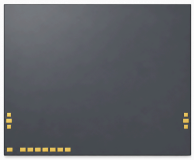
200–2000 MHz 6-Bit GaAs MMIC Digital Time Delay Die

LCI-TTD-200-2000-6B is a 6-bit GaAs pHEMT digital time-delay bare die for 200–2000 MHz, integrating delay paths and a parallel TTL control driver.

Time delay: 25 ps (typical) (T1; t_nom = 25 ps); Time delay: 800 ps (typical) (T6; t_nom = 800 ps); Insertion loss: 11 dB (maximum). Die dimensions: 5 × 4 × 0.1 mm.



RF characteristics

TA = +25 °C; VEE = -5 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	-	200	-	2000	MHz
Insertion loss	-	-	-	11	dB
Time delay (T1) [1]	-	-	25	-	ps
Time delay (T2) [2]	-	-	50	-	ps
Time delay [3]	-	-	100	-	ps
Time delay [4]	-	-	200	-	ps
Time delay [5]	-	-	400	-	ps
Time delay [6]	-	-	800	-	ps
Delay-induced amplitude variation	-	-	±0.2	-	dB
Input VSWR	-	-	1.3	-	-
Output VSWR	-	-	1.3	-	-

[1] T1; t_nom = 25 ps
[2] T2; t_nom = 50 ps
[3] T3; t_nom = 100 ps
[4] T4; t_nom = 200 ps
[5] T5; t_nom = 400 ps
[6] T6; t_nom = 800 ps

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Negative supply voltage	-	-5.3	-5	-4.7	V
Negative-supply quiescent current	-	-	0.006	-	A
Input drive current [1]	-	-	0.2	-	mA
High-level input voltage	-	3	-	5	V
Low-level input voltage	-	0	-	0.4	V

[1] VIH = +5 V; TTL

Absolute limits

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Minimum negative supply 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, 3, 4, 6	GND	Ground; no wire bond required	-
2	RF1	RF port	1
5	RF2	RF port	2
7, 14	VEE	DC bias	−5 V
8	T6	Delay control	800 ps; TTL
9	T5	Delay control	400 ps; TTL
10	T4	Delay control	200 ps; TTL
11	T3	Delay control	100 ps; TTL
12	T2	Delay control	50 ps; TTL
13	T1	Delay control	25 ps; TTL

Control truth table

0 = 0 V; 1 = +3.3 V

State	T6	T5	T4	T3	T2	T1
Reference state	0	0	0	0	0	0
25 ps	0	0	0	0	0	1
50 ps	0	0	0	0	1	0
100 ps	0	0	0	1	0	0
200 ps	0	0	1	0	0	0

Control truth table

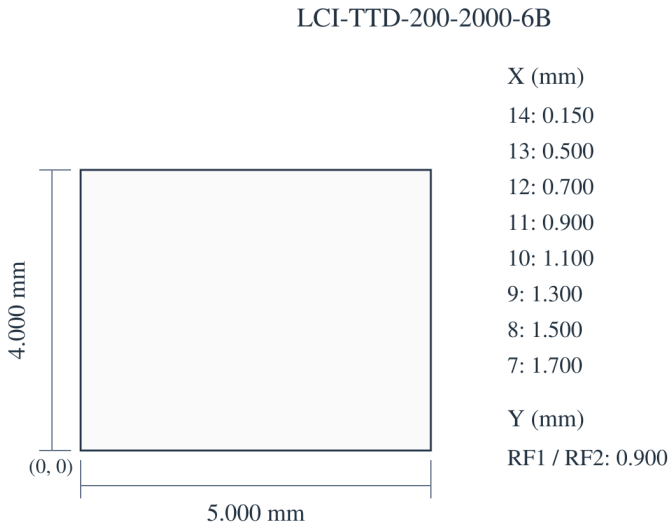
0 = 0 V; 1 = +3.3 V

State	T6	T5	T4	T3	T2	T1
400 ps	0	1	0	0	0	0
800 ps	1	0	0	0	0	0

Die dimensions

Parameter	Value	Unit
Die dimensions	5 × 4 × 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

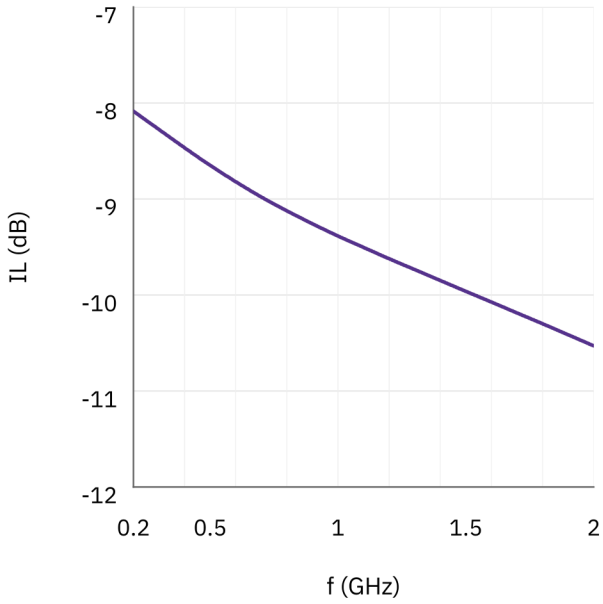
Control interface: Parallel TTL control.

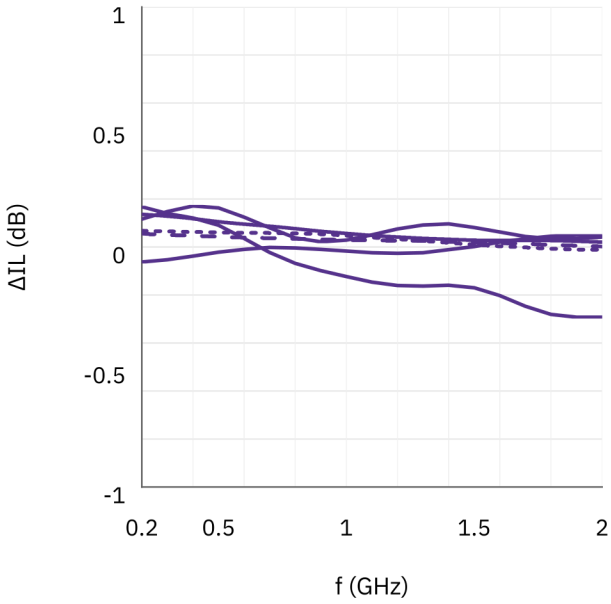
Performance curves

Read each figure with its stated operating conditions.

Insertion loss; Delay-induced amplitude variation.

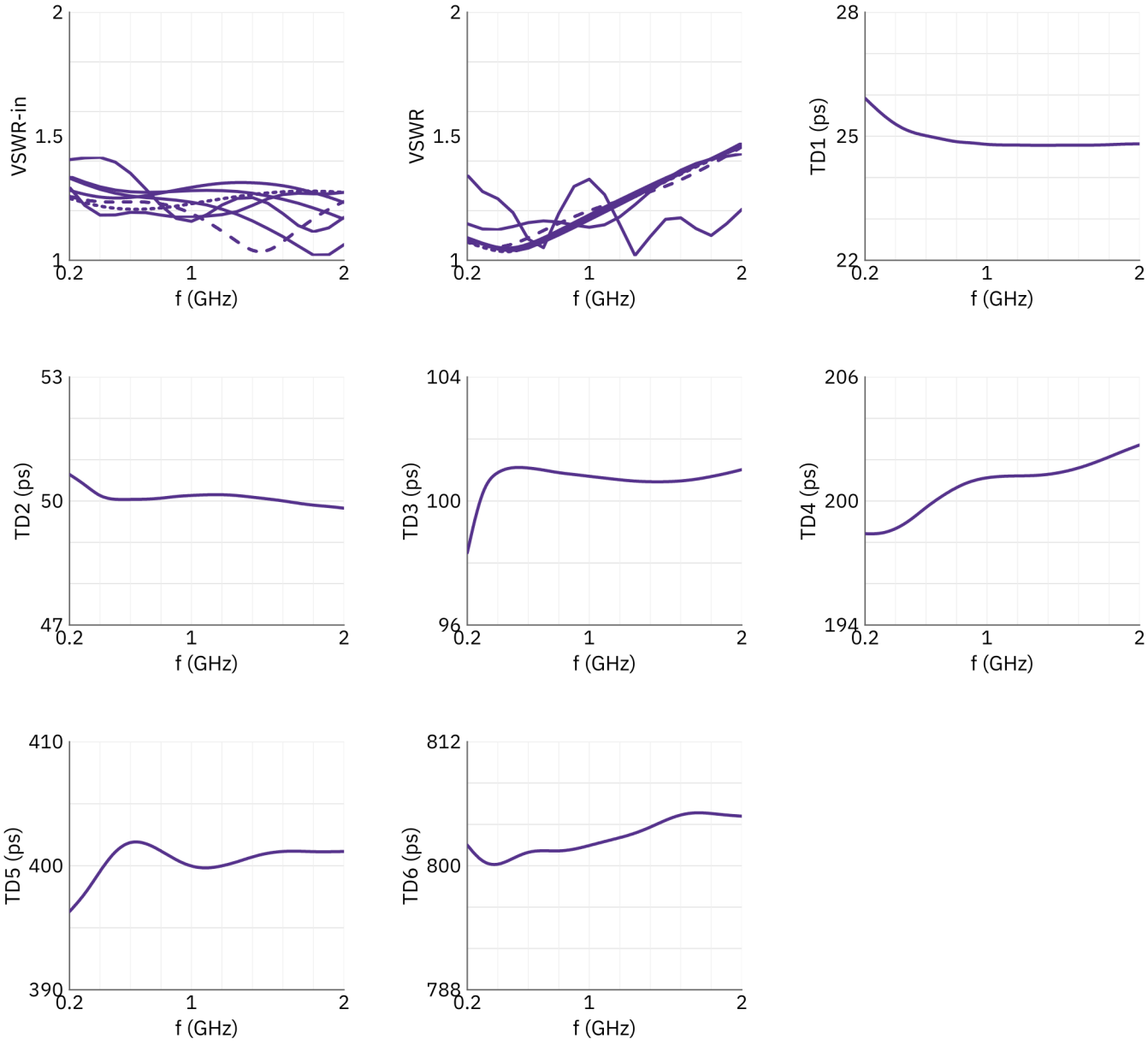
Readings are approximate.





Input matching; VSWR; TD.

Readings are approximate. Use the second VSWR plot for qualitative reference only. It does not identify a specific port.



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.