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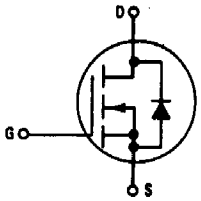
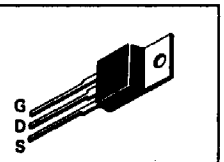
Power Field Effect Transistor

N-Channel Enhancement-Mode Silicon Gate

BUZ71
BUZ71A

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





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MAXIMUM RATINGS

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

THERMAL CHARACTERISTICS

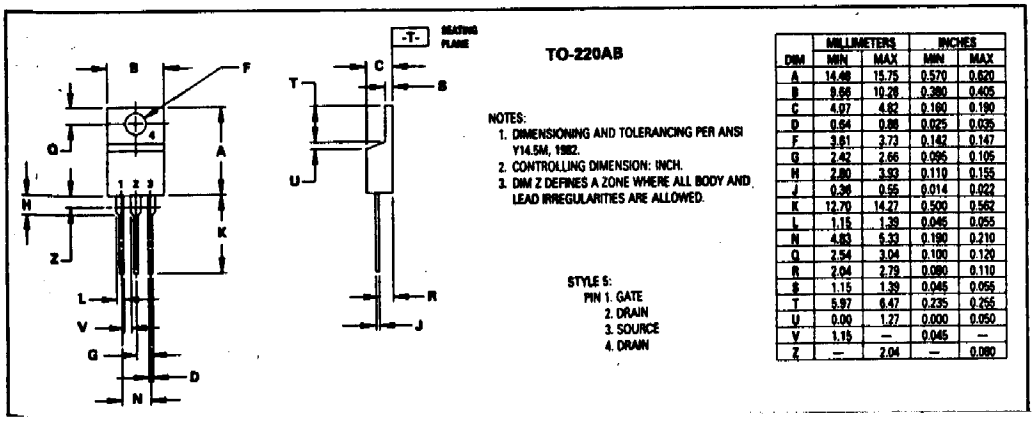
Thermal Resistance — Junction to Case — Junction toAmbient	$R_{\theta JC}$ $R_{\theta JA}$	3.12 62.5	°C/W
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	T_L	275	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 1 mA)	$V_{(BR)DSS}$	50	—	—	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 50 Volts, V_{GS} = 0) (V_{DS} = 50 Volts, V_{GS} = 0, T_J = 125°C)	I_{DSS}	 — —	 — —	 250 1000	μAdc
Gate-Body Leakage Current, Forward (V_{GSF} = 20 Vdc, V_{DS} = 0)	I_{GSSF}	—	10	100	nAdc
Gate-Body leakage Current, Reverse (V_{GSR} = 20 Vdc, V_{DS} = 0)	I_{GSSR}	—	10	100	nAdc

Characteristic		Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS*						
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 10 mA)		$V_{GS(th)}$	2.1	3.1	4	Vdc
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 6 Adc)	BUZ71 BUZ71A	$r_{DS(on)}$	— —	0.08 0.10	0.10 0.12	Ohm
Drain-Source On-Voltage (V_{GS} = 10 V) (I_D = 6 Adc) (I_D = 6 Adc)	BUZ71 BUZ71A	$V_{DS(on)}$	— —	0.48 0.60	— —	Vdc
Forward Transconductance (V_{DS} = 25 V, I_D = 6 A)		g_{FS}	3	5.5	—	mhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz)	C_{iss}	—	—	650	pF
Output Capacitance		C_{oss}	—	—	450	
Reverse Transfer Capacitance		C_{rss}	—	—	280	
Total Gate Charge	(V_{DS} = 40 V, V_{GS} = 10 Vdc, I_D = 12 A) See Figures 6 and 12	Q_g	—	14	—	nC
SWITCHING CHARACTERISTICS*						
Turn-On Delay Time	(V_{DD} = 30 V, I_D = 3 A, R_{gen} = 50 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 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 ≤ 300 μs, Duty Cycle ≤ 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 5:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.28	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.88	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	3.93	0.110	0.155
J	0.36	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