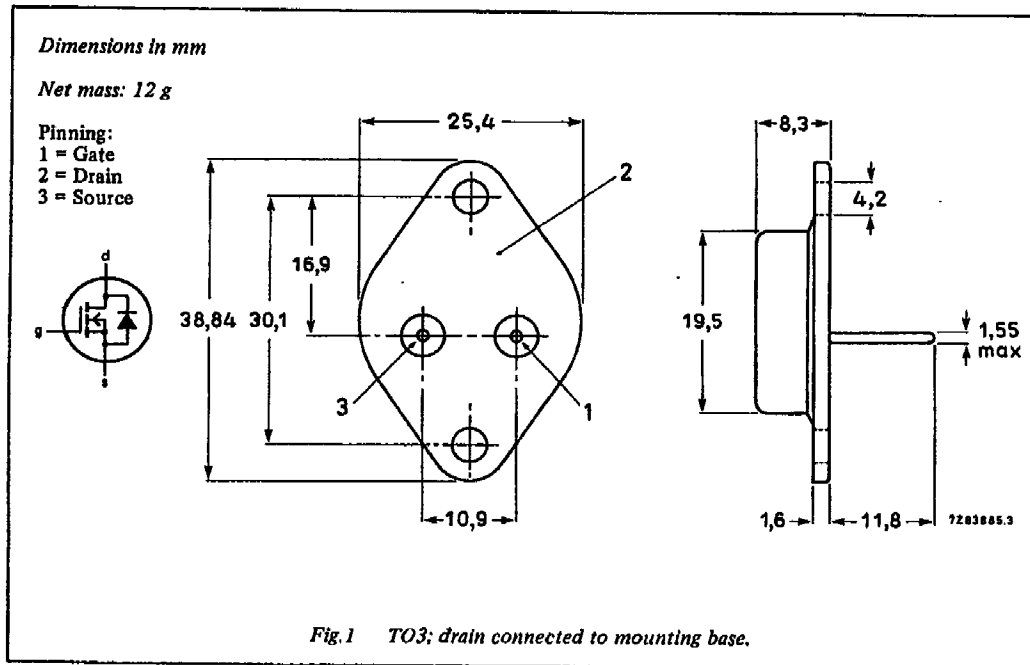# BUZ53A

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.
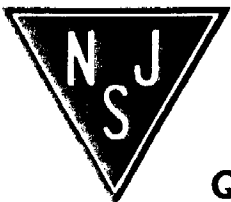
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
V_{DS}	Drain-source voltage	1000	V
I_D	Drain current (d.c.)	2,6	A
P_{tot}	Total power dissipation	78	W
$R_{DS(ON)}$	Drain-source on-state resistance	5,0	Ω

MECHANICAL DATA

Dimensions in mm

Net mass: 12 g

Pinning:
1 = Gate
2 = Drain
3 = Source

Fig.1   TO3; drain connected to mounting base.

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.

Quality Semi-Conductors

RATINGS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{DS}	Drain-source voltage	–	–	1000	V
V_{DGR}	Drain-gate voltage	$R_{GS} = 20\ k\Omega$	–	1000	V
$\pm V_{GS}$	Gate-source voltage	–	–	20	V
I_D	Drain current (d.c.)	$T_{mb} = 30\,°C$	–	2,6	A
I_D	Drain current (d.c.)	$T_{mb} = 100\,°C$	–	1,7	A
I_{DM}	Drain current (pulse peak value)	$T_{mb} = 25\,°C$	–	10	A
P_{tot}	Total power dissipation	$T_{mb} = 25\,°C$	–	78	W
T_{stg}	Storage temperature	–	–55	150	°C
T_j	Junction temperature	–	–	150	°C

THERMAL RESISTANCES

From junction to mounting base	$R_{th\ j\text{-}mb} = 1,6\ K/W$
From junction to ambient	$R_{th\ j\text{-}a} = 35\ K/W$

STATIC CHARACTERISTICS

$T_{mb} = 25\,°C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0\ V$; $I_D = 0,25\ mA$	1000	–	–	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	$V_{DS} = 1000\ V$; $V_{GS} = 0\ V$; $T_j = 25\,°C$	–	20	250	μA
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 1000\ V$; $V_{GS} = 0\ V$; $T_j = 125\,°C$	–	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	$V_{GS} = 10\ V$; $I_D = 1,5\ A$	–	4,5	5,0	Ω

DYNAMIC CHARACTERISTICS

$T_{mb} = 25\,°C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g_{fs}	Forward transconductance	$V_{DS} = 25\ V$; $I_D = 1,5\ A$	0,7	1,5	–	S
C_{iss}	Input capacitance	$V_{GS} = 0\ V$; $V_{DS} = 25\ V$; $f = 1\ MHz$	–	1600	2100	pF
C_{oss}	Output capacitance		–	70	120	pF
C_{rss}	Feedback capacitance		–	30	55	pF
$t_{d\ on}$	Turn-on delay time	$V_{DD} = 30\ V$; $I_D = 2\ A$; $V_{GS} = 10\ V$; $R_{GS} = 50\ \Omega$; $R_{gen} = 50\ \Omega$	–	30	45	ns
t_r	Turn-on rise time		–	40	60	ns
$t_{d\ off}$	Turn-off delay time		–	110	140	ns
t_f	Turn-off fall time		–	60	80	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 CHARACTERISTICS

$T_{mb} = 25\,°C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{DR}	Continuous reverse drain current	$T_{mb} = 25\,°C$	–	–	2,6	A
I_{DRM}	Pulsed reverse drain current	$T_{mb} = 25\,°C$	–	–	10	A
V_{SD}	Diode forward on-voltage	$I_F = 5,2\ A;\ V_{GS} = 0\ V;$ $T_j = 25\,°C$	–	1,05	1,3	V
t_{rr}	Reverse recovery time	$I_F = 2,6\ A;\ T_j = 25\,°C$	–	2000	–	ns
Q_{rr}	Reverse recovery charge	$-dI_F/dt = 100\ A/\mu s;$ $T_j = 25\,°C;$ $V_{GS} = 0\ V;\ V_R = 100\ V$	–	15	–	μC