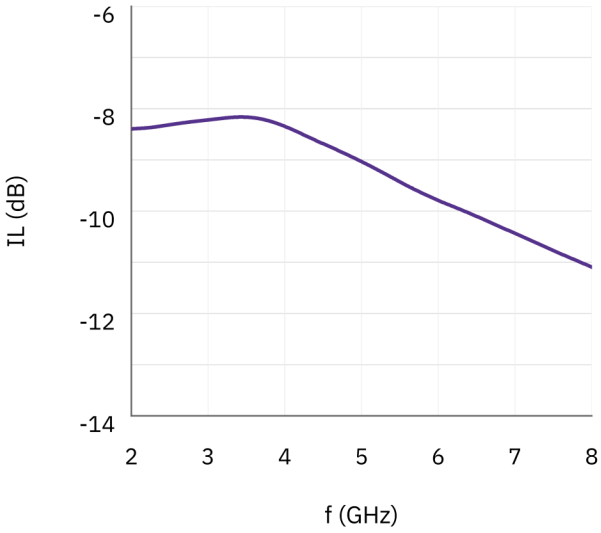


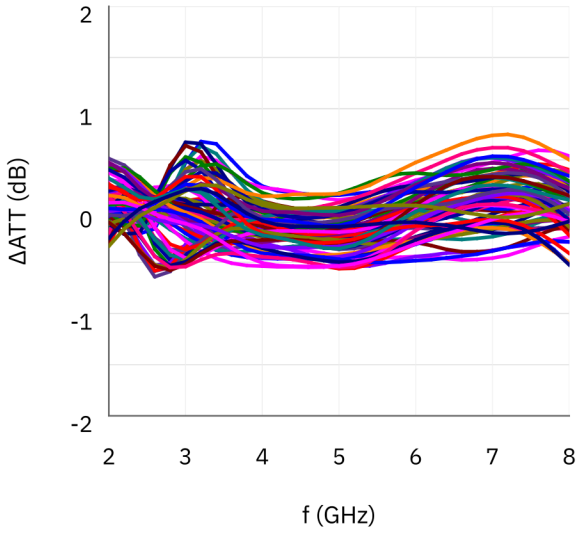
Insertion loss; Input matching; Output matching; Phase-induced amplitude variation.

Readings are approximate.









Document notice

Specifications are subject to revision. Before design release, confirm the current document revision and product-specific requirements with LCRF. The approved quotation and order documentation define the supplied configuration.