8000–12000 MHz GaN MMIC Power Amplifier Die

LCI-PA-8000-12000-PS42T-D is a GaN MMIC power amplifier supplied as bare die for 8000–12000 MHz. It supports CW and pulsed operation.

The RF table specifies: Saturated output power: 42 dBm (typical); Power gain: 22 dB (typical); Power-added efficiency: 43 % (typical). RF test conditions: TA = +25 °C; Vd = +28 V; Vg = -2.8 V. Die dimensions: 3.04 × 1.91 × 0.1 mm.



RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.8 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	f	8000	-	12000	MHz
Saturated output power	Psat	41.2	42	-	dBm
Power gain	Gp	21.2	22	-	dB
Power-gain flatness	ΔGp	-	-	±0.5	dB
Power-added efficiency	PAE	-	43	-	%
Small-signal gain	S21	-	34	36	dB
Small-signal gain flatness	ΔS21	-	-	±2	dB
Input VSWR	VSWR(in)	-	1.6	2	-

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Drain voltage	Vd	-	28	32	V
Gate voltage	Vg	-3	-2.8	-1.8	V
Quiescent drain current	Id	-	0.47	-	A
Dynamic drain current	Idd	-	1.2	1.4	A
Dynamic gate current	Igg	-	3	10	mA

Absolute limits

Absolute limits; these are not normal operating targets.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Maximum drain-source voltage	Vd	-	-	32	V
Minimum gate bias	Vg	-5	-	-	V
Maximum input power	Pin	-	-	28	dBm
Maximum channel temperature	Top	-	-	225	°C
Storage temperature	TSTG	-65	-	150	°C

Die dimensions

Parameter	Value	Unit
Die dimensions	3.04 × 1.91 × 0.1	mm
Plan-view outline tolerance	±100 (Plan-view outline only; the source does not specify thickness tolerance.)	µm

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Die integration and bias sequencing

Apply gate bias before drain bias at power-up. At power-down, remove drain bias before gate bias. Use clean handling, ESD protection and a carrier with thermal expansion compatible with the SiC die.

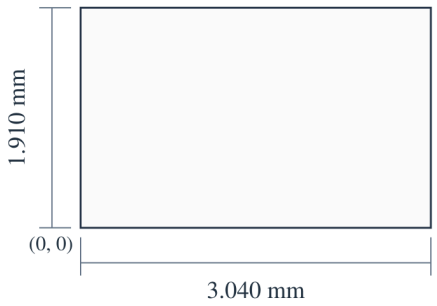
Bond-pad dimensions

Symbol: RFin; Dimensions (µm): 100 × 120. Symbol: Vg1; Dimensions (µm): 100 × 100. Symbol: Vg2; Dimensions (µm): 140 × 100. Symbol: Vd1; Dimensions (µm): 140 × 100. Symbol: Vd2; Dimensions (µm): 140 × 100. Symbol: Vd3; Dimensions (µm): 150 × 120. Symbol: RFout; Dimensions (µm): 110 × 120.

Mechanical Outline

Outline and dimensioned coordinates in mm. Use this drawing as a dimensional reference. Fabrication and wire bonding require complete drawings.

LCI-PA-8000-12000-PS42T-D



X (mm)
Vg2: 0.390
Vg1: 0.370
Vd1: 0.970
Vd2: 1.270
Vd3: 2.730

Y (mm)
RFin / RFout: 0.955

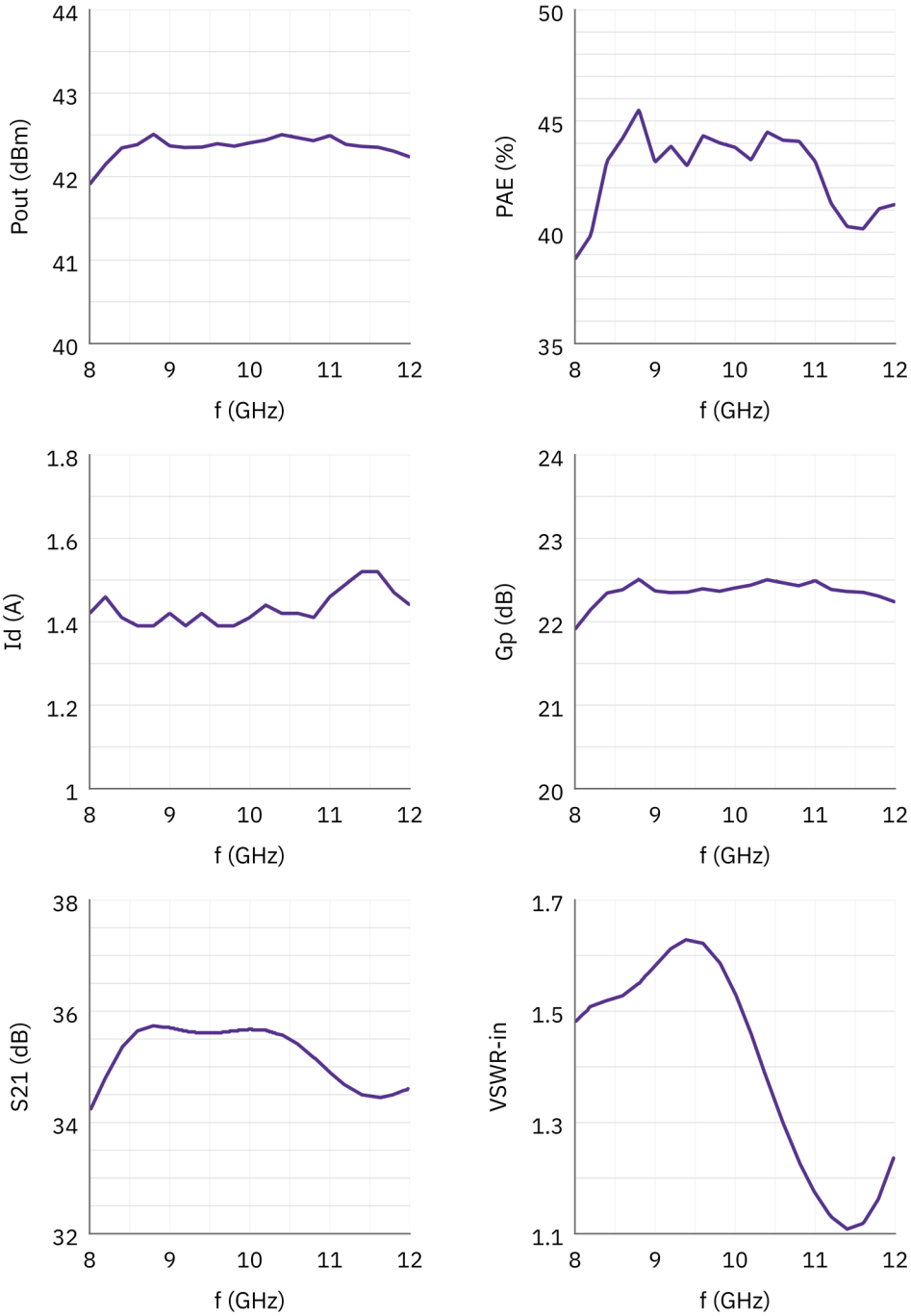
3.040 × 1.910 × 0.100 mm
X, Y: ±0.100 mm
X → · Y ↑ · X, Y: mm

Performance curves

Each performance plot applies to its stated operating conditions.

Pulsed — Saturated output power; Power-added efficiency; Dynamic drain current; Power gain; Small-signal gain; Input matching.

Figure notes: Vd=+28V; Vg=-2.8V; Pin=20dBm. Readings are approximate. Pulse width = 100 µs; duty cycle = 10%. No separate input-power condition is stated for the input-matching or small-signal-gain plots.



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.