

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 $f = 1 \text{ kHz}$

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

$R_{ds \text{ on}}$ max. $50 \ \Omega$

Drain-source resistance (off)

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

$R_{DS \text{ off}}$ min. $10 \text{ G}\Omega$

Feedback capacitance at $f = 1 \text{ MHz}$

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

C_{rs} typ. 0.5 pF

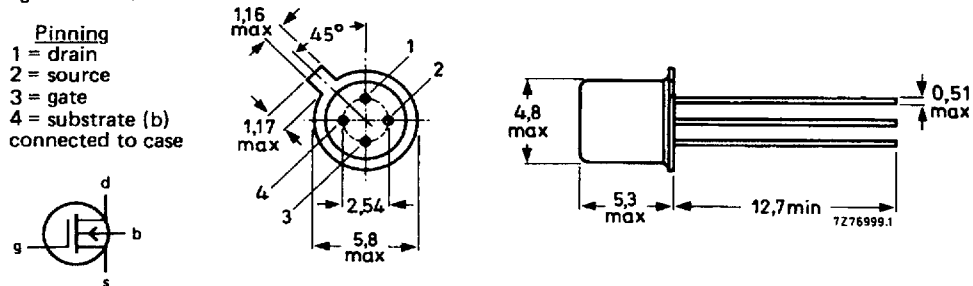
$-V_{GD} = 5 \text{ V}$; $V_{SD} = 0$; $I_B = 0$

C_{rd} typ. 0.5 pF

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-72.



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.	10 V
		min.	-10 V
Repetitive peak gate to all other terminals voltage $V_{SB} = V_{DB} = 0$; $f > 100$ Hz	V_{G-N}	max.	15 V
		min.	-15 V
Non-repetitive peak gate to all other terminals voltage $V_{SB} = V_{DB} = 0$; $t < 10$ ms	V_{G-N}	max.	50 V
		min.	-50 V
Drain current (DC)	I_D	max.	25 mA
Drain current (peak value) $t_p = 20$ ms; $\delta = 0.1$	I_{DM}	max.	50 mA
Source current (peak value) $t_p = 20$ ms; $\delta = 0.1$	I_{SM}	max.	50 mA
Total power dissipation up to $T_{amb} = 25$ °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_{thj-a}	=	500 K/W
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CHARACTERISTICS

 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specifiedDrain cut-off currents; $V_{BS} = 0$

$V_{DS} = 10\text{ V}; -V_{GS} = 5\text{ V}$

$I_{DSX} < 1\text{ nA}$

$V_{DS} = 10\text{ V}; -V_{GS} = 5\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$

$I_{DSX} < 1\text{ }\mu\text{A}$

Source cut-off currents; $V_{BD} = 0$

$V_{SD} = 10\text{ V}; -V_{GD} = 5\text{ V}$

$I_{SDX} < 1\text{ nA}$

$V_{SD} = 10\text{ V}; -V_{GD} = 5\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$

$I_{SDX} < 1\text{ }\mu\text{A}$

Gate currents; $V_{BS} = 0$

$-V_{GS} = 10\text{ V}; V_{DS} = 0$

$-I_{GSS} < 10\text{ pA}$

$V_{GS} = 10\text{ V}; V_{DS} = 0$

$I_{GSS} < 10\text{ pA}$

$-V_{GS} = 10\text{ V}; V_{DS} = 0; T_j = 125\text{ }^{\circ}\text{C}$

$-I_{GSS} < 200\text{ pA}$

$V_{GS} = 10\text{ V}; V_{DS} = 0; T_j = 125\text{ }^{\circ}\text{C}$

$I_{GSS} < 200\text{ pA}$

Bulk currents; $V_{GB} = 0$

$-V_{BD} = 30\text{ V}; I_S = 0$

$-I_{BDO} < 10\text{ }\mu\text{A}$

$-V_{BS} = 30\text{ V}; I_D = 0$

$-I_{BSO} < 10\text{ }\mu\text{A}$

Drain-source resistance (on) at $f = 1\text{ kHz}; V_{BS} = 0$

$V_{GS} = 0; V_{DS} = 0$

$R_{ds\text{ on}} < 100\text{ }\Omega$

$V_{GS} = 0; V_{DS} = 0; T_j = 125\text{ }^{\circ}\text{C}$

$R_{ds\text{ on}} < 150\text{ }\Omega$

$+V_{GS} = 5\text{ V}; V_{DS} = 0$

$R_{ds\text{ on}} < 50\text{ }\Omega$

Drain-source resistance (off)

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

$R_{DS\text{ off}} > 10\text{ G}\Omega$

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 $f = 1\text{ MHz}$

$-V_{GB} = 5\text{ V}; V_{SB} = V_{DB} = 0$

$C_{g-n} < 6\text{ pF}$

