

# SILICON N-CHANNEL DUAL GATE MOS-FET

Depletion type field-effect transistor in a plastic X-package with source and substrate interconnected, intended for u.h.f. applications, such as u.h.f. television tuners, with 12 V supply voltage.

This MOS-FET tetrode is protected against excessive input voltage surges by integrated back-to-back diodes between gates and source.

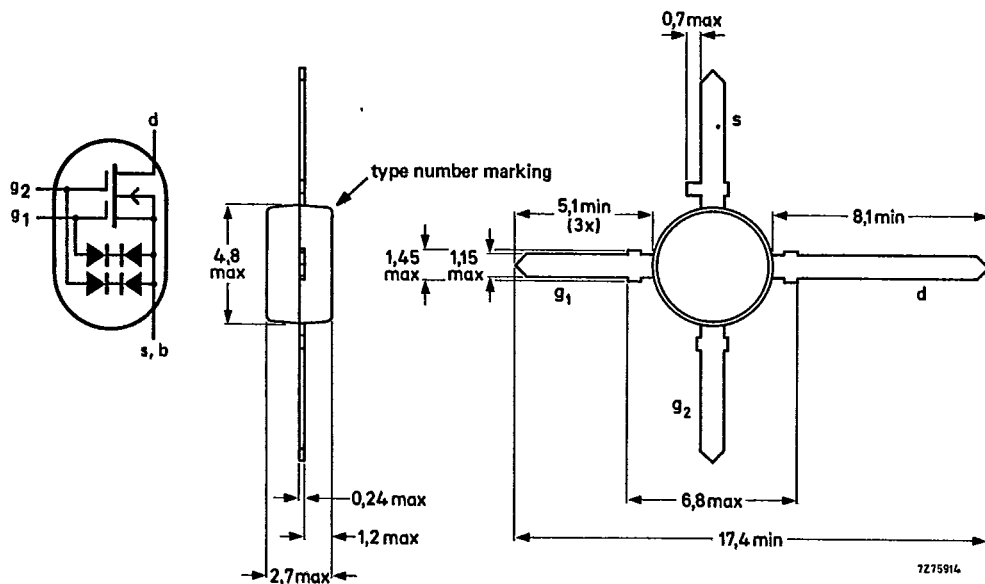
## QUICK REFERENCE DATA

|                                                                                                                                                                 |            |      |     |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------|-----|--------------------|
| Drain-source voltage                                                                                                                                            | $V_{DS}$   | max. | 18  | V                  |
| Drain current                                                                                                                                                   | $I_D$      | max. | 30  | mA                 |
| Total power dissipation up to $T_{amb} = 75\text{ }^{\circ}\text{C}$                                                                                            | $P_{tot}$  | max. | 225 | mW                 |
| Junction temperature                                                                                                                                            | $T_j$      | max. | 150 | $^{\circ}\text{C}$ |
| Transfer admittance at $f = 1\text{ kHz}$<br>$I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$                                           | $ y_{fs} $ | typ. | 19  | mS                 |
| Feedback capacitance at $f = 1\text{ MHz}$<br>$I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$                                          | $C_{rs}$   | typ. | 25  | fF                 |
| Noise figure at $G_S = 5\text{ mS}$ ; $B_S = B_S\text{ opt}$<br>$I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$ ; $f = 800\text{ MHz}$ | $F$        | typ. | 2,8 | dB                 |

## MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-103.



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**T<sub>j</sub> max. 150 °C**

$$R_{th\ j-a} = 335\text{ K/W}$$

Technical drawing of a mechanical part, likely a valve or connector, showing dimensions and labels. The drawing is a top-down view of a symmetrical component. Key dimensions include a total width of 35, a total height of 40, and a central circular feature with a diameter of 6. Various other dimensions (6, 5, 3, 2, 1, 4, 27, 3, 6) define the geometry of the different sections and features. A label '7277614' is present in the bottom right corner.

Fig. 2 Single-sided 35  $\mu\text{m}$  Cu-clad epoxy fibre-glass printed-circuit board, thickness 1,5 mm. Tracks are fully tin-lead plated. Board in horizontal position for  $R_{\text{th}}$  measurement.

## STATIC CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$

Gate cut-off currents

|                                                    |                 |     |       |
|----------------------------------------------------|-----------------|-----|-------|
| $\pm V_{G1-S} = 7\text{ V}; V_{G2-S} = V_{DS} = 0$ | $\pm I_{G1-SS}$ | $<$ | 25 nA |
| $\pm V_{G2-S} = 7\text{ V}; V_{G1-S} = V_{DS} = 0$ | $\pm I_{G2-SS}$ | $<$ | 25 nA |

Gate-source breakdown voltages

|                                                       |                     |     |     |
|-------------------------------------------------------|---------------------|-----|-----|
| $\pm I_{G1-SS} = 10\text{ mA}; V_{G2-S} = V_{DS} = 0$ | $\pm V_{(BR)G1-SS}$ | $>$ | 8 V |
| $\pm I_{G2-SS} = 10\text{ mA}; V_{G1-S} = V_{DS} = 0$ | $\pm V_{(BR)G2-SS}$ | $>$ | 8 V |

Gate-source cut-off voltages

|                                                                              |                |     |       |
|------------------------------------------------------------------------------|----------------|-----|-------|
| $I_D = 20\text{ }\mu\text{A}; V_{DS} = 10\text{ V}; + V_{G2-S} = 4\text{ V}$ | $-V_{(P)G1-S}$ | $<$ | 1,3 V |
|                                                                              |                | $>$ | 0,2 V |
| $I_D = 20\text{ }\mu\text{A}; V_{DS} = 10\text{ V}; V_{G1-S} = 0$            | $-V_{(P)G2-S}$ | $<$ | 1,1 V |
|                                                                              |                | $>$ | 0,2 V |

## DYNAMIC CHARACTERISTICS

Measuring conditions (common source):  $I_D = 10\text{ mA}; V_{DS} = 10\text{ V}; + V_{G2-S} = 4\text{ V}; T_{amb} = 25\text{ }^{\circ}\text{C}$

|                                                                               |             |      |        |
|-------------------------------------------------------------------------------|-------------|------|--------|
| Transfer admittance at $f = 1\text{ kHz}$                                     | $ y_{fs} $  | $>$  | 17 mS  |
|                                                                               |             | typ. | 19 mS  |
| Input capacitance at gate 1; $f = 1\text{ MHz}$                               | $C_{ig1-s}$ | $<$  | 3,0 pF |
|                                                                               |             | typ. | 2,6 pF |
| Feedback capacitance at $f = 1\text{ MHz}$                                    | $C_{rs}$    | $<$  | 35 fF  |
|                                                                               |             | typ. | 25 fF  |
| Output capacitance at $f = 1\text{ MHz}$                                      | $C_{os}$    | $<$  | 1,3 pF |
|                                                                               |             | typ. | 1,1 pF |
| Noise figure at $f = 800\text{ MHz}; G_S = 5\text{ mS}; B_S = B_S\text{ opt}$ | F           | $<$  | 3,9 dB |
|                                                                               |             | typ. | 2,8 dB |