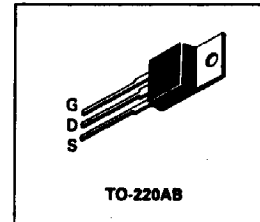
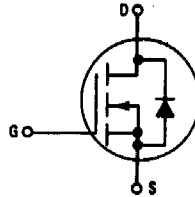


Power Field Effect Transistor
N-Channel Enhancement-Mode
Silicon Gate

BUZ71
BUZ71A

TMOS POWER FETs
12 AMPERES
 $t_{DS(on)} = 0.10$ and
 0.12 OHMS
50 VOLTS



TO-220AB

MAXIMUM RATINGS

Rating	Symbol	BUZ71	BUZ71A	Unit
Drain-Source Voltage	V_{DS}	50		Vdc
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)	V_{DGR}	50		Vdc
Gate-Source Voltage	V_{GS}	± 20		Vdc
Drain Current — Continuous	I_D	12		Adc
— Pulsed	I_{DM}	48		
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	40		Watts
Derate above 25°C		0.32		W/ $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

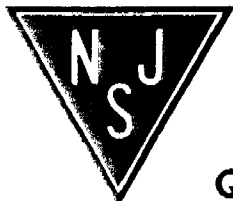
Thermal Resistance — Junction to Case	$R_{\theta JC}$	3.12	$^\circ\text{C/W}$
— Junction to Ambient	$R_{\theta JA}$	62.5	
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L	275	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 1 \text{ mA}$)	$V_{(BR)DSS}$	50	—	—	Vdc
Zero Gate Voltage Drain Current ($V_{DS} = 50 \text{ Volts}, V_{GS} = 0$)	I_{DSS}	—	—	250	μAdc
($V_{DS} = 50 \text{ Volts}, V_{GS} = 0, T_J = 125^\circ\text{C}$)		—	—	1000	
Gate-Body Leakage Current, Forward ($V_{GSF} = 20 \text{ Vdc}, V_{DS} = 0$)	I_{GSSF}	—	10	100	nAdc
Gate-Body leakage Current, Reverse ($V_{GSR} = 20 \text{ Vdc}, V_{DS} = 0$)	I_{GSSR}	—	10	100	nAdc



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS*					
Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 10 \text{ mA}$)	$V_{GS(th)}$	2.1	3.1	4	Vdc
Static Drain-Source On-Resistance ($V_{GS} = 10 \text{ Vdc}, I_D = 8 \text{ Adc}$)	$r_{DS(on)}$	—	0.08 0.10	0.10 0.12	Ohm
Drain-Source On-Voltage ($V_{GS} = 10 \text{ V}$) ($I_D = 6 \text{ Adc}$) ($I_D = 6 \text{ Adc}$)	$V_{DS(on)}$	—	0.48 0.60	—	Vdc
Forward Transconductance ($V_{DS} = 25 \text{ V}, I_D = 6 \text{ A}$)	gFS	3	5.5	—	mhos

DYNAMIC CHARACTERISTICS					
Input Capacitance	$(V_{DS} = 25 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz})$	C_{iss}	—	650	pF
Output Capacitance		C_{oss}	—	450	
Reverse Transfer Capacitance		C_{rss}	—	280	
Total Gate Charge	$(V_{DS} = 40 \text{ V}, V_{GS} = 10 \text{ Vdc}, I_D = 12 \text{ A})$ See Figures 6 and 12	Q_g	—	14	nC

SWITCHING CHARACTERISTICS*					
Turn-On Delay Time	$(V_{DD} = 30 \text{ V}, I_D = 3 \text{ A}, R_{gen} = 50 \text{ ohms})$ See Figures 11 and 12	$t_{d(on)}$	—	30	ns
Rise Time		t_r	—	85	
Turn-Off Delay Time		$t_{d(off)}$	—	90	
Fall Time		t_f	—	110	

SOURCE DRAIN DIODE CHARACTERISTICS*					
Forward On-Voltage	$(I_S = 24 \text{ A}, V_{GS} = 0)$	V_{SD}	—	2.2	Vdc
Forward Turn-On Time		t_{on}	—	120	ns
Reverse Recovery Time		t_{rr}	—	110	ns

INTERNAL PACKAGE INDUCTANCE					
Internal Drain Inductance (Measured from the contact screw on tab to center of die) (Measured from the drain lead 0.25" from package to center of die)	L_d	—	3.5 4.5	—	nH
Internal Source Inductance (Measured from the source lead 0.25" from package to source bond pad)	L_s	—	7.5	—	

*Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

TO-220AB

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

STYLE S:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.29	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.86	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.80	3.92	0.110	0.155
J	0.38	0.55	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.15	1.39	0.045	0.055
T	6.97	6.47	0.235	0.255
U	0.00	1.27	0.000	0.050
V	1.15	—	0.045	—
Z	—	2.04	—	0.080