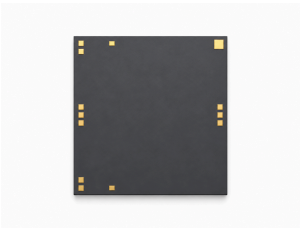
1200–2400 MHz GaN MMIC Power Amplifier Die

LCI-PA-1200-2400-PS45T is a GaN MMIC power amplifier supplied as bare die for 1200–2400 MHz. It supports CW and pulsed operation.

The RF table specifies: Saturated output power: 45 dBm (typical); Power gain: 25 dB (typical); Power-added efficiency: 53 % (typical). RF test conditions: TA = +25 °C; Vd = +28 V; Vg = -2.6 V. Die dimensions: 3.1 × 3.2 × 0.08 mm.



RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.6 V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating frequency	f	1200	-	2400	MHz
Saturated output power	Psat	44.5	45	45.5	dBm
Power gain	Gp	24.5	25	-	dB
Power-gain flatness	ΔGp	-	-	±0.5	dB
Power-added efficiency	PAE	50	53	-	%

DC bias and current

TA = +25 °C

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Drain voltage	Vd	-	28	-	V
Gate voltage	Vg	-3	-2.6	-2.2	V
Quiescent drain current	Id	-	1.2	-	A
Dynamic drain current	Idd	-	2.2	2.4	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	-	-	32	-	V
Minimum gate bias	Vg	-5	-	-	-	V
Maximum input power	Pin	-	-	25	-	dBm
Maximum channel temperature	Top	-	-	225	-	°C
Storage temperature	TSTG	-65	-	150	-	°C
Load mismatch survival	-	-	-	-	10:1	-

Die dimensions

Parameter	Value	Unit
Die dimensions	3.1 × 3.2 × 0.08	mm
Plan-view outline tolerance	±50 (Plan-view outline only; the source does not specify thickness tolerance.)	µm

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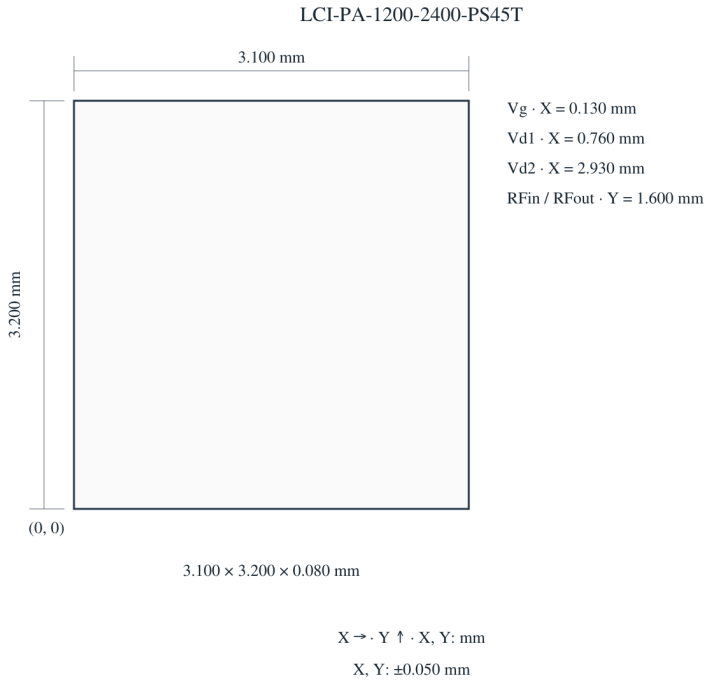
Die integration and bias sequencing

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

1 RFin: 100 × 100 µm; 2 RFout: 100 × 100 µm; 3,6 Vg: 100 × 100 µm; 4,7 Vd1: 100 × 80 µm; 5 Vd2: 180 × 180 µm.

Mechanical Outline



Performance curves

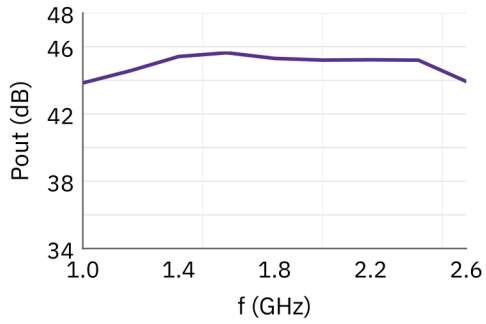
Read each figure with its stated operating conditions.

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

Figure notes: Vd=+28V; Vg=-2.6V. Pout/PAE/Id/Gp: Pin = 20 dBm; S21/S11: Pin = -20 dBm. The Pout axis is labeled dB. The absolute power unit for this plot is unspecified. Input matching is plotted as dB(S11). Readings are approximate.

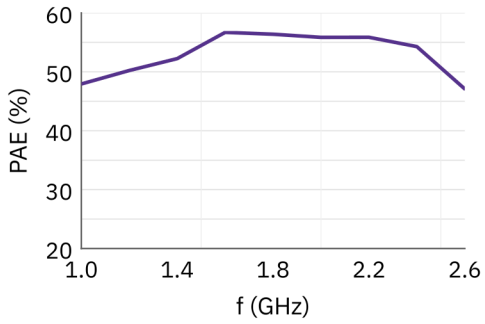
Pout

Pin = 20 dBm



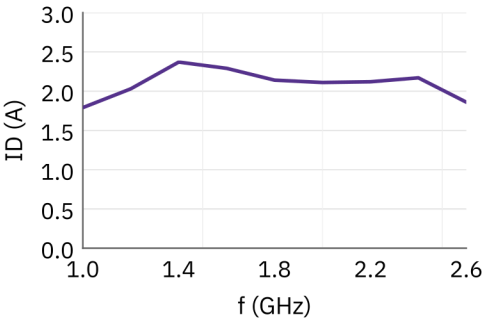
PAE

Pin = 20 dBm



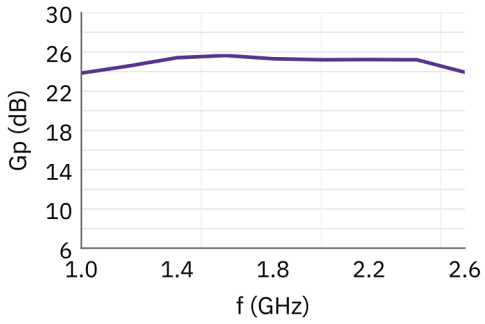
ID

Pin = 20 dBm



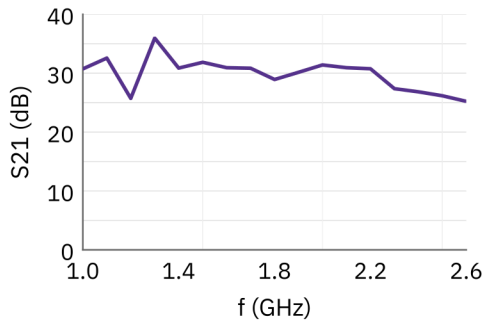
Gp

Pin = 20 dBm



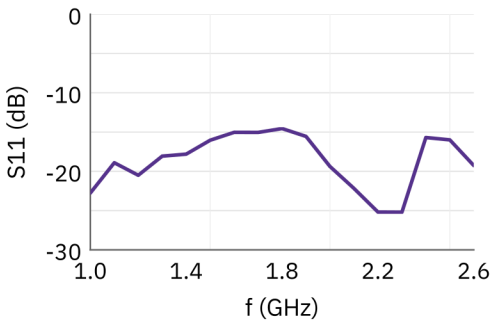
S21

Pin = −20 dBm



S11

Pin = −20 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.