

N-CHANNEL IG-MOS-FET

Symmetrical depletion type field-effect transistor in a TO-72 metal envelope with the substrate connected to the case. It is intended for chopper and other special switching applications, e.g. timing circuits, multiplex circuits, etc. The features are a very low drain-source 'on' resistance, a very high drain-source 'off' resistance and low feedback capacitances.

QUICK REFERENCE DATA

Drain-source resistance (on) at $f = 1$ kHz

$V_{DS} = 0$; $V_{GS} = 5$ V; $V_{BS} = 0$

$R_{ds\ on}$	max.	50 Ω
$R_{DS\ off}$	min.	10 G Ω

Drain-source resistance (off)

$V_{DS} = 10$ V; $-V_{GS} = 5$ V; $V_{BS} = 0$

Feedback capacitance at $f = 1$ MHz

$-V_{GS} = 5$ V; $V_{DS} = 0$; $I_B = 0$

C_{rs}	typ.	0.5 pF
C_{rd}	typ.	0.5 pF

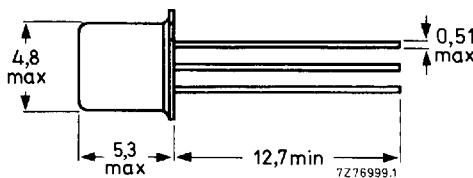
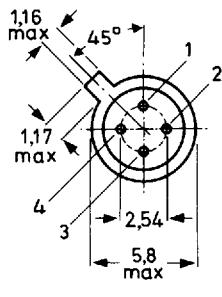
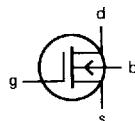
$-V_{GD} = 5$ V; $V_{SD} = 0$; $I_B = 0$

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-72.

Pinning
 1 = drain
 2 = source
 3 = gate
 4 = substrate (b)
 connected to case



Accessories: 56246 (distance disc).

Note

To safeguard the gates against damage due to accumulation of static charge during transport or handling, the leads are encircled by a ring of conductive rubber which should be removed just after the transistor is soldered into the circuit.

RATINGS

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

Drain-substrate voltage	V_{DB}	max.	30 V
Source-substrate voltage	V_{SB}	max.	30 V
Gate-substrate voltage (continuous)	V_{GB}	max. min.	10 V -10 V
Repetitive peak gate to all other terminals voltage $V_{SB} = V_{DB} = 0; f > 100 \text{ Hz}$	V_{G-N}	max. min.	15 V -15 V
Non-repetitive peak gate to all other terminals voltage $V_{SB} = V_{DB} = 0; t < 10 \text{ ms}$	V_{G-N}	max. min.	50 V -50 V
Drain current (DC)	I_D	max.	25 mA
Drain current (peak value) $t_p = 20 \text{ ms}; \delta = 0.1$	I_{DM}	max.	50 mA
Source current (peak value) $t_p = 20 \text{ ms}; \delta = 0.1$	I_{SM}	max.	50 mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot}	max.	200 mW
Storage temperature range	T_{stg}		-65 to + 125 °C
Junction temperature	T_j	max.	125 °C
THERMAL RESISTANCE			
From junction to ambient in free air	$R_{th\ j-a}$	=	500 K/W

CHARACTERISTICS

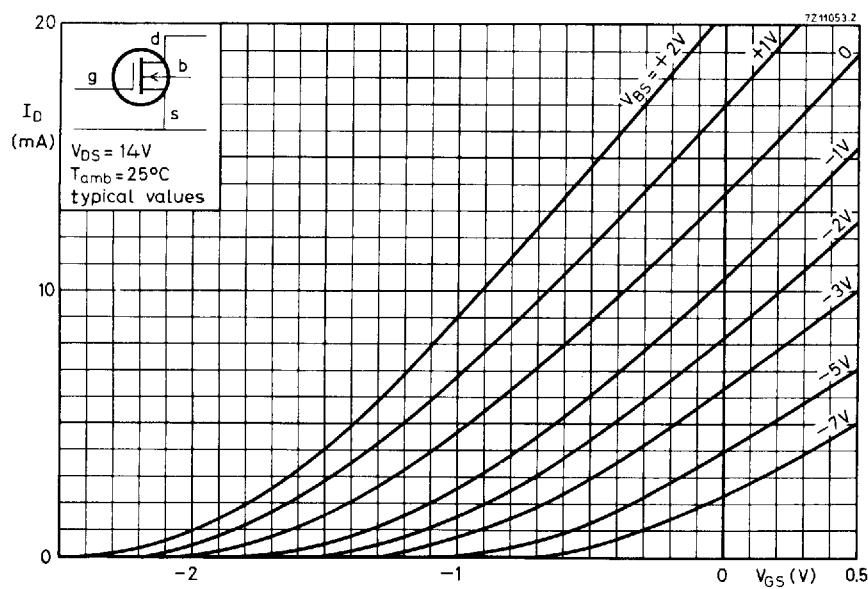
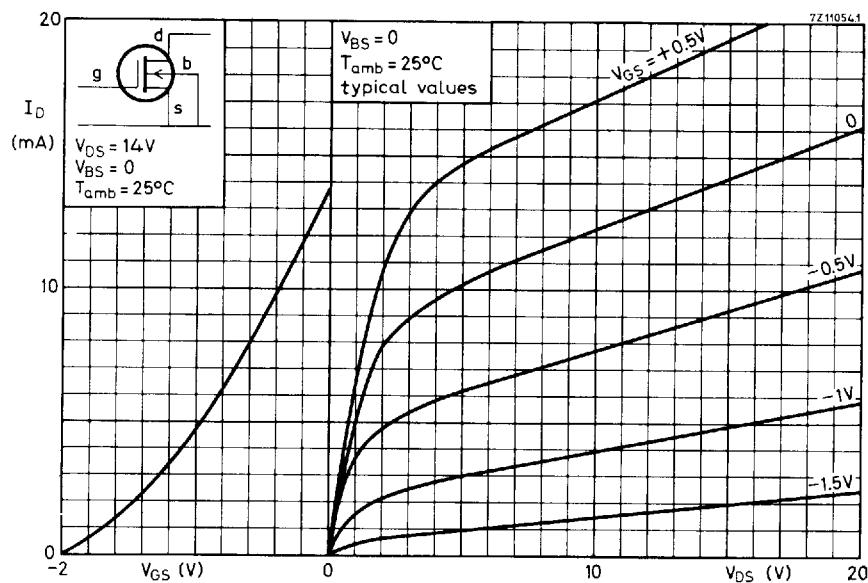
 $T_j = 25^\circ\text{C}$ unless otherwise specifiedDrain cut-off currents; $V_{BS} = 0$ $V_{DS} = 10 \text{ V}; -V_{GS} = 5 \text{ V}$ $I_{DSX} < 1 \text{ nA}$ $V_{DS} = 10 \text{ V}; -V_{GS} = 5 \text{ V}; T_j = 125^\circ\text{C}$ $I_{DSX} < 1 \mu\text{A}$ Source cut-off currents; $V_{BD} = 0$ $V_{SD} = 10 \text{ V}; -V_{GD} = 5 \text{ V}$ $I_{SDX} < 1 \text{ nA}$ $V_{SD} = 10 \text{ V}; -V_{GD} = 5 \text{ V}; T_j = 125^\circ\text{C}$ $I_{SDX} < 1 \mu\text{A}$ Gate currents; $V_{BS} = 0$ $-V_{GS} = 10 \text{ V}; V_{DS} = 0$ $-I_{GSS} < 10 \text{ pA}$ $V_{GS} = 10 \text{ V}; V_{DS} = 0$ $I_{GSS} < 10 \text{ pA}$ $-V_{GS} = 10 \text{ V}; V_{DS} = 0; T_j = 125^\circ\text{C}$ $-I_{GSS} < 200 \text{ pA}$ $V_{GS} = 10 \text{ V}; V_{DS} = 0; T_j = 125^\circ\text{C}$ $I_{GSS} < 200 \text{ pA}$ Bulk currents; $V_{GB} = 0$ $-V_{BD} = 30 \text{ V}; I_S = 0$ $-I_{BDO} < 10 \mu\text{A}$ $-V_{BS} = 30 \text{ V}; I_D = 0$ $-I_{BSO} < 10 \mu\text{A}$ Drain-source resistance (on) at $f = 1 \text{ kHz}; V_{BS} = 0$ $V_{GS} = 0; V_{DS} = 0$ $R_{ds\ on} < 100 \Omega$ $V_{GS} = 0; V_{DS} = 0; T_j = 125^\circ\text{C}$ $R_{ds\ on} < 150 \Omega$ $+V_{GS} = 5 \text{ V}; V_{DS} = 0$ $R_{ds\ on} < 50 \Omega$

Drain-source resistance (off)

 $-V_{GS} = 5 \text{ V}; V_{DS} = 10 \text{ V}; V_{BS} = 0$ $R_{DS\ off} > 10 \text{ G}\Omega$ Feedback capacitances at $f = 1 \text{ MHz}$ $-V_{GS} = 5 \text{ V}; V_{DS} = 0; I_B = 0$ $C_{rs} \text{ typ. } 0.5 \text{ pF}$ $-V_{GD} = 5 \text{ V}; V_{SD} = 0; I_B = 0$ $C_{rd} \text{ typ. } 0.5 \text{ pF}$ Gate to all other terminals capacitance at $f = 1 \text{ MHz}$ $-V_{GB} = 5 \text{ V}; V_{SB} = V_{DB} = 0$ $C_{g-n} < 6 \text{ pF}$

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