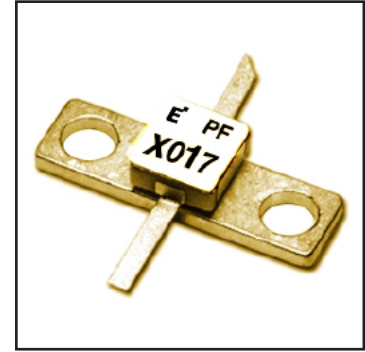


### FEATURES

- Medium Power Output:  $P_{1dB}=21.5dB$  (Typ.)@8.0GHz
- High Power Gain:  $G_{1dB}=11dB$  (Typ.)@8.0GHz
- Hermetic Metal/Ceramic Package
- Proven Reliability

### DESCRIPTION

The FSX017WF is a general purpose GaAs FET designed for medium power applications up to the 12GHz. These devices have a wide dynamic range and are suitable for use in medium power, wide band, linear drive amplifiers or oscillators.



Eudyna stringent Quality Assurance Program assures the highest reliability and consistent performance.

### ABSOLUTE MAXIMUM RATING (Ambient Temperature $T_a=25^\circ C$ )

| Item                    | Symbol    | Condition          | Rating      | Unit       |
|-------------------------|-----------|--------------------|-------------|------------|
| Drain-Source Voltage    | $V_{DS}$  |                    | 12          | V          |
| Gate-Source Voltage     | $V_{GS}$  |                    | -5          | V          |
| Total Power Dissipation | $P_{tot}$ | $T_c = 25^\circ C$ | 1.0         | W          |
| Storage Temperature     | $T_{stg}$ |                    | -65 to +175 | $^\circ C$ |
| Channel Temperature     | $T_{ch}$  |                    | 175         | $^\circ C$ |

Eudyna recommends the following conditions for the reliable operation of GaAs FETs:

1. The drain - source operating voltage ( $V_{DS}$ ) should not exceed 8 volts.
2. The forward and reverse gate currents should not exceed 0.7 and -0.1 mA respectively with gate resistance of 2000 $\Omega$ .
3. The operating channel temperature ( $T_{ch}$ ) should not exceed 145 $^\circ C$ .

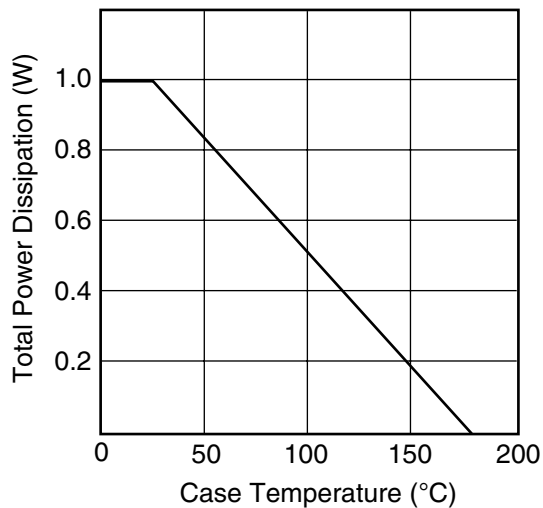
### ELECTRICAL CHARACTERISTICS (Ambient Temperature $T_a=25^\circ C$ )

| Item                          | Symbol    | Test Conditions                                                                    | Limit |      |      | Unit         |
|-------------------------------|-----------|------------------------------------------------------------------------------------|-------|------|------|--------------|
|                               |           |                                                                                    | Min.  | Typ. | Max. |              |
| Saturated Drain Current       | $I_{DSS}$ | $V_{DS} = 3V, V_{GS} = 0V$                                                         | 35    | 55   | 75   | mA           |
| Transconductance              | $g_m$     | $V_{DS} = 3V, I_{DS} = 27mA$                                                       | -     | 50   | -    | mS           |
| Pinch-off Voltage             | $V_p$     | $V_{DS} = 3V, I_{DS} = 2.7mA$                                                      | -0.7  | -1.2 | -1.7 | V            |
| Gate Source Breakdown Voltage | $V_{GSO}$ | $I_{GS} = -2.7\mu A$                                                               | -5.0  | -    | -    | V            |
| Noise Figure                  | NF        | $V_{DS} = 3V, I_{DS} = 10mA$<br>$f = 8GHz$                                         | -     | 2.5  | -    | dB           |
| Associated Gain               | $G_{as}$  |                                                                                    | -     | 10.5 | -    | dB           |
| Output Power at 1 dB G.C.P.   | $P_{1dB}$ | $V_{DS} = 8V,$<br>$I_{DS} = 0.7I_{DSS}$<br>$f = 4GHz$<br>$f = 8GHz$<br>$f = 12GHz$ | -     | 21.5 | -    | dBm          |
|                               |           |                                                                                    | 20.5  | 21.5 | -    | dBm          |
|                               |           |                                                                                    | -     | 20.5 | -    | dBm          |
| Power Gain at 1 dB G.C.P.     | $G_{1dB}$ | $V_{DS} = 8V,$<br>$I_{DS} = 0.7I_{DSS}$<br>$f = 4GHz$<br>$f = 8GHz$<br>$f = 12GHz$ | -     | 15.0 | -    | dB           |
|                               |           |                                                                                    | 10.0  | 11.0 | -    | dB           |
|                               |           |                                                                                    | -     | 7.5  | -    | dB           |
| Thermal Resistance            | $R_{th}$  | Channel to Case                                                                    | -     | 120  | 150  | $^\circ C/W$ |

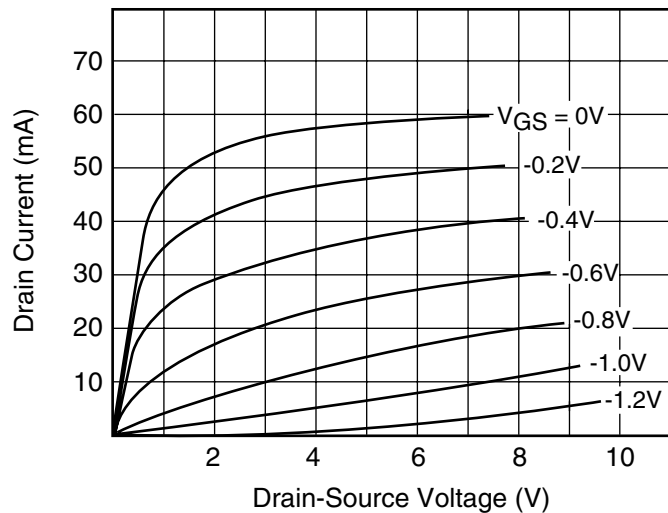
CASE STYLE: WF

G.C.P.: Gain Compression Point

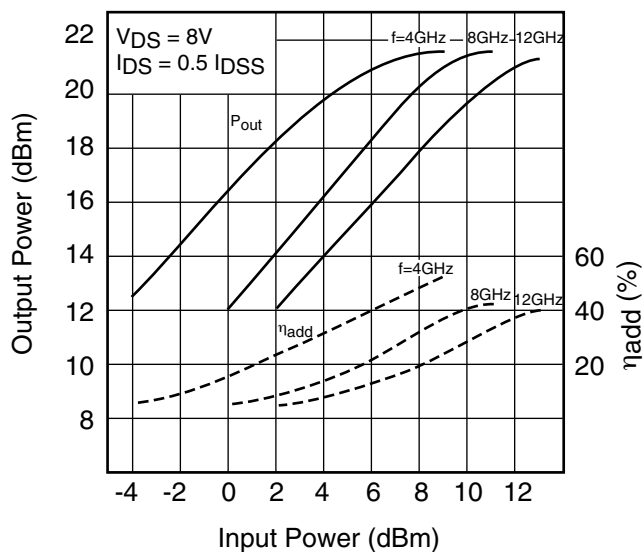
POWER DERATING CURVE



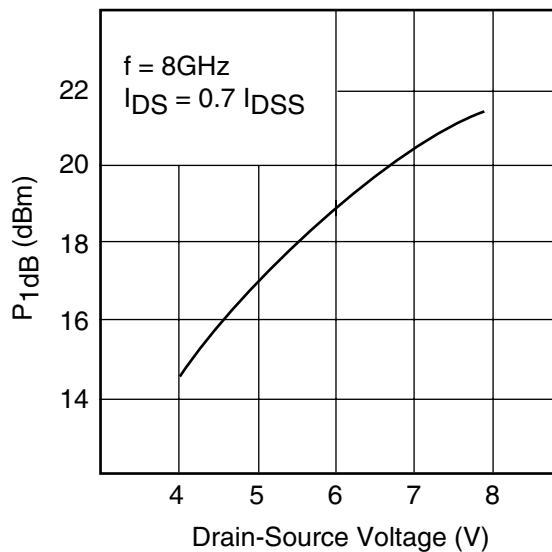
DRAIN CURRENT vs. DRAIN-SOURCE VOLTAGE



OUTPUT POWER vs. INPUT POWER

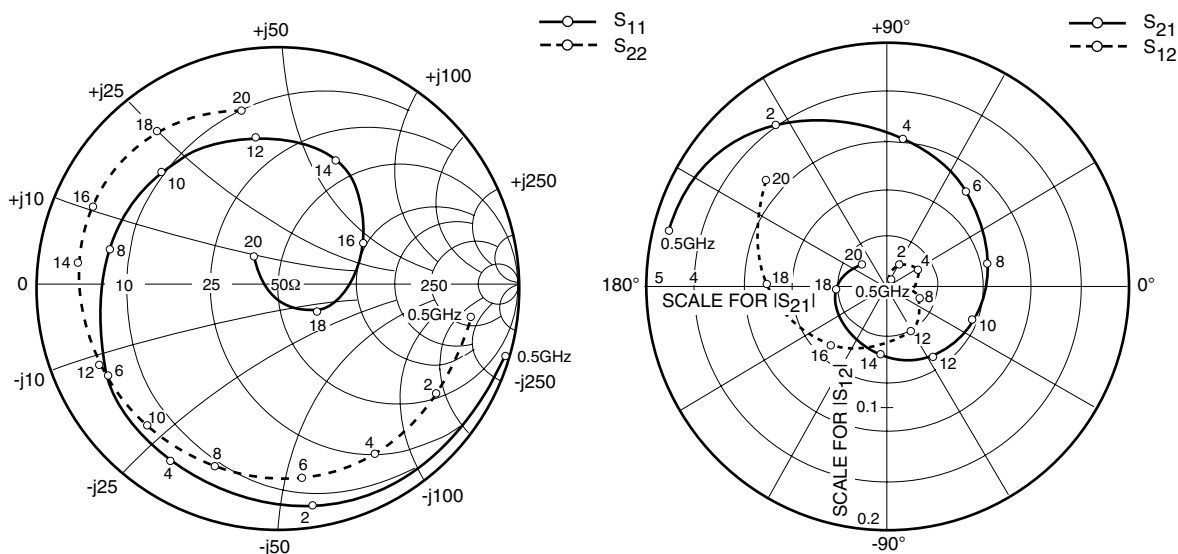


$P_{1dB}$  vs.  $V_{DS}$



# FSX017WF

## General Purpose GaAs FET



### S-PARAMETERS

$V_{DS} = 8V, I_{DS} = 35mA$

| FREQUENCY<br>(MHZ) | S11  |        | S21   |        | S12  |        | S22  |        |
|--------------------|------|--------|-------|--------|------|--------|------|--------|
|                    | MAG  | ANG    | MAG   | ANG    | MAG  | ANG    | MAG  | ANG    |
| 500                | .994 | -17.5  | 4.666 | 165.0  | .007 | 75.3   | .826 | -8.4   |
| 1000               | .982 | -33.7  | 4.499 | 151.2  | .013 | 69.9   | .819 | -17.3  |
| 2000               | .936 | -66.2  | 4.066 | 124.2  | .022 | 47.3   | .808 | -33.3  |
| 3000               | .891 | -92.7  | 3.486 | 101.1  | .026 | 30.2   | .799 | -47.7  |
| 4000               | .855 | -112.9 | 3.001 | 82.3   | .027 | 17.5   | .796 | -59.2  |
| 5000               | .817 | -131.0 | 2.706 | 66.1   | .026 | 7.6    | .795 | -67.5  |
| 6000               | .778 | -150.4 | 2.555 | 49.2   | .026 | 0.0    | .791 | -76.3  |
| 7000               | .738 | -172.0 | 2.407 | 30.3   | .026 | -12.8  | .778 | -88.8  |
| 8000               | .705 | 167.8  | 2.206 | 12.0   | .022 | -20.7  | .774 | -102.1 |
| 9000               | .693 | 150.3  | 2.020 | -5.3   | .025 | -24.2  | .777 | -115.7 |
| 10000              | .679 | 135.1  | 1.894 | -20.9  | .028 | -31.8  | .780 | -127.6 |
| 11000              | .655 | 117.2  | 1.842 | -38.1  | .035 | -43.3  | .791 | -140.5 |
| 12000              | .631 | 96.4   | 1.750 | -57.3  | .042 | -60.2  | .798 | -155.2 |
| 13000              | .610 | 78.9   | 1.595 | -76.9  | .047 | -79.6  | .809 | -173.0 |
| 14000              | .573 | 64.6   | 1.422 | -94.9  | .050 | -96.0  | .830 | 172.1  |
| 15000              | .503 | 48.0   | 1.298 | -111.5 | .058 | -113.5 | .846 | 163.3  |

### Case Style "WF" Metal-Ceramic Hermetic Package

