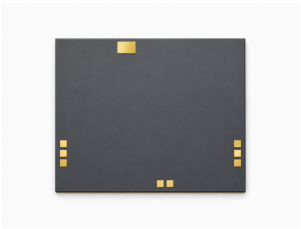
300–6000 MHz GaN MMIC Power Amplifier Die

LCI-PA-300-6000-PS40p8T is a GaN MMIC power amplifier supplied as bare die for 300–6000 MHz. It supports CW operation.

The RF table specifies: Saturated output power: 40.8 dBm (typical); Power gain: 12.8 dB (typical); Power-added efficiency: 40 % (typical). RF test conditions: TA = +25 °C; Vd = +28 V; Vg = -2.4 V. Die dimensions: 2.95 × 2.4 × 0.1 mm.



RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.4 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	f	300	-	6000	MHz
Saturated output power	Psat	40	40.8	41.6	dBm
Power gain	Gp	12	12.8	13.6	dB
Power-gain flatness	ΔGp	-	±0.8	-	dB
Power-added efficiency	PAE	35	40	65	%
Small-signal gain	S21	15	17	19	dB

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Drain voltage	Vd	24	28	29	V
Gate voltage	Vg	-2.8	-2.4	-2.4	V
Quiescent drain current	Id	-	0.69	0.7	A
Dynamic drain current	Idd	-	0.9	1	A
Dynamic gate current	Igg	-	-	1	mA

Absolute limits

Absolute limits; these are not normal operating targets.

Parameter	Symbol	Minimum	Typical	Maximum	Value	Unit
Maximum drain-source voltage	Vd	-	-	29	-	V
Minimum gate bias	Vg	-5	-	-	-	V
Maximum input power	Pin	-	-	29	-	dBm
Maximum channel temperature	Top	-	-	190	-	°C
Storage temperature	TSTG	-65	-	150	-	°C
Load mismatch survival	-	-	-	-	3:1	-

Die dimensions

Parameter	Value	Unit
Die dimensions	2.95 × 2.4 × 0.1	mm
Plan-view outline tolerance	±50 (Plan-view outline only; the source does not specify thickness tolerance.)	µm

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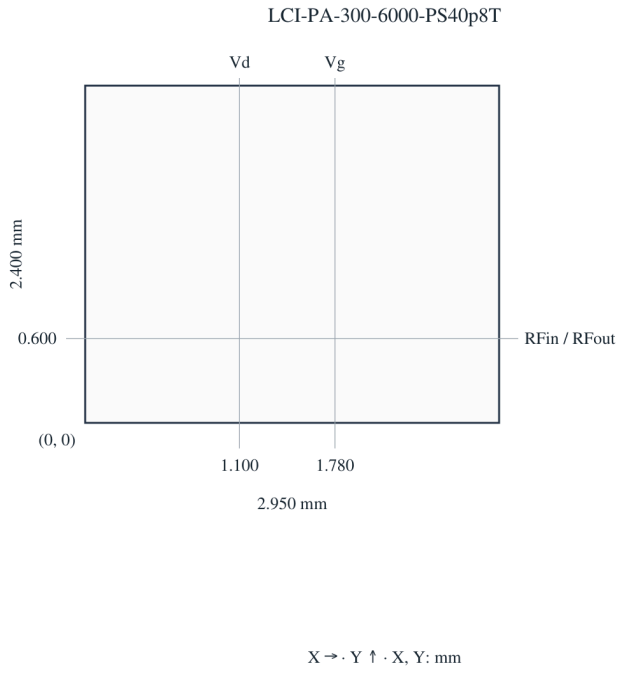
Die integration and bias sequencing

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

Bond-pad dimensions

RFin: 90 × 100 µm; RFout: 100 × 100 µm; Vg: 100 × 100 µm; Vd: 280 × 180 µm.

Mechanical Outline



Performance curves

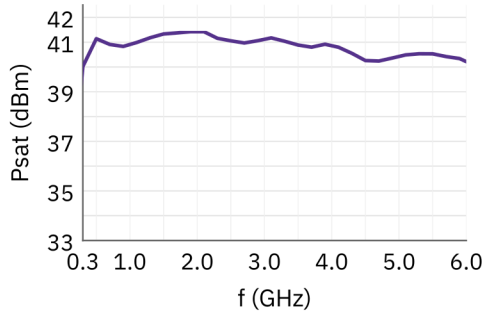
Read each figure with its stated operating conditions.

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

Figure notes: Vd=+28V; Vg=-2.4V. Psat/PAE/Ids/Gp: Pin = 28 dBm; S21: Pin = -20 dBm. Readings are approximate.

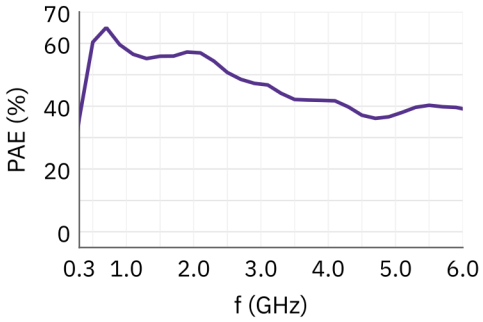
Psat

Pin = 28 dBm



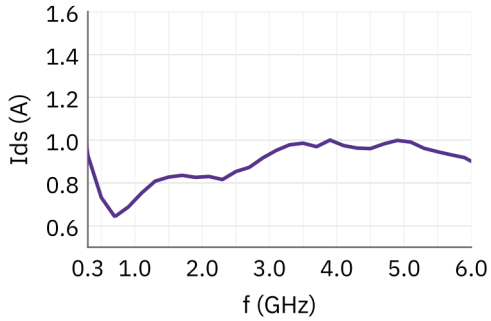
PAE

Pin = 28 dBm



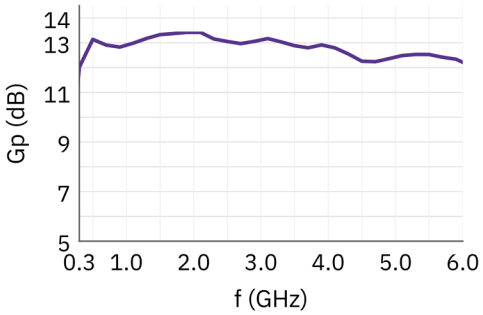
Ids

Pin = 28 dBm



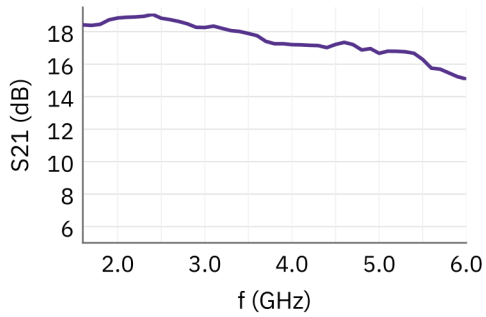
Gp

Pin = 28 dBm



S21

Pin = −20 dBm



Vd = +28 V

Vg = −2.4 V

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.