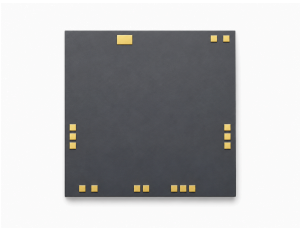
300–6000 MHz GaN T/R MMIC Power Amplifier Die

LCI-TRPA-300-6000-PS39T is a GaN MMIC power amplifier supplied as bare die for 300–6000 MHz. It supports CW operation. The die integrates a transmit power-amplifier path and a switched receive bypass path.



pulsed: PSAT: 38.7 dBm (minimum) / 39 dBm (typical) / 40.5 dBm (maximum); Power gain: 10.7 dB (minimum) / 11 dB (typical) / 12.5 dB (maximum); PAE: 30 % (minimum) / 35 % (typical) / 53 % (maximum). Die dimensions: 3.1 × 3.1 × 0.1 mm.

RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.6 V; pulsed

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	f	300	-	6000	MHz
Saturated output power	Psat	38.7	39	40.5	dBm
Power gain	Gp	10.7	11	12.5	dB
Power-gain flatness	ΔGp	-	±0.9	-	dB
Power-added efficiency	PAE	30	35	53	%
Small-signal gain	S21	14.5	17	18	dB

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Drain operating voltage	Vd	24	28	29	V
Gate operating voltage	Vg	-2.8	-2.6	-2.4	V
Quiescent drain current	Id	-	0.5	-	A
Dynamic drain current	Idd	-	0.9	1	A
Dynamic gate current	Igg	-	-	1	mA

Absolute limits

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

Die dimensions

Parameter	Value	Unit
Die dimensions	3.1 × 3.1 × 0.1	mm

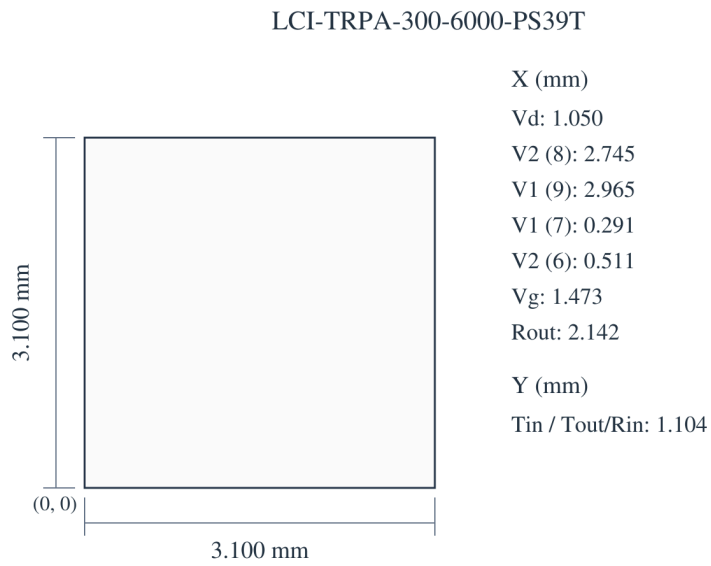
Current publication record · 1.6 · 2026-11-12. Product description or editorial content updated. Replaces revision 1.5.

Die integration and bias sequencing

Integrated DC blocking: RFout. External input DC-blocking capacitor: Tin: 1000 pF. Separate characterization: TA = +25 °C; Vd = +28 V; Vg = -2.6 V; CW. Transmit state: Tin → Tout; Vd = +28 V; Vg = -2.6 V; V1 = 0 V; V2 = -28 V. Receive state: Rin → Rout; Vd = +28 V; Vg = -2.6 V; V1 = -28 V; V2 = 0 V. Apply gate bias before drain bias. Remove drain bias before gate bias.

Mechanical Outline

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



Performance curves

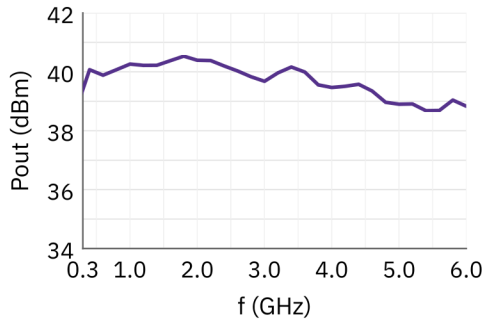
Each performance plot applies to its stated operating conditions.

Continuous wave (CW) — Saturated output power; Power-added efficiency; Dynamic drain current; Power gain; Small-signal gain.

Figure notes: TA=+25°C; Vd=+28V; Vg=-2.6V. V1 = 0 V; V2 = -28 V; Pout/PAE/Id/Gp: Pin = 28 dBm; S21: Pin = -20 dBm. Readings are approximate.

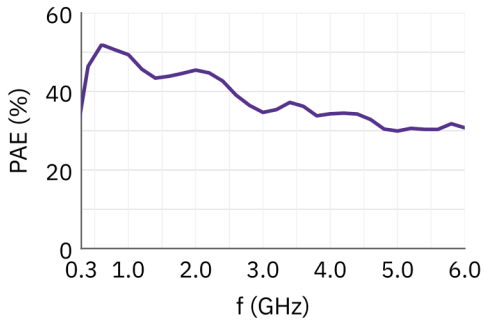
Pout

Pin = 28 dBm



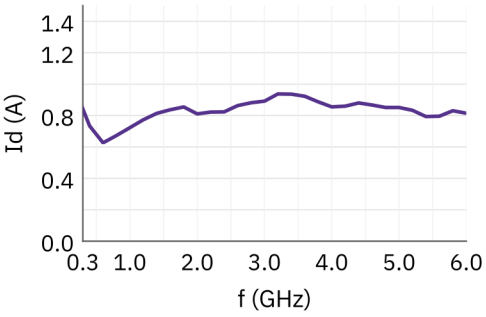
PAE

Pin = 28 dBm



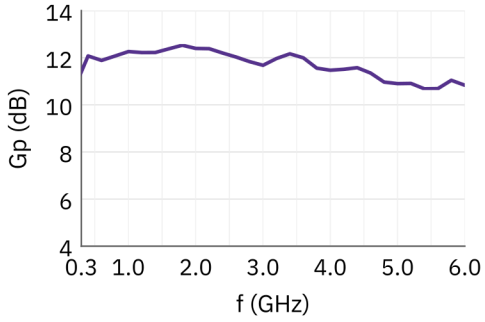
Id

Pin = 28 dBm



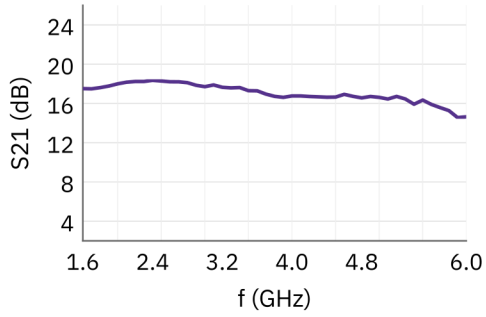
Gp

Pin = 28 dBm



S21

Pin = −20 dBm



CW

TA = +25 °C

Vd = +28 V

Vg = −2.6 V

V1 = 0 V

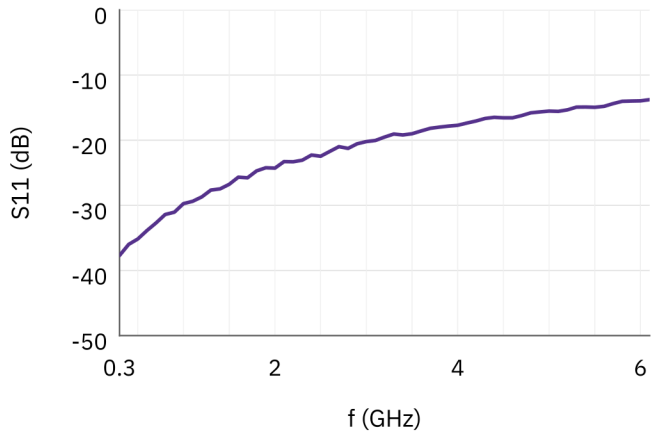
V2 = −28 V

Rx — Continuous wave (CW) — Input matching; Output matching; Insertion loss.

Figure notes: TA=+25°C; Vd=+28V; Vg=-2.6V. V1 = -28 V; V2 = 0 V; S11/S22/IL: Pin = -10 dBm. Readings are approximate.

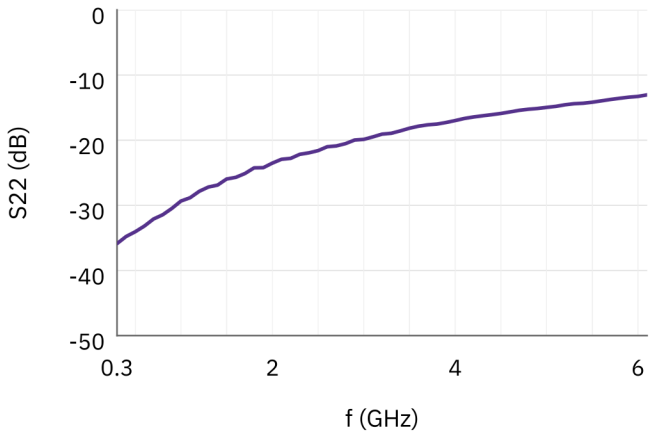
S11

Pin = −10 dBm



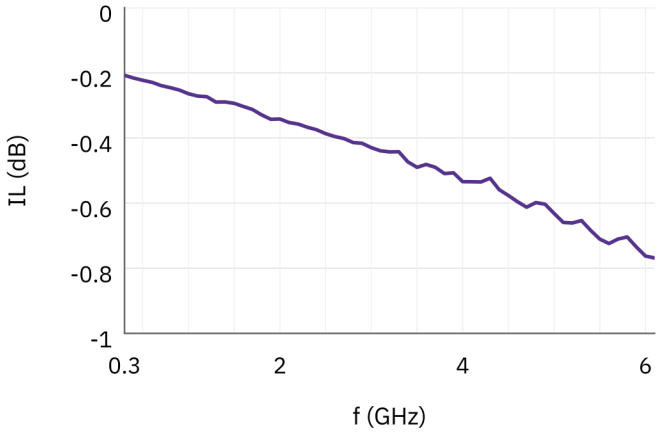
S22

Pin = −10 dBm



IL

Pin = −10 dBm



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.