# 10000–13000 MHz GaN MMIC Power Amplifier Die

LCI-PA-10000-13000-PS30p5T is a GaN MMIC power amplifier supplied as bare die for 10000–13000 MHz. It supports CW and pulsed operation.

The RF table specifies: Saturated output power: 30.5 dBm (typical); Power gain: 30 dB (typical); Power-added efficiency: 22 % (typical). RF test conditions: TA = +25 °C; Vd = +28 V; Vg = -2.4 V. Die dimensions: 2.22 × 1.16 × 0.1 mm.



## RF characteristics

TA = +25 °C; Vd = +28 V; Vg = -2.4 V

| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Operating frequency | f | 10000 | - | 13000 | MHz |
| Saturated output power | Psat | 30 | 30.5 | - | dBm |
| Power gain | Gp | - | 30 | - | dB |
| Power-gain flatness | ΔGp | - | - | ±0.5 | dB |
| Power-added efficiency | PAE | - | 22 | - | % |
| Small-signal gain | S21 | - | 33 | 34 | dB |
| Small-signal gain flatness | ΔS21 | - | - | ±1.5 | 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 | -2.4 | -2.2 | V |
| Quiescent drain current | Id | - | 0.2 | - | A |
| Dynamic drain current | Idd | - | 0.2 | - | A |
| Dynamic gate current | Igg | - | 0.1 | 0.3 | 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 | - | - | 6 | dBm |
| Maximum channel temperature | Top | - | - | 225 | °C |
| Storage temperature | TSTG | -65 | - | 150 | °C |

## Die dimensions

| Parameter | Value | Unit |
|---|---|---|
| Die dimensions | 2.22 × 1.16 × 0.1 | mm |
| Plan-view outline tolerance | ±100 (Plan-view outline only; the source does not specify thickness tolerance.) | µm |

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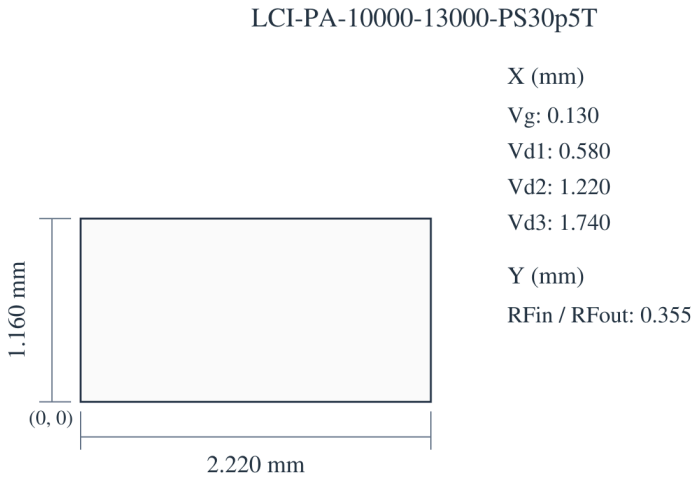
## Die integration and bias sequencing

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.

## Mechanical Outline

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



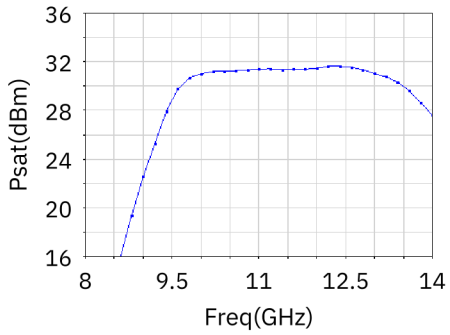

2.220 × 1.160 × 0.100 mm
X, Y: ±0.100 mm
X → · Y ↑ · X, Y: mm

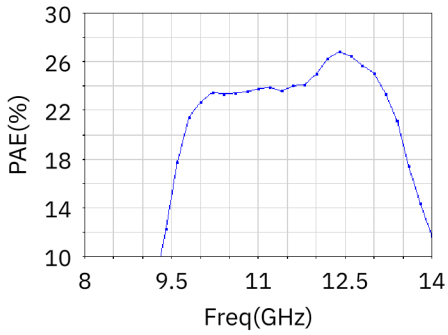
## Performance curves

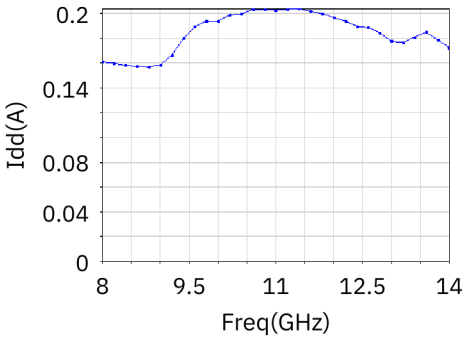
Each performance plot applies to its stated operating conditions.

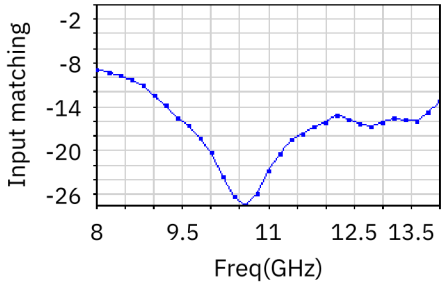
### Pulsed — Saturated output power; Power-added efficiency; Dynamic drain current; Gain; Input matching.

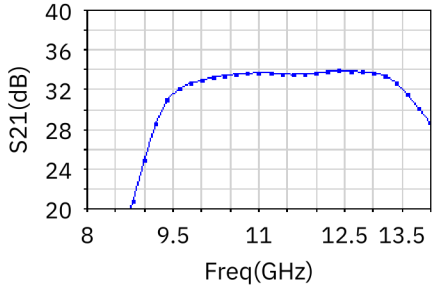
Figure notes: Vd=+28V; Vg=-2.4V. PW = 100 µs; D = 10%. Plots 1–3: Pin = 0 dBm. Plots 4–5: Pin = -10 dBm. The input-matching plot shows negative values on its vertical axis, with no specified unit or S11 designation.



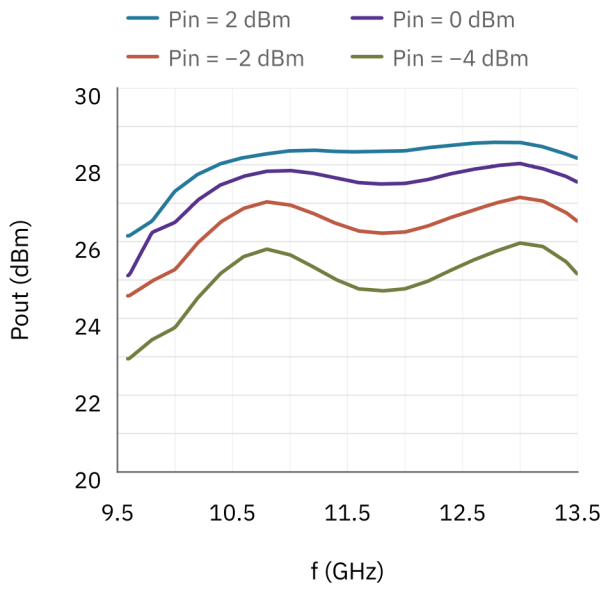



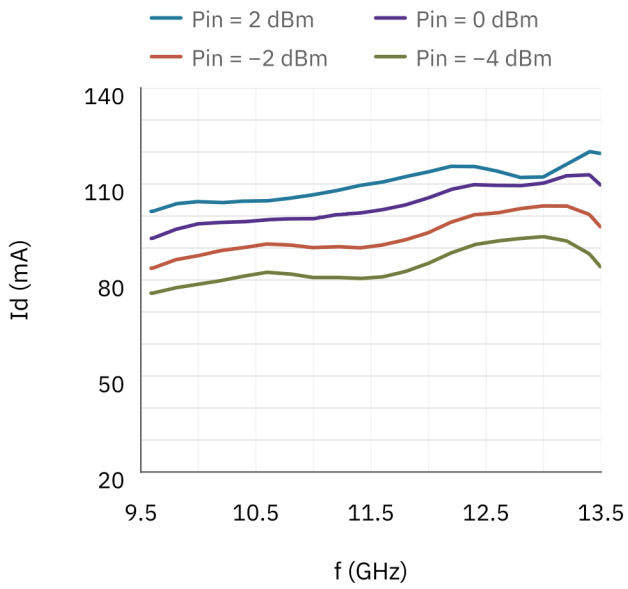



### Continuous wave (CW) — Output power; Operating current.

Figure notes: Vd=+28V; Vg=-2.8V. Readings are approximate. Pin = 2 / 0 / −2 / −4 dBm. Read each trace with the conditions shown in its plot.




**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.