# HWL26YC

L-Band Power FET Via Hole Chip

Autumn 2002

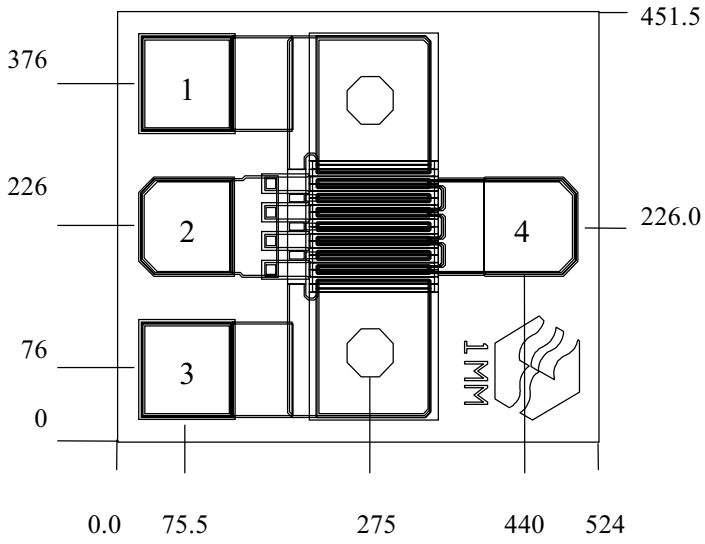
## Features

- **Low Cost GaAs Power FET**
- **Class A or Class AB Operation**
- **18 dB Typical Gain at 2.4 GHz**
- **5V to 10V Operation**

## Description

The HWL26YC is a medium power GaAs FET designed for various L-band & S-band applications.

## Outline Dimensions




Units: µm
Thickness: 50 ±5
Chip size ±50
Bond Pad 1, 3 (Source): 100 x 100
Bond Pad 2 (Gate): 100 x 100
Bond Pad 4 (Drain): 100 x 100

## 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 | 1mA |
| $T_{CH}$ | Channel Temperature | 175°C |
| $T_{STG}$ | Storage Temperature | -65 to +175°C |
| $P_T^*$ | Power Dissipation | 1.7W |

* mounted on an infinite heat sink

## Electrical Specifications ($T_A$=25°C) f = 2.4 GHz for all RF Tests

| Symbol | Parameters & Conditions | Units | Min. | Typ. | Max. |
|---|---|---|---|---|---|
| $I_{DSS}$ | Saturated Current at $V_{DS}$=3V, $V_{GS}$=0V | mA | 150 | 200 | 280 |
| $V_P$ | Pinch-off Voltage at $V_{DS}$=3V, $I_D$=10mA | V | -3.5 | -2.0 | -1.5 |
| gm | Transconductance at $V_{DS}$=3V, $I_D$=100mA | mS | - | 120 | - |
| $P_{1dB}$ | Power Output at Test Points $V_{DS}$=10V, $I_D$=0.5 $I_{DSS}$ | dBm | 25 | 26 | - |
| $G_{1dB}$ | Gain at 1dB Compression Point $V_{DS}$=10V, $I_D$=0.5 $I_{DSS}$ | dB | 16 | 17 | - |
| PAE | Power-Added Efficiency ($P_{OUT}$ = $P_{1dB}$) $V_{DS}$=10V, $I_D$=0.5 $I_{DSS}$ | % | 35 | 42 | - |



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## Small Signal Common Source Scattering Parameters

### S-MAGN AND ANGLES

**VDS=9V, IDS=0.5$I_{DSS}$**

| (GHz) | IS11I | ∠ANG | IS21I | ∠ANG | IS12I | ∠ANG | IS22I | ∠ANG |
|---|---|---|---|---|---|---|---|---|
| 0.50 | 0.994 | -22.26 | 6.048 | 164.50 | 0.008 | 74.22 | 0.676 | -6.59 |
| 0.60 | 0.994 | -24.49 | 5.904 | 161.84 | 0.009 | 75.82 | 0.670 | -9.32 |
| 0.70 | 0.999 | -30.31 | 5.953 | 158.76 | 0.012 | 75.97 | 0.652 | -9.24 |
| 0.80 | 0.975 | -35.18 | 5.843 | 155.58 | 0.012 | 72.36 | 0.658 | -9.09 |
| 0.90 | 0.974 | -38.65 | 5.805 | 153.18 | 0.014 | 68.69 | 0.662 | -10.89 |
| 1.00 | 0.971 | -42.19 | 5.778 | 150.54 | 0.016 | 69.80 | 0.657 | -12.67 |
| 1.10 | 0.966 | -47.41 | 5.635 | 147.98 | 0.016 | 67.06 | 0.650 | -11.25 |
| 1.20 | 0.965 | -51.99 | 5.583 | 144.84 | 0.018 | 63.89 | 0.635 | -12.30 |
| 1.30 | 0.952 | -55.29 | 5.480 | 142.64 | 0.019 | 60.46 | 0.643 | -13.15 |
| 1.40 | 0.960 | -59.25 | 5.395 | 140.07 | 0.020 | 60.68 | 0.629 | -14.02 |
| 1.50 | 0.940 | -62.73 | 5.305 | 137.39 | 0.021 | 59.88 | 0.636 | -14.96 |
| 1.60 | 0.945 | -66.79 | 5.214 | 135.03 | 0.022 | 59.10 | 0.623 | -15.66 |
| 1.70 | 0.933 | -69.79 | 5.106 | 132.75 | 0.024 | 54.90 | 0.627 | -16.67 |
| 1.80 | 0.926 | -74.40 | 5.018 | 130.23 | 0.023 | 54.44 | 0.624 | -16.47 |
| 1.90 | 0.923 | -77.56 | 4.968 | 128.04 | 0.025 | 52.68 | 0.624 | -17.96 |
| 2.00 | 0.922 | -80.63 | 4.853 | 125.83 | 0.026 | 52.20 | 0.615 | -18.58 |
| 2.10 | 0.923 | -84.47 | 4.748 | 123.55 | 0.027 | 49.18 | 0.606 | -18.56 |
| 2.20 | 0.918 | -87.53 | 4.669 | 121.49 | 0.027 | 49.90 | 0.604 | -19.84 |
| 2.30 | 0.913 | -90.61 | 4.575 | 119.42 | 0.028 | 48.65 | 0.601 | -20.18 |
| 2.40 | 0.909 | -93.75 | 4.478 | 117.36 | 0.029 | 47.36 | 0.599 | -20.97 |
| 2.50 | 0.904 | -96.62 | 4.387 | 115.54 | 0.030 | 45.41 | 0.595 | -21.42 |
| 2.60 | 0.899 | -99.71 | 4.303 | 113.57 | 0.030 | 44.54 | 0.597 | -22.14 |
| 2.70 | 0.895 | -102.26 | 4.199 | 111.68 | 0.030 | 44.27 | 0.582 | -22.82 |
| 2.80 | 0.894 | -104.90 | 4.118 | 109.75 | 0.030 | 41.72 | 0.583 | -23.87 |
| 2.90 | 0.893 | -107.51 | 4.046 | 108.05 | 0.031 | 41.41 | 0.577 | -24.64 |
| 3.00 | 0.888 | -109.93 | 3.953 | 106.36 | 0.031 | 40.01 | 0.581 | -24.59 |
| 3.10 | 0.886 | -112.39 | 3.857 | 104.59 | 0.031 | 40.14 | 0.570 | -25.33 |
| 3.20 | 0.884 | -114.54 | 3.778 | 102.93 | 0.031 | 39.58 | 0.571 | -26.41 |
| 3.30 | 0.878 | -116.84 | 3.715 | 101.39 | 0.031 | 39.64 | 0.570 | -26.75 |
| 3.40 | 0.879 | -119.03 | 3.649 | 99.78 | 0.032 | 36.82 | 0.567 | -27.72 |
| 3.50 | 0.875 | -121.05 | 3.583 | 98.20 | 0.032 | 36.18 | 0.570 | -28.31 |
| 3.60 | 0.872 | -123.18 | 3.491 | 96.71 | 0.032 | 35.49 | 0.564 | -28.57 |
| 3.70 | 0.872 | -125.31 | 3.426 | 95.12 | 0.032 | 34.37 | 0.558 | -29.61 |
| 3.80 | 0.872 | -127.10 | 3.369 | 93.71 | 0.033 | 35.56 | 0.557 | -30.27 |
| 3.90 | 0.870 | -129.01 | 3.306 | 92.20 | 0.033 | 34.61 | 0.555 | -31.37 |
| 4.00 | 0.868 | -130.87 | 3.247 | 90.73 | 0.033 | 33.36 | 0.554 | -31.74 |

## Bonding Manner

Gate, drain pad: 1 wire on each pad
Source pad: 1 wires on each side
(Not necessary, subject to user's need)