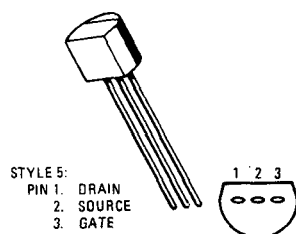


# MPF102 (SILICON)

Silicon N-channel junction field-effect transistor designed for VHF amplifier and mixer applications.



**CASE 29  
(TO-92)**

Drain and Source  
may be interchanged

## MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Rating                                                                                 | Symbol      | Value       | Unit                       |
|----------------------------------------------------------------------------------------|-------------|-------------|----------------------------|
| Drain-Source Voltage                                                                   | $V_{DS}$    | 25          | Vdc                        |
| Drain-Gate Voltage                                                                     | $V_{DG}$    | 25          | Vdc                        |
| Gate-Source Voltage                                                                    | $V_{GS}$    | 25          | Vdc                        |
| Gate Current                                                                           | $I_G$       | 10          | mAdc                       |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D^{(1)}$ | 310<br>2.82 | mW<br>mW/ $^\circ\text{C}$ |
| Operating Junction Temperature                                                         | $T_J^{(1)}$ | 125         | $^\circ\text{C}$           |
| Storage Temperature Range                                                              | $T_{stg}$   | -65 to +150 | $^\circ\text{C}$           |

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

### OFF CHARACTERISTICS

|                                                                                                                                                  |               |        |            |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|------------|-------------------------|
| Gate-Source Breakdown Voltage<br>( $I_G = 10 \mu\text{Adc}$ , $V_{DS} = 0$ )                                                                     | $BV_{GSS}$    | 25     | —          | Vdc                     |
| Gate Reverse Current<br>( $V_{GS} = 15 \text{ Vdc}$ , $V_{DS} = 0$ )<br>( $V_{GS} = 15 \text{ Vdc}$ , $V_{DS} = 0$ , $T_A = 100^\circ\text{C}$ ) | $I_{GSS}$     | —<br>— | 2.0<br>2.0 | nAdc<br>$\mu\text{Adc}$ |
| Gate-Source Cutoff Voltage<br>( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 2.0 \text{ nAdc}$ )                                                           | $V_{GS(off)}$ | —      | 8.0        | Vdc                     |
| Gate-Source Voltage<br>( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 0.2 \text{ mAdc}$ )                                                                  | $V_{GS}$      | 0.5    | 7.5        | Vdc                     |

### ON CHARACTERISTICS

|                                                                                                            |           |     |    |      |
|------------------------------------------------------------------------------------------------------------|-----------|-----|----|------|
| Zero-Gate-Voltage Drain Current <sup>(1)</sup><br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0 \text{ Vdc}$ ) | $I_{DSS}$ | 2.0 | 20 | mAdc |
|------------------------------------------------------------------------------------------------------------|-----------|-----|----|------|

### DYNAMIC CHARACTERISTICS

|                                                                                                                  |                     |      |      |                  |
|------------------------------------------------------------------------------------------------------------------|---------------------|------|------|------------------|
| Forward Transfer Admittance <sup>(1)</sup><br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1 \text{ kHz}$ ) | $ y_{fs} $          | 2000 | 7500 | $\mu\text{mhos}$ |
| Input Capacitance<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$ )                          | $C_{iss}$           | —    | 7.0  | pF               |
| Reverse Transfer Capacitance<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$ )               | $C_{rss}$           | —    | 3.0  | pF               |
| Forward Transfer Admittance<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 100 \text{ MHz}$ )              | $ y_{fs} $          | 1600 | —    | $\mu\text{mhos}$ |
| Input Conductance<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 100 \text{ MHz}$ )                        | $\text{Re}(y_{is})$ | —    | 800  | $\mu\text{mhos}$ |
| Output Conductance<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ , $f = 100 \text{ MHz}$ )                       | $\text{Re}(y_{os})$ | —    | 200  | $\mu\text{mhos}$ |

\*Pulse Test: Pulse Width  $\leq 630 \text{ ms}$ ; Duty Cycle  $\leq 10\%$

<sup>(1)</sup> Continuous package improvements have enhanced these guaranteed Maximum Ratings as follows:  $P_D = 1.0 \text{ W}$  @  $T_C = 25^\circ\text{C}$ .  
Derate above  $25^\circ\text{C} - 8.0 \text{ mW}/^\circ\text{C}$ ,  $T_J = -65$  to  $+150^\circ\text{C}$ ,  $\theta_{JC} = 125^\circ\text{C}/\text{W}$ .