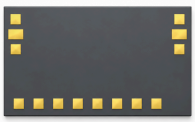
DC–8000 MHz 6-Bit GaAs MMIC Digital Attenuator Die

LCI-ATT-DC-8000-6B is a 6-bit GaAs pHEMT digital attenuator bare die for DC–8000 MHz, providing stepped RF amplitude adjustment.

RMS attenuation error: 0.2 dB (typical); Insertion loss: 1.6 dB (typical); Attenuation range: 0.5 dB (minimum) / 31.5 dB (maximum). Die dimensions: 1.9 × 1.1 × 0.1 mm.



RF characteristics

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Value	Unit
Operating frequency	-	0	-	8000	DC–8000	MHz
Insertion loss	-	-	1.6	-	-	dB
Attenuation range	-	0.5	-	31.5	-	dB
RMS attenuation error	-	-	0.2	-	-	dB
Attenuation-induced phase variation	-	-	±3	-	-	°
Input VSWR	-	-	1.3	-	-	-
Output VSWR	-	-	1.4	-	-	-

DC bias and current

Parameter	Symbol	Minimum	Typical	Maximum	Value	Unit
Negative-supply quiescent current	-	-	0.0065	-	-	A
Negative supply voltage	-	-	-	-	-5	V
High-level input voltage	-	3.3	-	5	-	V
Low-level input voltage	-	-	-	-	0	V
Attenuation step	-	-	-	-	0.5	dB

Absolute limits

Parameter	Symbol	Minimum	Typical	Maximum	Unit
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, 3, 4, 6	GND	Ground; no wire bond required	-
2	RF_in	RF input	-
5	RF_out	RF output	-
7, 14	VEE	DC bias	–5 V
8	A1	Attenuation control	0.5 dB; 0 / +3.3 V / +5 V
9	A2	Attenuation control	1 dB; 0 / +3.3 V / +5 V
10	A3	Attenuation control	2 dB; 0 / +3.3 V / +5 V
11	A4	Attenuation control	4 dB; 0 / +3.3 V / +5 V
12	A5	Attenuation control	8 dB; 0 / +3.3 V / +5 V
13	A6	Attenuation control	16 dB; 0 / +3.3 V / +5 V

Control truth table

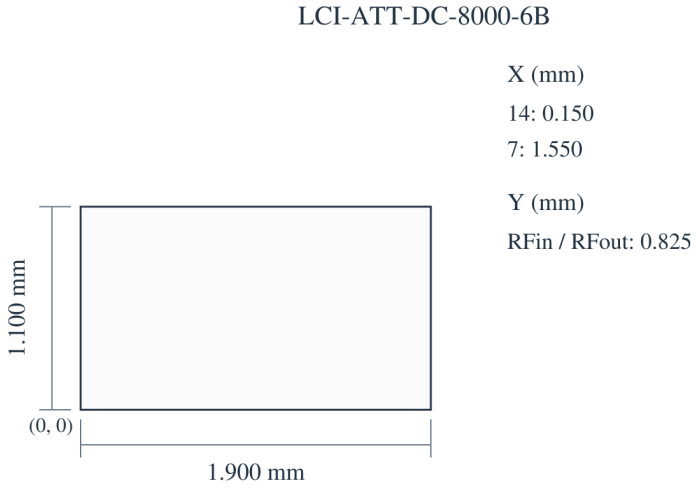
0 = 0 V; 1 = +3.3–5 V

State	A6	A5	A4	A3	A2	A1
Reference state	0	0	0	0	0	0
0.5 dB	0	0	0	0	0	1
1 dB	0	0	0	0	1	0
2 dB	0	0	0	1	0	0
4 dB	0	0	1	0	0	0
8 dB	0	1	0	0	0	0
16 dB	1	0	0	0	0	0

Die dimensions

Parameter	Value	Unit
Die dimensions	1.9 × 1.1 × 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

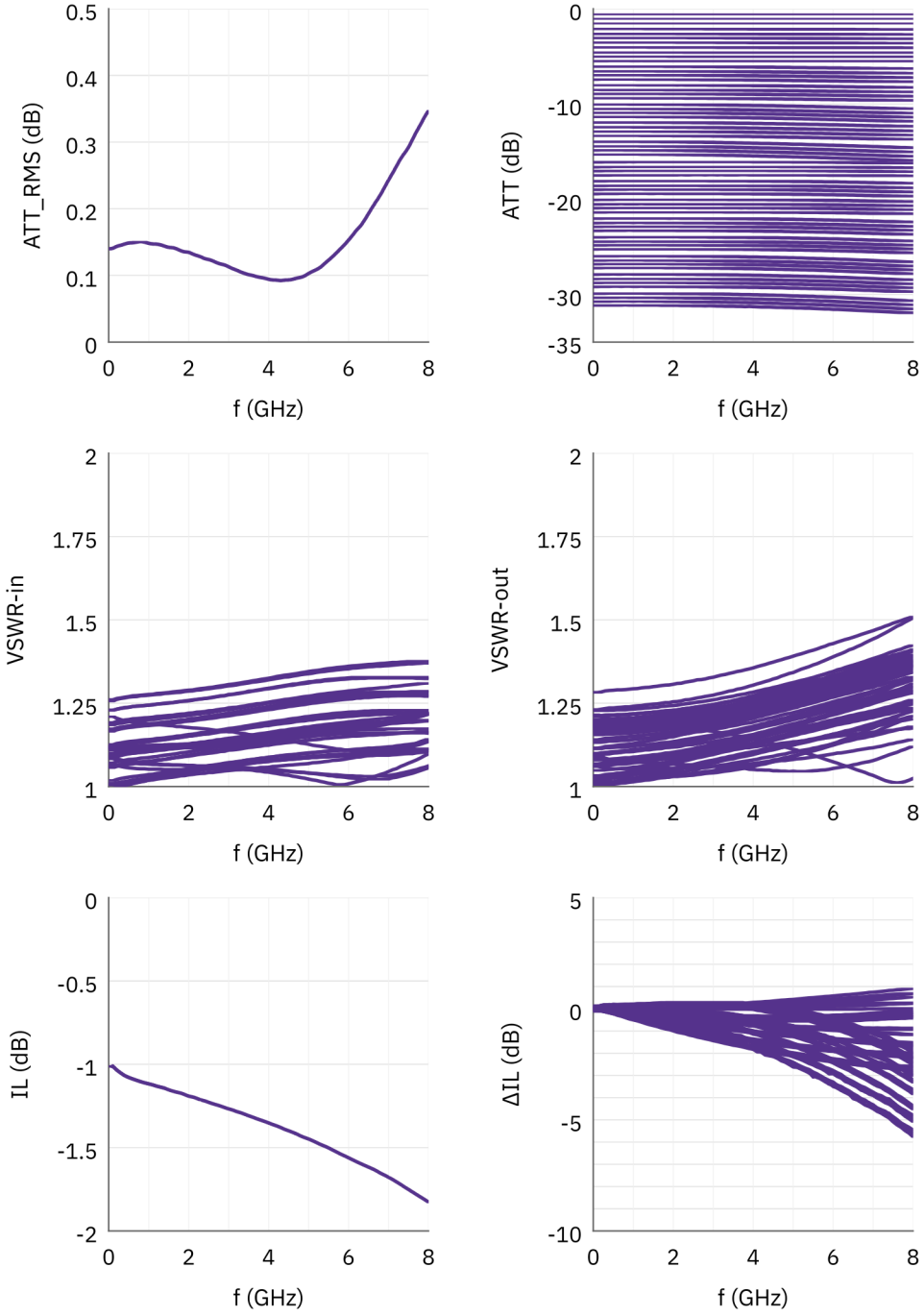
Control interface: Parallel TTL control.

Performance curves

Read each figure with its stated operating conditions.

Insertion loss; Input matching; Output matching; Attenuation; RMS attenuation error; ΔIL.

Readings are approximate. Read the final plot by its vertical axis, delta_IL (dB), which shows insertion-loss variation.



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.