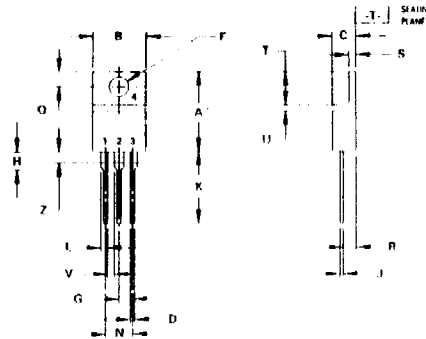


MTP2N80
Power Field Effect Transistor
N-Channel Enhancement-Mode
Silicon Gate TMOS



STYLE 5
PIN 1 GATE
2 DRAIN
3 SOURCE
4 DRAIN

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

TO-220AB

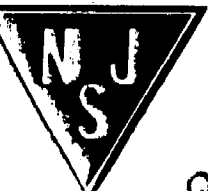
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.28	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.64	0.88	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.80	3.93	0.110	0.155
J	0.36	0.55	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
M	4.83	5.33	0.190	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

MAXIMUM RATINGS

Rating	Symbol		Unit
Drain-Source Voltage	V _{DSS}	800	V _{dc}
Drain-Gate Voltage (R _{GS} = 1 MΩ)	V _{DGR}	800	V _{dc}
Gate-Source Voltage — Continuous	V _{GS}	+ 20	V _{dc}
— Non-repetitive (t _p < 50 μs)	V _{GSM}	+ 40	V _{pk}
Drain Current — Continuous	I _D	2	A _{dc}
— Pulsed	I _{DM}	7	
Total Power Dissipation @ T _C = 25°C	P _D	75	Watts
Derate above 25°C		0.6	W/°C
Operating and Storage Temperature Range	T _J , T _{stg}	65 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance			°C/W
Junction to Case	R _{θJC}	1.67	
Junction to Ambient	R _{θJA}	30	
		62.5	
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 5 seconds	T _L	275	°C



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.

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage ($V_{GS} = 0, I_D = 0.25 \text{ mA}$)	$V_{(BR)DSS}$	800	—	Vdc
Zero Gate Voltage Drain Current ($V_{DS} = \text{Rated } V_{DSS}, V_{GS} = 0$) ($V_{DS} = 0.8 \text{ Rated } V_{DSS}, V_{GS} = 0, T_J = 125^\circ\text{C}$)	I_{DSS}	—	0.2 1	mAdc
Gate-Body Leakage Current, Forward ($V_{GSF} = 20 \text{ Vdc}, V_{DS} = 0$)	I_{GSSF}	—	100	nAdc
Gate-Body Leakage Current, Reverse ($V_{GSR} = 20 \text{ Vdc}, V_{DS} = 0$)	I_{GSSR}	—	100	nAdc

ON CHARACTERISTICS*

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 1 \text{ mA}$) $T_J = 100^\circ\text{C}$	$V_{GS(th)}$	2 1.5	4.5 4	Vdc
Static Drain-Source On-Resistance ($V_{GS} = 10 \text{ Vdc}, I_D = 1 \text{ Adc}$)	$r_{DS(on)}$	—	8	Ohms
Drain-Source On-Voltage ($V_{GS} = 10 \text{ V}$) ($I_D = 2 \text{ Adc}$) ($I_D = 1 \text{ Adc}, T_J = 100^\circ\text{C}$)	$V_{DS(on)}$	—	20 16	Vdc
Forward Transconductance ($V_{DS} = 15 \text{ V}, I_D = 1 \text{ A}$)	g_{FS}	0.5	—	mhos

DYNAMIC CHARACTERISTICS

Input Capacitance	($V_{DS} = 25 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$) See Figure 11	C_{iss}	—	1200	pF
Output Capacitance		C_{oss}	—	300	
Reverse Transfer Capacitance		C_{rss}	—	80	

SWITCHING CHARACTERISTICS* ($T_J = 100^\circ\text{C}$)

Turn-On Delay Time	($V_{DD} = 125 \text{ V}, I_D = 0.5 \text{ Rated } I_D$ $R_{\theta en} = 50 \text{ ohms}$) See Figures 9, 13 and 14	$t_{d(on)}$	—	50	ns
Rise Time		t_r	—	150	
Turn-Off Delay Time		$t_{d(off)}$	—	200	
Fall Time		t_f	—	100	
Total Gate Charge		($V_{DS} = 0.8 \text{ Rated } V_{DSS},$ $I_D = \text{Rated } I_D, V_{GS} = 10 \text{ V}$) See Figure 12	Q_g	33 (Typ)	40
Gate-Source Charge	Q_{gs}		20 (Typ)	—	
Gate-Drain Charge	Q_{gd}		13 (Typ)	—	

SOURCE DRAIN DIODE CHARACTERISTICS*

Forward On-Voltage	($I_S = \text{Rated } I_D$ $V_{GS} = 0$)	V_{SD}	1 (Typ)	1.4	Vdc
Forward Turn-On Time		t_{on}	Limited by stray inductance		
Reverse Recovery Time		t_{rr}	420 (Typ)	—	ns

INTERNAL PACKAGE INDUCTANCE (TO-204)

Internal Drain Inductance (Measured from the contact screw on the header closer to the source pin and the center of the die)	L_d	5 (Typ)	—	nH
Internal Source Inductance (Measured from the source pin, 0.25" from the package to the source bond pad)	L_s	12.5 (Typ)	—	

INTERNAL PACKAGE INDUCTANCE (TO-220)

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 (Typ) 4.5 (Typ)	—	nH
Internal Source Inductance (Measured from the source lead 0.25" from package to source bond pad)	L_s	7.5 (Typ)	—	

*Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$