

# 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.

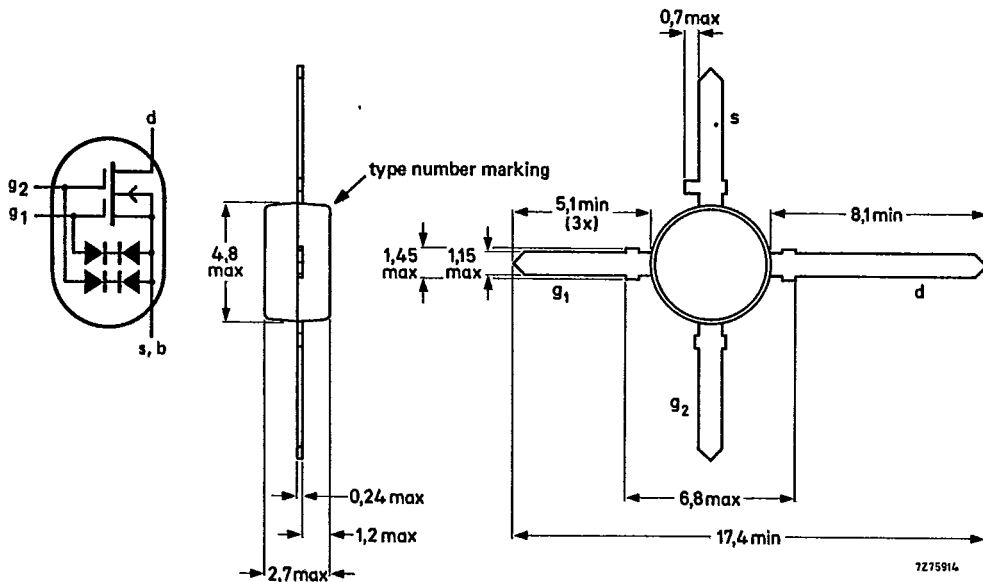
## QUICK REFERENCE DATA

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 $f = 1\text{ kHz}$ $I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$	$ y_{fs} $	typ.	19 mS
Feedback capacitance at $f = 1\text{ MHz}$ $I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$	$C_{rs}$	typ.	25 fF
Noise figure at $G_S = 5\text{ mS}$ ; $B_S = B_S\text{ opt}$ $I_D = 10\text{ mA}$ ; $V_{DS} = 10\text{ V}$ ; $+V_{G2-S} = 4\text{ V}$ ; $f = 800\text{ MHz}$	$F$	typ.	2,8 dB

## MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-103.



## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	V <sub>DS</sub>	max.	18	V
Drain current (d.c. or average)	I <sub>D</sub>	max.	30	mA
Gate 1 - source current	±I <sub>G1-S</sub>	max.	10	mA
Gate 2 - source current	±I <sub>G2-S</sub>	max.	10	mA
Total power dissipation up to T <sub>amb</sub> = 75 °C	P <sub>tot</sub>	max.	225	mW
Storage temperature	T <sub>stg</sub>	-65 to +150		°C
Junction temperature	T <sub>j</sub>	max.	150	°C

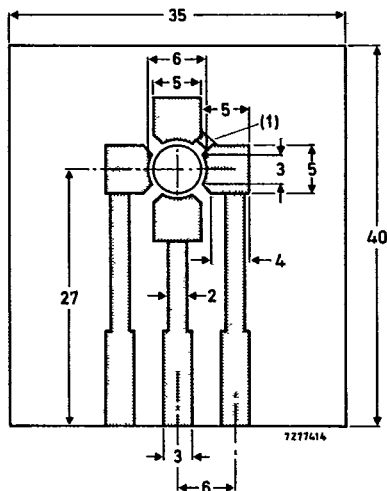
## THERMAL RESISTANCE

From junction to ambient in free air

mounted on the printed-circuit board (see Fig. 2)

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

Dimensions in mm



(1) Connection made by a strip or Cu wire.

Fig. 2 Single-sided 35  $\mu$ 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<sub>th</sub> 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