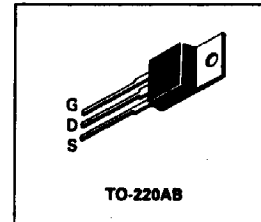
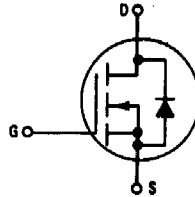


**Power Field Effect Transistor**  
**N-Channel Enhancement-Mode**  
**Silicon Gate**

**BUZ71**  
**BUZ71A**

**TMOS POWER FETs**  
**12 AMPERES**  
 **$r_{DS(on)}$  = 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	$V_{GS}$	$\pm 20$		Vdc
Drain Current — Continuous	$I_D$	12		Adc
— Pulsed	$I_{DM}$	48		
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	40		Watts
		0.32		W/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

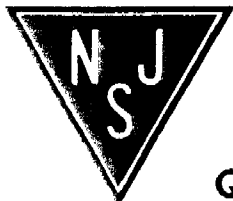
Thermal Resistance — Junction to Case	$R_{\theta JC}$	3.12	$^\circ\text{C/W}$
— Junction to Ambient	$R_{\theta JA}$	62.5	
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	$T_L$	275	$^\circ\text{C}$

**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	$\mu\text{Adc}$
( $V_{DS} = 50\text{ Volts}, V_{GS} = 0, T_J = 125^\circ\text{C}$ )		—	—	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
<b>ON CHARACTERISTICS*</b>					
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

<b>DYNAMIC CHARACTERISTICS</b>					
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

<b>SWITCHING CHARACTERISTICS*</b>					
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	

<b>SOURCE DRAIN DIODE CHARACTERISTICS*</b>					
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

<b>INTERNAL PACKAGE INDUCTANCE</b>					
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	9.56	10.29	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.86	0.025	0.034
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	5.97	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

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