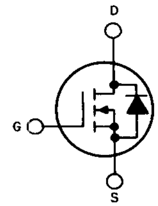
BUZ 76 A

N-Channel Enhancement-Mode Power Field-Effect Transistors

2.6 A, 400 V
$r_{DS(on)}$ = 2.5 Ω

Features:
- *SOA is power-dissipation limited*
- *Nanosecond switching speeds*
- *Linear transfer characteristics*
- *High input impedance*
- *Majority carrier device*

N-CHANNEL ENHANCEMENT MODE

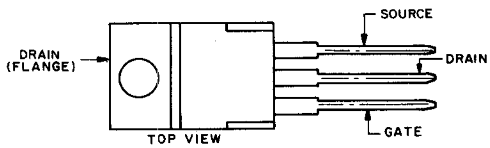


TERMINAL DIAGRAM

The BUZ 76 A is an n-channel enhancement-mode silicon-gate power field-effect transistor designed for applications such as switching regulators, switching converters, motor drivers, relay drivers, and drivers for high-power bipolar switching transistors requiring high speed and low gate-drive power. This type can be operated directly from integrated circuits.

The BUZ 76 A is supplied in the JEDEC TO-220AB plastic package.

TERMINAL DESIGNATION



JEDEC TO-220AB

MAXIMUM RATINGS, *Absolute-Maximum Values (T_C = 25° C):*

DRAIN-SOURCE VOLTAGE	V_{DSS}	400	V
DRAIN-GATE VOLTAGE, R_{DS} = 20 kΩ	V_{DGR}	400	V
GATE-SOURCE VOLTAGE	V_{GS}	±20	V
DRAIN CURRENT, RMS Continuous T_C = 30 °C	I_D	2.6	A
Pulsed T_C = 25 °C	I_{DM}	10	A
POWER DISSIPATION @ T_C = 25 °C	P_T	40	W
OPERATING AND STORAGE TEMPERATURE	T_j, T_{stg}	-55 to +150	°C
DIN HUMIDITY CATEGORY — DIN 40040		E	
IEC CLIMATIC CATEGORY — DIN IEC 68-1		55/150/56	

ELECTRICAL CHARACTERISTICS *At Case Temperature (T_C) = 25° C Unless Otherwise Specified*

CHARACTERISTIC		TEST CONDITIONS	LIMITS			UNITS
			MIN.	TYP.	MAX.	
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V I_D = 0.25 mA	400	—	—	V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} I_D = 1 mA	2.1	3	4	V
Zero-Gate Voltage Drain Current	I_{DSS}	T_j = 25 °C T_j = 125 °C V_{DS} = 400 V, V_{GS} = 0 V	— —	20 100	250 1000	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = 20 V V_{DS} = 0 V	—	10	100	nA
Drain-Source On Resistance	$r_{DS(on)}$	V_{GS} = 10 V I_D = 1.5 A	—	2.2	2.5	Ω
Forward Transconductance	g_{fs}	V_{DS} = 25 V I_D = 1.5 A	2.1	2.5	—	S
Input Capacitance	C_{iss}	V_{GS} = 0 V V_{DS} = 25 V f = 1 MHz	—	300	500	pF
Output Capacitance	C_{oss}		—	50	80	pF
Reverse Transfer Capacitance	C_{rss}		—	35	60	pF
Turn-On Time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	V_{CC} = 30 V I_D = 2.4 A V_{GS} = 10 V R_{GS} = 50 Ω	—	15	20	ns
	t_r		—	40	60	ns
Turn-Off Time t_{off} ($t_{off} = t_{d(off)} + t_r$)	$t_{d(off)}$		—	50	65	ns
	t_r		—	30	40	ns
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$		≤ 3.1			°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$		≤ 75			°C/W

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

CHARACTERISTIC		TEST CONDITIONS	LIMITS			UNITS
			MIN.	TYP.	MAX.	
Continuous Reverse Drain Current	I_{DR}	T_C = 25 °C	—	—	2.6	A
Pulsed Reverse Drain Current	I_{DRM}		—	—	10	A
Diode Forward Voltage	V_{SD}	I_F = 2 x I_{DR} V_{GS} = 0 V, T_j = 25 °C	—	1.1	1.4	V
Reverse Recovery Time	t_{rr}	T_j = 25°C, I_F = I_{DR}	—	300	—	ns
Reverse Recovered Charge	Q_{RR}	dI_F/dt = 100 A/μs, V_R = 100 V	—	2.5	—	μC

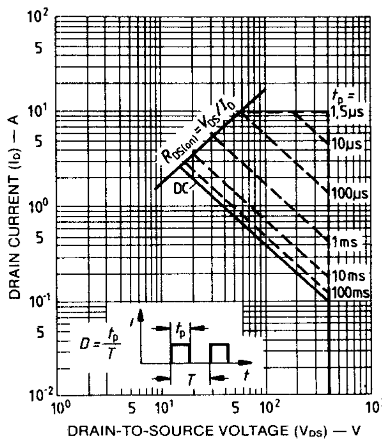


Fig. 1 - Maximum safe operating areas for all types.

BUZ 76 A

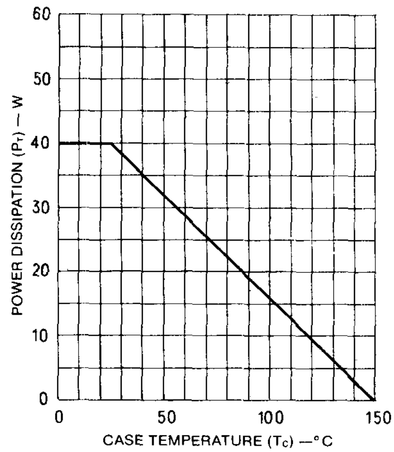


Fig. 2 - Power vs. temperature derating curve for all types.

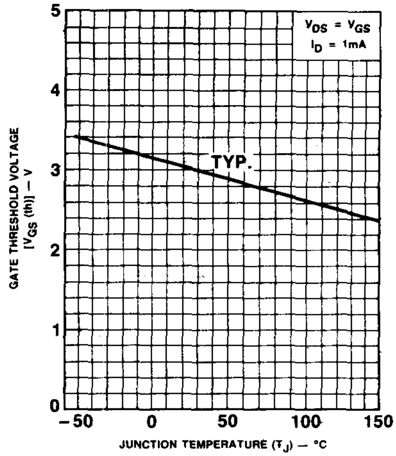


Fig. 3 - Normalized gate threshold voltage as a function of junction temperature for all types.

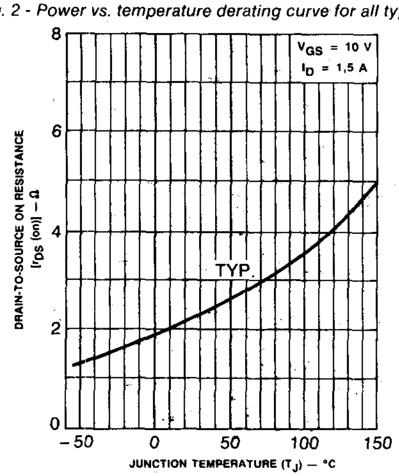


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Fig. 4 - Normalized drain-to-source on resistance to junction temperature for all types.

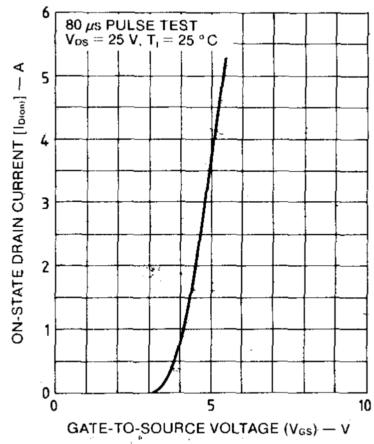

Fig. 5 - Typical transfer characteristics for all types.

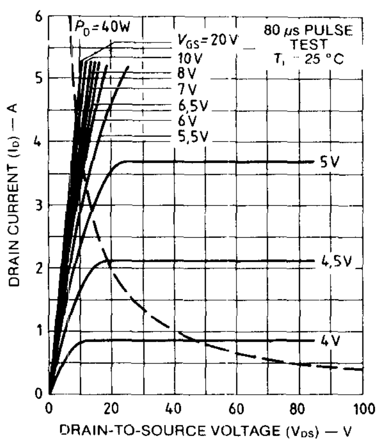

Fig. 6 - Typical output characteristics.

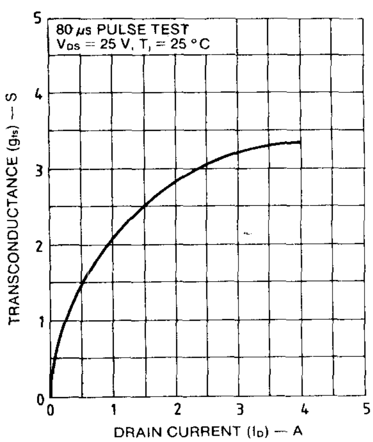

Fig. 7 - Typical transconductance vs. drain current.

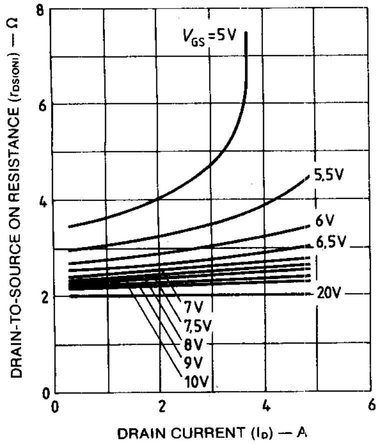

Fig. 8 - Typical on-resistance vs. drain current.

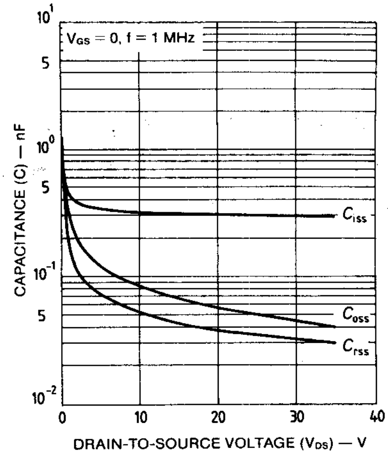

Fig. 9 - Typical capacitance vs. drain-to-source voltage.

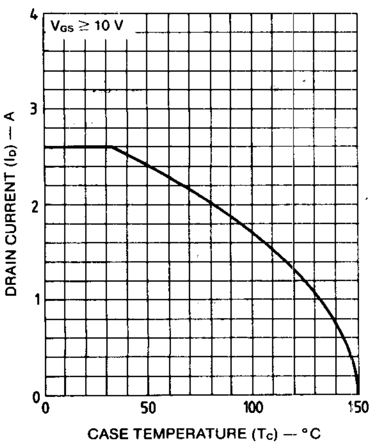

Fig. 10 - Maximum drain current vs. case temperature.

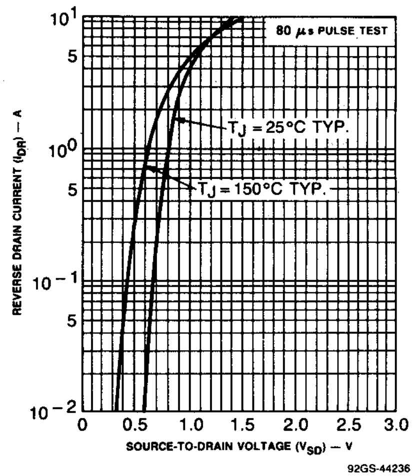

Fig. 11 - Typical source-drain diode forward voltage.

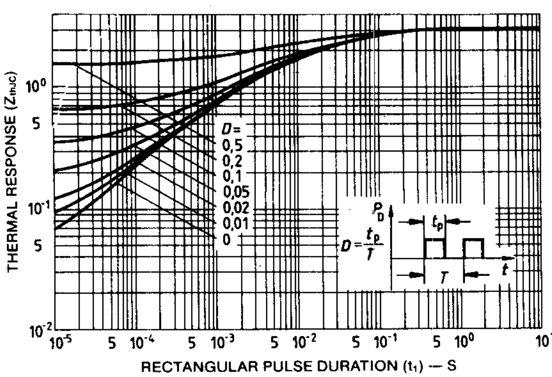

Fig. 12 - Maximum effective transient thermal impedance, junction-to-case vs. pulse duration.

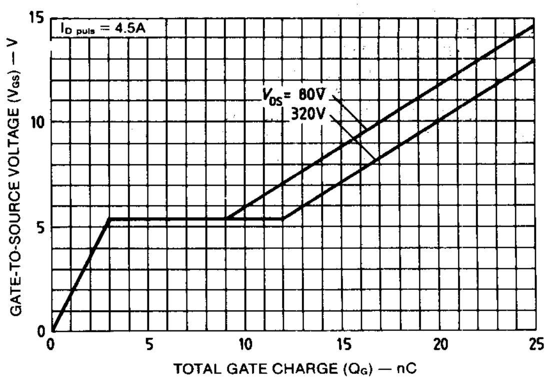

Fig. 13 - Typical gate charge vs. gate-to-source voltage.

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