

Features

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

Description

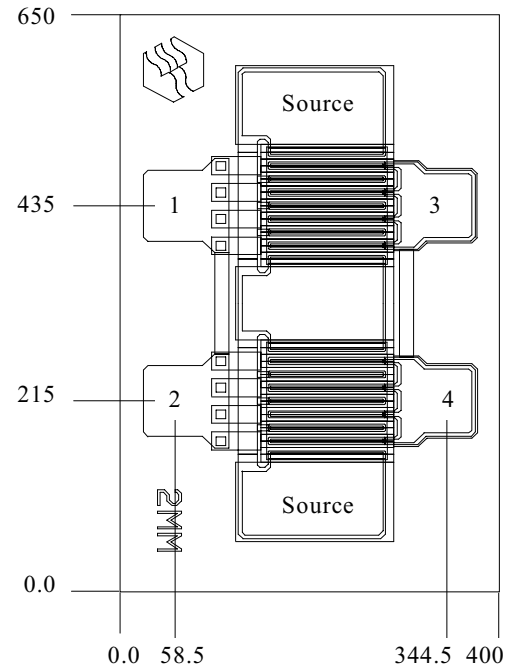
The HWC27YC is a medium power GaAs FET designed for various RF and microwave applications.

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: μm

Thickness: 50 ± 5

Chip size ± 50

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

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

Electrical Specifications ($T_A=25^\circ\text{C}$) $f = 2.4 \text{ GHz}$ 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 | 16 | 17 | - |
| PAE | Power-Added Efficiency ($P_{OUT} = P_{1dB}$) $V_{DS}=10\text{V}$, $I_D=0.5 I_{DSS}$ | % | - | 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 |
|-------|-------|---------|-------|--------|-------|-------|-------|---------|
| 2.0 | 0.912 | -118.90 | 5.295 | 104.40 | 0.024 | 35.50 | 0.413 | -35.82 |
| 2.5 | 0.906 | -128.90 | 4.540 | 95.77 | 0.025 | 31.08 | 0.409 | -42.72 |
| 3.0 | 0.900 | -138.90 | 3.784 | 87.16 | 0.026 | 26.65 | 0.404 | -49.62 |
| 3.5 | 0.900 | -144.50 | 3.335 | 80.57 | 0.026 | 25.72 | 0.410 | -56.64 |
| 4.0 | 0.899 | -150.20 | 2.886 | 73.98 | 0.025 | 24.78 | 0.416 | -63.65 |
| 4.5 | 0.901 | -153.70 | 2.585 | 68.26 | 0.025 | 25.24 | 0.429 | -70.99 |
| 5.0 | 0.903 | -157.20 | 2.284 | 62.54 | 0.024 | 25.70 | 0.441 | -78.33 |
| 5.5 | 0.907 | -159.90 | 2.072 | 57.40 | 0.024 | 26.84 | 0.468 | -84.84 |
| 6.0 | 0.910 | -162.50 | 1.860 | 52.26 | 0.023 | 27.98 | 0.495 | -91.35 |
| 6.5 | 0.911 | -164.20 | 1.696 | 47.77 | 0.023 | 29.32 | 0.521 | -95.72 |
| 7.0 | 0.911 | -165.80 | 1.533 | 43.27 | 0.022 | 30.66 | 0.547 | -100.10 |
| 7.5 | 0.915 | -167.20 | 1.413 | 39.22 | 0.022 | 32.61 | 0.573 | -103.80 |
| 8.0 | 0.919 | -168.50 | 1.293 | 35.17 | 0.021 | 34.55 | 0.598 | -107.60 |
| 8.5 | 0.918 | -169.90 | 1.200 | 31.33 | 0.022 | 37.37 | 0.626 | -110.00 |
| 9.0 | 0.917 | -171.40 | 1.107 | 27.50 | 0.022 | 40.20 | 0.654 | -112.50 |
| 9.5 | 0.916 | -172.00 | 1.037 | 24.27 | 0.022 | 41.37 | 0.671 | -114.00 |
| 10.0 | 0.914 | -172.60 | 0.966 | 21.04 | 0.022 | 42.54 | 0.688 | -115.60 |

Bonding Manner

Gate, drain pad: 1 wire on each pad