15000–23000 MHz 6-Bit GaAs MMIC Digital Phase Shifter Die

LCI-PS-15000-23000-6B is a 6-bit GaAs pHEMT digital phase-shifter bare die for 15000–23000 MHz, providing stepped RF phase control.

RMS phase error: 1.4 ° (typical); Insertion loss: 9.5 dB (typical); Phase shift range: 5.625 ° (minimum) / 354.375 ° (maximum). Die dimensions: 3.1 × 1.1 × 0.1 mm.



RF characteristics

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	-	15000	-	23000	MHz
Insertion loss	-	-	9.5	-	dB
Phase shift range	-	5.625	-	354.375	°
RMS phase error	-	-	1.4	-	°
Phase-induced amplitude variation	-	-	±0.5	-	dB
Input VSWR	-	-	1.4	-	-
Output VSWR	-	-	1.2	-	-

DC bias and current

Parameter	Symbol	Minimum	Typical	Maximum	Value	Unit
Control voltage	-	-	-	-	0 / -5	V
Phase step	-	-	-	-	5.625	°

Absolute limits

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Minimum negative supply voltage	-	-6	-	-	V
Maximum control voltage	-	-	-	0.5	V
Maximum input power	-	-	-	20	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	1B	Phase control	0 / −5 V
8	1A	Phase control	0 / −5 V
9	2B	Phase control	0 / −5 V
10	2A	Phase control	0 / −5 V
11	3B	Phase control	0 / −5 V
12	3A	Phase control	0 / −5 V
13	4B	Phase control	0 / −5 V
14	4A	Phase control	0 / −5 V
15	5B	Phase control	0 / −5 V
16	5A	Phase control	0 / −5 V
17	6B	Phase control	0 / −5 V
18	6A	Phase control	0 / −5 V

Control truth table

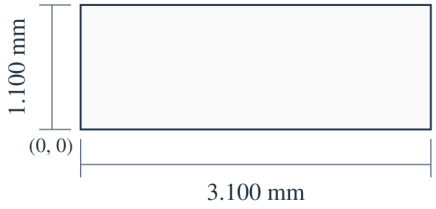
State	1B	1A	2B	2A	3B	3A	4B	4A	5B	5A	6B	6A
Reference state	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V
5.625°	−5 V	0 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V
11.25°	0 V	−5 V	−5 V	0 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V
22.5°	0 V	−5 V	0 V	−5 V	−5 V	0 V	0 V	−5 V	0 V	−5 V	0 V	−5 V
45°	0 V	−5 V	0 V	−5 V	0 V	−5 V	−5 V	0 V	0 V	−5 V	0 V	−5 V
90°	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	−5 V	0 V	0 V	−5 V
180°	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	−5 V	0 V
354.375°	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V	−5 V	0 V

Die dimensions

Parameter	Value	Unit
Die dimensions	3.1 × 1.1 × 0.1	mm

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

LCI-PS-15000-23000-6B



X (mm)
7: 0.416
18: 2.616

Y (mm)
RFin / RFout: 0.365

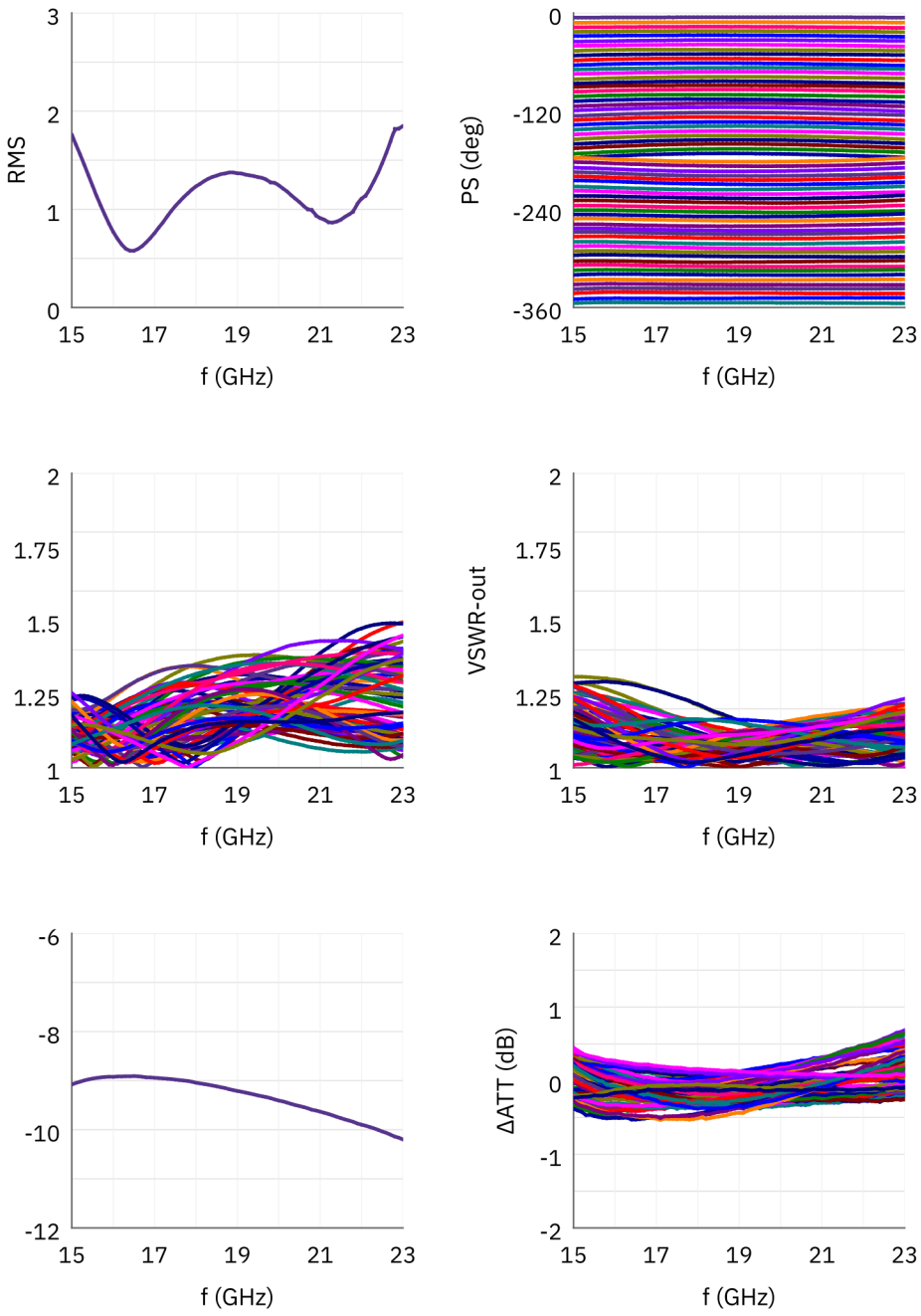
3.100 × 1.100 × 0.100 mm
X, Y: ±0.050 mm
X → · Y ↑ · X, Y: mm

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Performance curves

Read each figure with its stated operating conditions.

Insertion loss; Input matching; Output matching; Phase shift; RMS phase error; Phase-induced amplitude variation.
Readings are approximate. The RMS axis has no specified unit.



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.