

BUZ45

N-Channel Enhancement-Mode Power Field-Effect Transistors

GENERAL DESCRIPTION

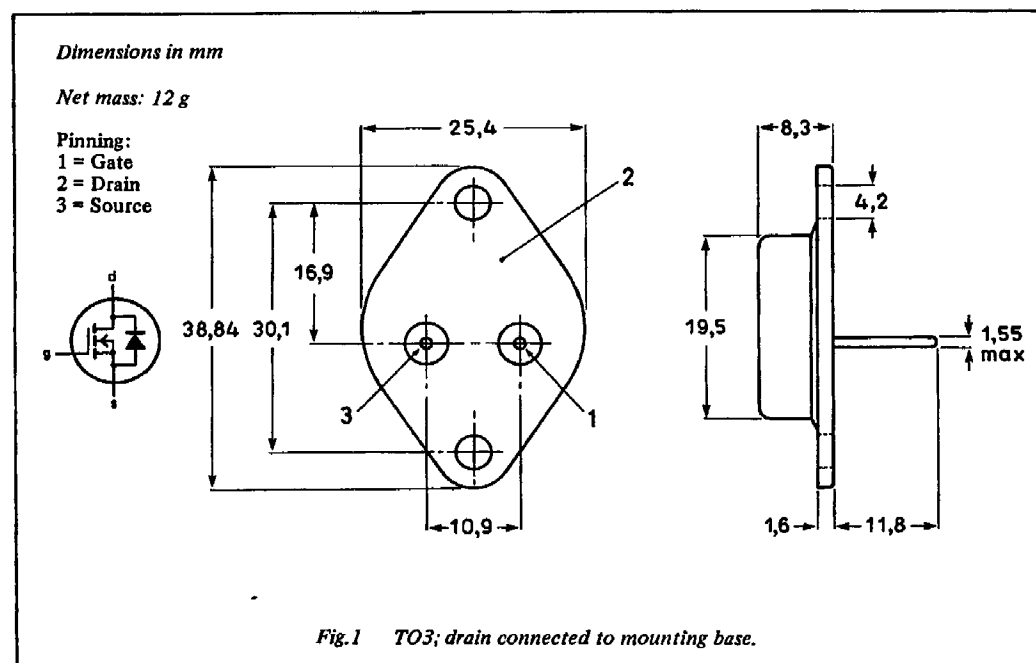
N-channel enhancement mode field-effect power transistor in a metal envelope.

This device is intended for use in Switched Mode Power Supplies (SMPS), motor control, welding, DC/DC and DC/AC converters, and in general purpose switching applications.

QUICK REFERENCE DATA

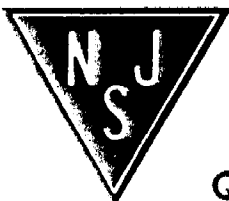
SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	Drain-source voltage	500	V
I_D	Drain current (d.c.)	9,6	A
P_{tot}	Total power dissipation	125	W
$R_{DS(ON)}$	Drain-source on-state resistance	0,6	Ω

MECHANICAL DATA



Notes

1. Observe the general handling precautions for electrostatic-discharge sensitive devices (ESDs) to prevent damage to MOS gate oxide.
2. Accessories supplied on request: refer to Mounting instructions for TO3 envelopes.



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RATINGS

Limiting values in accordance with the Absolute Maximum System

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{DS}	Drain-source voltage	—	—	500	V
V _{DGR}	Drain-gate voltage	R _{GS} = 20 k Ω	—	500	V
$\pm$ V _{GS}	Gate-source voltage	—	—	20	V
I _D	Drain current (d.c.)	T _{mb} = 25 °C	—	9,6	A
I _D	Drain current (d.c.)	T _{mb} = 100 °C	—	6,1	A
I _{DM}	Drain current (pulse peak value)	T _{mb} = 25 °C	—	38	A
P _{tot}	Total power dissipation	T _{mb} = 25 °C	—	125	W
T _{stg}	Storage temperature	—	−55	150	°C
T _j	Junction temperature	—	—	150	°C

THERMAL RESISTANCES

From junction to mounting base	R _{th j-mb} = 1,0 K/W
From junction to ambient	R _{th j-a} = 35 K/W

STATIC CHARACTERISTICST_{mb} = 25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{(BR)DSS}	Drain-source breakdown voltage	V _{GS} = 0 V; I _D = 0,25 mA	500	—	—	V
V _{GS(TO)}	Gate threshold voltage	V _{DS} = V _{GS} ; I _D = 1 mA	2,1	3,0	4,0	V
I _{DSS}	Zero gate voltage drain current	V _{DS} = 500 V; V _{GS} = 0 V; T _j = 25 °C	—	20	250	μ A
I _{DSS}	Zero gate voltage drain current	V _{DS} = 500 V; V _{GS} = 0 V; T _j = 125 °C	—	0,1	1,0	mA
I _{GSS}	Gate source leakage current	V _{GS} = $\pm$ 20 V; V _{DS} = 0 V	—	10	100	nA
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} = 10 V; I _D = 5 A	—	0,55	0,6	Ω

DYNAMIC CHARACTERISTICST_{mb} = 25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g _{fs}	Forward transconductance	V _{DS} = 25 V; I _D = 5 A	2,7	5,0	—	S
C _{iss}	Input capacitance	V _{GS} = 0 V; V _{DS} = 25 V; f = 1 MHz	—	3800	4900	pF
C _{oss}	Output capacitance		—	250	400	pF
C _{rss}	Feedback capacitance		—	100	170	pF
t _{d on}	Turn-on delay time	V _{DD} = 30 V; I _D = 2,8 A;	—	50	75	ns
t _r	Turn-on rise time	V _{GS} = 10 V; R _{GS} = 50 Ω ;	—	80	120	ns
t _{d off}	Turn-off delay time	R _{gen} = 50 Ω	—	330	430	ns
t _f	Turn-off fall time		—	110	140	ns
L _d	Internal drain inductance	Measured from contact screw on header closer to source pin and centre of die	—	5,0	—	nH
L _s	Internal source inductance	Measured from source lead 6 mm from package to source bond pad	—	12,5	—	nH

REVERSE DIODE RATINGS AND CHARACTERISTICST_{mb} = 25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{DR}	Continuous reverse drain current	T _{mb} = 25 °C	—	—	9,6	A
I _{DRM}	Pulsed reverse drain current	T _{mb} = 25 °C	—	—	38	A
V _{SD}	Diode forward on-voltage	I _F = 19,2 A; V _{GS} = 0 V; T _j = 25 °C	—	1,3	1,7	V
t _{rr}	Reverse recovery time	I _F = 9,6 A; T _j = 25 °C −dI _F /dt = 100 A/ μ s;	—	1200	—	ns
Q _{rr}	Reverse recovery charge	T _j = 25 °C; V _{GS} = 0 V; V _R = 100 V	—	12	—	μ C