

## Features

- Low Cost GaAs Power FET
- Class A or Class AB Operation
- 11 dB Typical Gain at 4 GHz
- 5V to 10V Operation

## Description

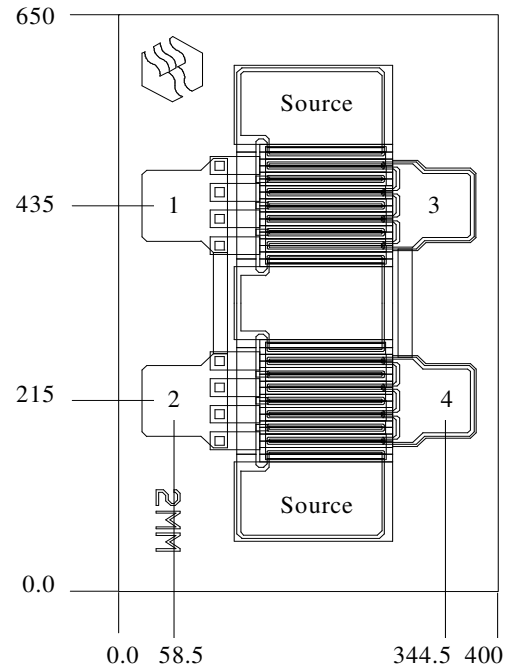
The HWC27NC is a medium power GaAs FET designed for various L-band & S-band applications.

## Absolute Maximum Ratings

$V_{DS}$	Drain to Source Voltage	+15V
$V_{GS}$	Gate to Source Voltage	-5V
$I_D$	Drain Current	$I_{DSS}$
$I_G$	Gate Current	2mA
$T_{CH}$	Channel Temperature	175°C
$T_{STG}$	Storage Temperature	-65 to +175°C
$P_T^*$	Power Dissipation	3.5W

\* mounted on an infinite heat sink

## Outline Dimensions



Unit:  $\mu\text{m}$

Thickness:  $100 \pm 5$

Chip size  $\pm 50$

Bond Pads 1-2 (Gate): 60 x 60

Bond Pads 3-4 (Drain): 60 x 60

## Electrical Specifications ( $T_A=25^\circ\text{C}$ ) $f = 4 \text{ GHz}$ for all RF Tests

Symbol	Parameters & Conditions	Units	Min.	Typ.	Max.
$I_{DSS}$	Saturated Current at $V_{DS}=3\text{V}$ , $V_{GS}=0\text{V}$	mA	300	400	600
$V_P$	Pinch-off Voltage at $V_{DS}=3\text{V}$ , $I_D=20\text{mA}$	V	-3.5	-2.0	-1.5
$g_m$	Transconductance at $V_{DS}=3\text{V}$ , $I_D=200\text{mA}$	mS	-	250	-
$P_{1dB}$	Power Output at Test Points $V_{DS}=10\text{V}$ , $I_D=0.5 I_{DSS}$	dBm	27	28	-
$G_{1dB}$	Gain at 1dB Compression Point $V_{DS}=10\text{V}$ , $I_D=0.5 I_{DSS}$	dB	9	10	-
PAE	Power-Added Efficiency ( $P_{OUT} = P_{1dB}$ ) $V_{DS}=10\text{V}$ , $I_D=0.5 I_{DSS}$	%	30	40	-

## Small Signal Common Source Scattering Parameters

### S-MAGN AND ANGLES

$V_{DS}=10V, I_{DS}=0.5I_{DSS}$

(GHz)	IS11I	∠ANG	IS21I	∠ANG	IS12I	∠ANG	IS22I	∠ANG
2.00	0.845	-115.62	4.702	103.80	0.028	71.07	0.236	-49.89
2.50	0.839	-126.96	3.921	95.65	0.032	71.05	0.246	-55.54
3.00	0.839	-135.39	3.336	88.67	0.037	72.49	0.257	-62.80
3.50	0.837	-141.73	2.896	82.57	0.042	72.98	0.275	-68.12
4.00	0.834	-147.23	2.551	77.03	0.045	74.32	0.291	-73.17
4.50	0.832	-151.60	2.278	72.18	0.048	76.58	0.309	-79.08
5.00	0.828	-155.23	2.052	67.94	0.052	77.92	0.327	-82.34
5.50	0.827	-158.30	1.879	63.92	0.056	80.91	0.336	-85.76
6.00	0.827	-161.00	1.720	59.95	0.061	83.84	0.352	-89.00
6.50	0.827	-163.08	1.588	56.32	0.066	85.29	0.365	-91.68
7.00	0.829	-165.07	1.475	52.75	0.070	86.33	0.384	-94.59
7.50	0.827	-167.18	1.370	49.09	0.077	87.32	0.399	-97.11
8.00	0.830	-169.65	1.279	45.84	0.083	89.28	0.418	-100.45
8.50	0.828	-171.56	1.204	42.82	0.089	89.60	0.440	-102.74
9.00	0.827	-173.63	1.136	39.47	0.096	89.96	0.456	-105.73
9.50	0.827	-175.28	1.077	36.43	0.104	90.23	0.467	-107.27
10.00	0.825	-176.45	1.019	33.25	0.110	91.35	0.475	-111.08

### Bonding Manner

Gate, drain pad: 1 wire on each pad  
Source pad: 2 wires on each side