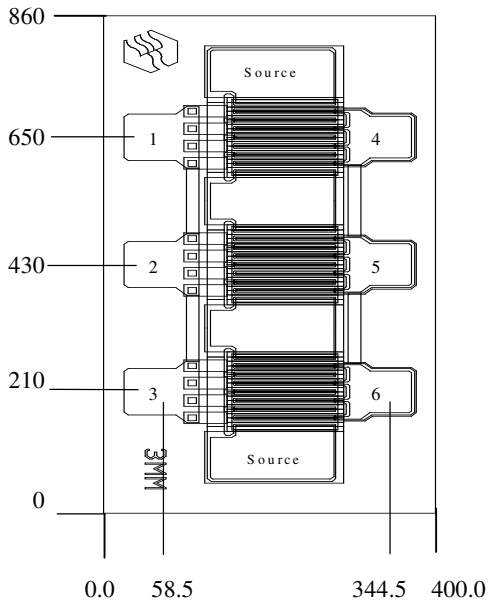
Features

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

Description

The HWC30NC is a medium power GaAs FET designed for various L-band & S-band applications.

Outline Dimensions



Units: µm
Thickness: 100 ±5
Chip size ±50
Bond Pads 1-3 (Gate): 60 x 60
Bond Pads 4-6 (Drain): 60 x 60

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	3mA
T_{CH}	Channel Temperature	175°C
T_{STG}	Storage Temperature	-65 to +175°C
P_T^*	Power Dissipation	6W

* mounted on an infinite heat sink

Electrical Specifications (T_A=25°C) f =4 GHz for all RF Tests

Symbol	Parameters & Conditions	Units	Min.	Typ.	Max.
I_{DSS}	Saturated Current at V_{DS}=3V, V_{GS}=0V	mA	500	600	900
V_P	Pinch-off Voltage at V_{DS}=3V, I_D=30mA	V	-3.5	-2.0	-1.5
gm	Transconductance at V_{DS}=3V, I_D=300mA	mS	-	300	-
P_{1dB}	Power Output at Test Points V_{DS}=10V, I_D=0.5 I_{DSS}	dBm	29	30	-
G_{1dB}	Gain at 1dB Compression Point V_{DS}=10V, I_D=0.5 I_{DSS}	dB	9	10	-
PAE	Power-Added Efficiency (P_{OUT} = P_{1dB}) V_{DS}=10V, I_D=0.5 I_{DSS}	%	30	35	-

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	0.838	-136.22	4.344	92.80	0.031	72.10	0.187	-97.86
2.50	0.839	-144.63	3.525	85.70	0.035	73.09	0.209	-100.53
3.00	0.842	-150.68	2.954	79.70	0.042	77.67	0.238	-103.32
3.50	0.843	-154.74	2.526	74.29	0.048	79.88	0.267	-104.43
4.00	0.843	-158.40	2.208	69.51	0.053	80.80	0.293	-106.47
4.50	0.842	-161.14	1.958	65.26	0.060	82.79	0.324	-109.01
5.00	0.842	-163.41	1.755	61.58	0.066	84.42	0.350	-110.46
5.50	0.843	-165.18	1.597	58.03	0.073	86.57	0.367	-112.47
6.00	0.845	-166.48	1.461	54.54	0.079	87.77	0.385	-114.54
6.50	0.846	-167.39	1.348	51.38	0.088	88.74	0.401	-116.11
7.00	0.849	-168.13	1.249	48.23	0.096	90.30	0.423	-118.03
7.50	0.848	-169.26	1.162	45.29	0.105	90.46	0.441	-119.90
8.00	0.849	-170.64	1.087	42.69	0.114	91.53	0.466	-122.08
8.50	0.850	-171.65	1.027	40.04	0.124	91.74	0.491	-123.44
9.00	0.848	-172.62	0.969	37.10	0.135	91.96	0.510	-126.11
9.50	0.846	-173.36	0.921	34.79	0.146	92.12	0.519	-127.98
10.00	0.843	-173.73	0.873	32.10	0.159	91.95	0.533	-131.95

Bonding Manner

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