

- 14.5 dB Typical Gain at 2.4 GHz
- 5V to 10V Operation

Description

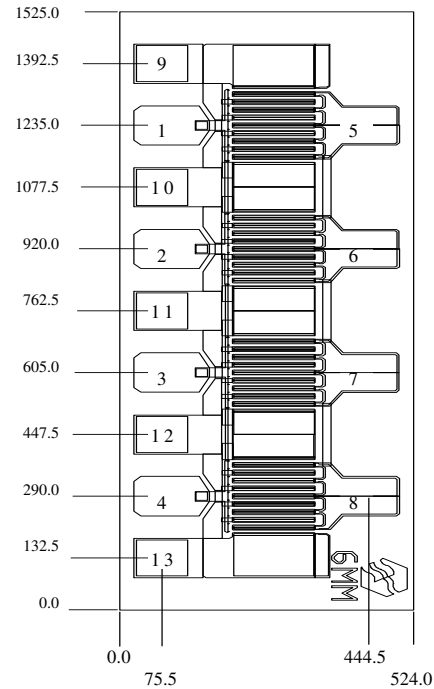
The HWL34NC is a power GaAs FET designed for various L-band & S-band applications.

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 | 6mA |
| T_{CH} | Channel Temperature | 175°C |
| T_{STG} | Storage Temperature | -65 to +175°C |
| P_T^* | Power Dissipation | 12W |

* mounted on an infinite heat sink

Outline Dimensions



Units: μm

Thickness: 100 \pm 5

Chip size \pm 50

Bond Pads 1-4 (Gate): 100 x 100

Bond Pads 5-8 (Drain): 100 x 100

Bond Pads 9-13 (Source): 100 x 100

Electrical Specifications (TA=25°C) f = 2.4 GHz for μr

| Symbol | Parameters & Conditions | Ur | | | |
|-----------|--|-----|------|------|------|
| I_{DSS} | Saturated Current at $V_{DS}=3V$, $V_{GS}=0V$ | mA | 900 | 1200 | 1600 |
| V_P | Pinch-off Voltage at $V_{DS}=3V$, $I_D=60mA$ | V | -3.5 | -2.0 | -1.5 |
| gm | Transconductance at $V_{DS}=3V$, $I_D=600mA$ | mS | - | 700 | - |
| P_{1dB} | Power Output at Test Points $V_{DS}=10V$, $I_D=0.5 I_{DSS}$ | dBm | 33 | 34 | - |
| G_{1dB} | Gain at 1dB Compression Point $V_{DS}=10V$, $I_D=0.5 I_{DSS}$ | dB | 12.5 | 13.5 | - |
| PAE | Power-Added Efficiency ($P_{OUT} = P_{1dB}$) $V_{DS}=10V$, $I_D=0.5 I_{DSS}$ | % | 25 | 30 | - |

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 |
|-------|-------|---------|--------|--------|-------|-------|-------|---------|
| 0.50 | 0.887 | -111.36 | 11.200 | 114.93 | 0.018 | 59.27 | 0.263 | -158.55 |
| 0.60 | 0.881 | -122.10 | 9.816 | 108.73 | 0.019 | 52.79 | 0.272 | -159.45 |
| 0.70 | 0.876 | -130.68 | 8.678 | 103.44 | 0.021 | 51.73 | 0.280 | -161.03 |
| 0.80 | 0.872 | -137.70 | 7.769 | 98.93 | 0.023 | 52.71 | 0.285 | -162.06 |
| 0.90 | 0.870 | -143.48 | 7.023 | 95.01 | 0.024 | 51.99 | 0.290 | -162.88 |
| 1.00 | 0.865 | -148.23 | 6.399 | 91.61 | 0.026 | 54.57 | 0.293 | -163.34 |
| 1.10 | 0.863 | -152.62 | 5.858 | 88.33 | 0.027 | 52.90 | 0.297 | -164.20 |
| 1.20 | 0.864 | -156.37 | 5.402 | 85.47 | 0.028 | 55.60 | 0.300 | -163.99 |
| 1.30 | 0.862 | -159.54 | 4.996 | 82.67 | 0.030 | 53.47 | 0.303 | -165.14 |
| 1.40 | 0.862 | -162.41 | 4.665 | 79.99 | 0.031 | 54.50 | 0.308 | -166.30 |
| 1.50 | 0.863 | -165.14 | 4.362 | 77.38 | 0.032 | 54.73 | 0.313 | -167.97 |
| 1.60 | 0.864 | -167.44 | 4.090 | 75.05 | 0.034 | 55.23 | 0.321 | -168.45 |
| 1.70 | 0.862 | -169.77 | 3.862 | 72.73 | 0.036 | 54.29 | 0.324 | -168.88 |
| 1.80 | 0.863 | -172.16 | 3.645 | 70.35 | 0.037 | 55.08 | 0.329 | -169.54 |
| 1.90 | 0.863 | -174.21 | 3.470 | 68.23 | 0.039 | 55.54 | 0.332 | -169.87 |
| 2.00 | 0.859 | -176.36 | 3.296 | 66.23 | 0.040 | 55.48 | 0.340 | -170.42 |
| 2.10 | 0.858 | -178.17 | 3.136 | 64.02 | 0.041 | 55.20 | 0.347 | -170.89 |
| 2.20 | 0.857 | -179.78 | 3.011 | 61.98 | 0.044 | 55.76 | 0.347 | -171.41 |
| 2.30 | 0.853 | 178.67 | 2.881 | 60.03 | 0.045 | 56.12 | 0.347 | -172.09 |
| 2.40 | 0.852 | 177.35 | 2.766 | 58.02 | 0.047 | 55.98 | 0.348 | -172.94 |
| 2.50 | 0.851 | 176.11 | 2.659 | 56.19 | 0.049 | 56.99 | 0.356 | -173.65 |
| 2.60 | 0.852 | 174.73 | 2.545 | 54.29 | 0.051 | 56.37 | 0.361 | -173.94 |
| 2.70 | 0.853 | 173.43 | 2.452 | 52.38 | 0.052 | 55.14 | 0.365 | -175.88 |
| 2.80 | 0.855 | 172.03 | 2.354 | 50.70 | 0.053 | 55.16 | 0.375 | -175.47 |
| 2.90 | 0.856 | 170.43 | 2.264 | 48.96 | 0.056 | 55.28 | 0.383 | -175.35 |
| 3.00 | 0.855 | 168.76 | 2.185 | 47.30 | 0.057 | 54.91 | 0.395 | -173.39 |
| 3.10 | 0.857 | 167.10 | 2.109 | 45.34 | 0.059 | 54.46 | 0.397 | -174.42 |
| 3.20 | 0.856 | 165.34 | 2.042 | 43.52 | 0.060 | 54.84 | 0.403 | -173.91 |
| 3.30 | 0.855 | 163.66 | 1.977 | 41.64 | 0.062 | 54.03 | 0.407 | -175.37 |
| 3.40 | 0.851 | 162.09 | 1.916 | 39.60 | 0.064 | 53.34 | 0.411 | -175.48 |
| 3.50 | 0.851 | 160.70 | 1.869 | 37.63 | 0.066 | 53.24 | 0.419 | -177.03 |
| 3.60 | 0.847 | 159.50 | 1.813 | 35.90 | 0.068 | 51.96 | 0.428 | -178.65 |
| 3.70 | 0.846 | 158.68 | 1.761 | 34.34 | 0.071 | 51.81 | 0.437 | -179.72 |
| 3.80 | 0.845 | 157.96 | 1.713 | 32.69 | 0.072 | 51.37 | 0.445 | 179.17 |
| 3.90 | 0.844 | 157.35 | 1.660 | 31.47 | 0.073 | 51.12 | 0.458 | 178.27 |
| 4.00 | 0.847 | 156.81 | 1.604 | 30.03 | 0.075 | 50.76 | 0.467 | 177.78 |

Bonding Manner

Gate, drain pad: 1 wire on each pad

Source pad: 1 wires on each pad