8000–12000 MHz GaN MMIC Power Amplifier Die

LCI-PA-8000-12000-PS39T-D is a GaN MMIC power amplifier supplied as bare die for 8000–12000 MHz. It supports pulsed operation.

The RF table specifies: Saturated output power: 39 dBm (typical); Power gain: 18 dB (typical); Power-added efficiency: 43 % (typical). RF test conditions: TA = +25 °C; Vd = +28 V; Vg = -2.6 V. Die dimensions: 2.3 × 1.15 × 0.1 mm.



RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.6 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	f	8000	-	12000	MHz
Saturated output power	Psat	38	39	-	dBm
Power gain	Gp	17	18	-	dB
Power-gain flatness	ΔGp	-	-	±0.7	dB
Power-added efficiency	PAE	-	43	-	%
Small-signal gain	S21	-	27	29	dB
Small-signal gain flatness	ΔS21	-	-	±2	dB
Input VSWR	VSWR(in)	-	1.6	3	-

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Drain voltage	Vd	-	28	32	V
Gate voltage	Vg	-3.4	-2.6	-2.4	V
Quiescent drain current	Id	-	0.2	-	A
Dynamic drain current	Idd	-	0.7	0.8	A
Dynamic gate current	Igg	-	0.2	1	mA

Absolute limits

Absolute limits; these are not normal operating targets.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Maximum drain-source voltage	Vd	-	-	36	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	2.3 × 1.15 × 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

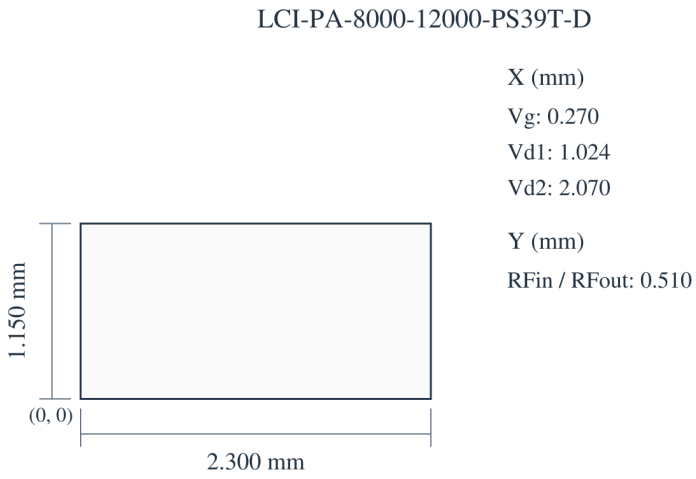
Apply gate bias before drain bias at power-up. At power-down, remove drain bias before gate bias. Use clean handling, ESD protection and a carrier with thermal expansion compatible with the SiC die.

Bond-pad dimensions

Symbol: RFin; Dimensions (µm): 100 × 100. Symbol: Vg; Dimensions (µm): 100 × 100. Symbol: Vd1; Dimensions (µm): 100 × 100. Symbol: Vd2; Dimensions (µm): 100 × 100. Symbol: RFout; Dimensions (µm): 100 × 100.

Mechanical Outline

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



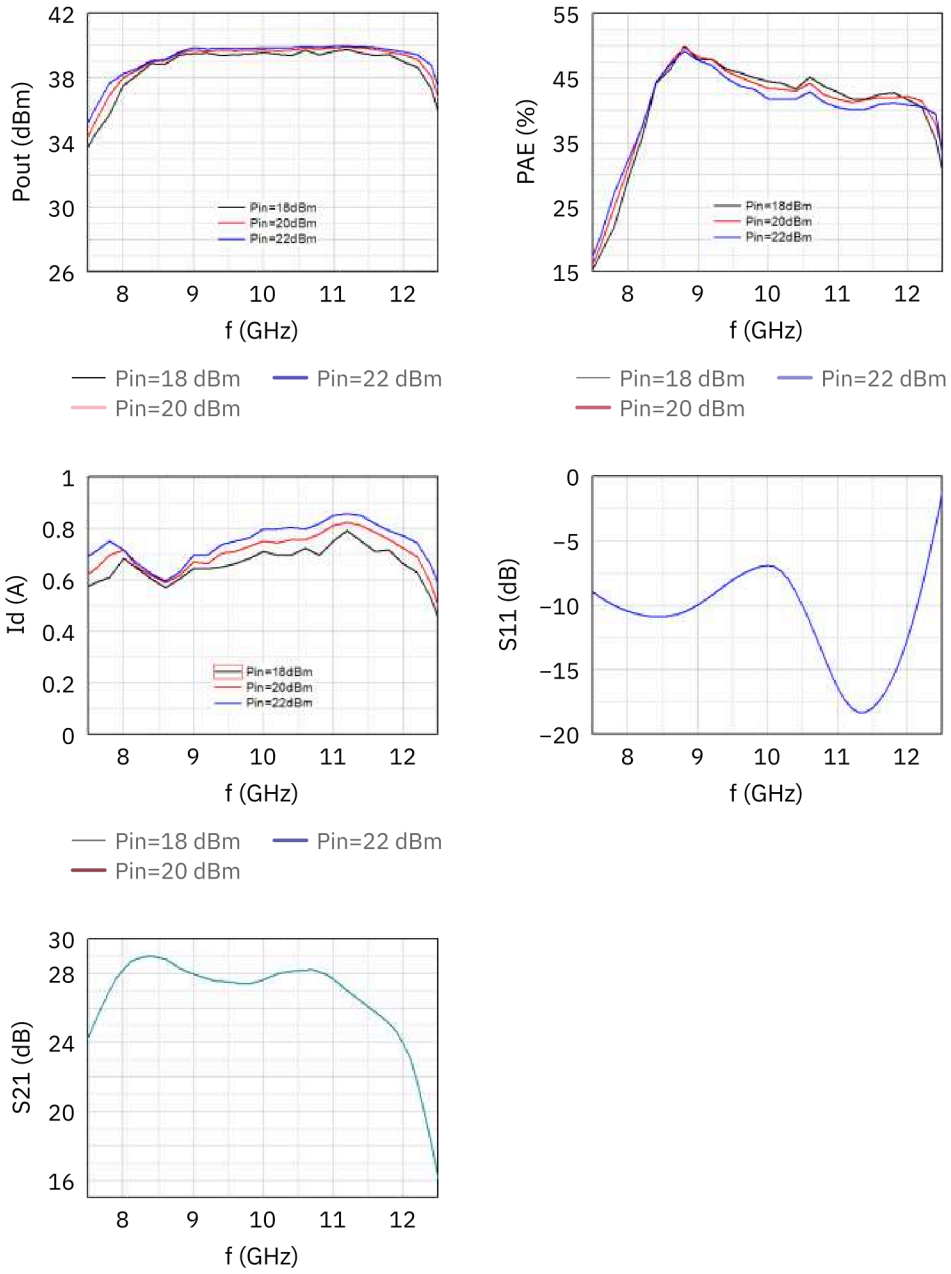
2.300 × 1.150 × 0.100 mm
X, Y: ±0.100 mm
X → · Y ↑ · X, Y: mm

Performance curves

Each performance plot applies to its stated operating conditions.

Output power; Power-added efficiency; Drain current; Small-signal gain; Input matching.

Figure notes: Vd=+28V; Vg=-2.6V. (1–3): Pin = 18 / 20 / 22 dBm. Conditions apply to the indicated plots and their own legends.



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.