New Jersey Semi-Conductor Products, Inc.

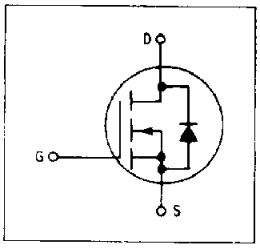
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
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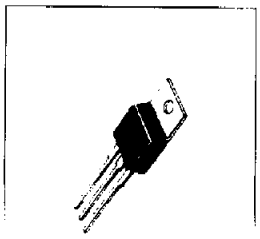
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MTP8N15L

TMOS POWER FET
LOGIC LEVEL
10 AMPERES
$r_{DS(on)}$ = 0.45 OHM
150 VOLTS

TMOS™





CASE 221A-04
TO-220AB

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	150	Vdc
Drain-Gate Voltage (R_{GS} 1 MΩ)	V_{DGR}	150	Vdc
Gate-Source Voltage — Continuous — Non-repetitive ($t_p \leq 50\ \mu s$)	V_{GS} V_{GSM}	± 15 ± 20	Vdc
Drain Current — Continuous — Pulsed	I_D I_{DM}	8 20	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	75 0.6	Watts W/°C
Operating and Storage Temperature Range	T_J, T_{stg}	− 65 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance — Junction to Case — Junction to Ambient	$R_{\theta JC}$ $R_{\theta JA}$	1.67 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	Max	Unit
OFF CHARACTERISTICS				
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 250 μA)	$V_{(BR)DSS}$	150	—	Vdc
Zero Gate Voltage Drain Current (V_{DS} = 150 V, V_{GS} = 0) (V_{DS} = 150 V, V_{GS} = 0, T_J = 125°C)	I_{DSS}	— —	1 50	μAdc

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 datasheet are current before placing orders.

Quality Semi-Conductors

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS (continued)					
Gate-Body Leakage Current, Forward (V_{GSF} = 15 Vdc, V_{DS} = 0)		I_{GSSF}	—	100	nAdc
Gate Body Leakage Current, Reverse (V_{GSR} = 15 Vdc, V_{DS} = 0)		I_{GSSR}	—	100	nAdc
ON CHARACTERISTICS					
Gate Threshold Voltage (V_{DS} = V_{GS}, I_D = 1 mA) (T_J = 100°C)		$V_{GS(th)}$	1 0.75	2 1.5	Vdc
Static Drain-Source On-Resistance (V_{GS} = 5 Vdc, I_D = 5 Adc)		$r_{DS(on)}$	—	0.45	Ohm
Drain-Source On-Voltage (V_{GS} = 5 V) (I_D = 8 Adc) (I_D = 4 Adc, T_J = 100°C)		$V_{DS(on)}$	— —	4 3	Vdc
Forward Transconductance (V_{DS} = 10 V, I_D = 4 A)		g_{FS}	4.5	—	mhos
DYNAMIC CHARACTERISTICS					
Input Capacitance	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	C_{iss}	560 (Typ)	—	pF
	V_{GS} = 15 V, V_{DS} = 0, f = 1 MHz		1780 (Typ)	—	
Reverse Transfer Capacitance	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	C_{rss}	20 (Typ)	—	pF
	V_{GS} = 15 V, V_{DS} = 0, f = 1 MHz		1000 (Typ)	—	
Output Capacitance	V_{DS} = 25 V, V_{GS} = 0, f = 1 MHz	C_{oss}	110 (Typ)	—	pF
SWITCHING CHARACTERISTICS (T_J = 100°C)					
Turn-On Delay Time	(V_{DD} = 25 V, I_D = 8 A, V_{GS} = 5 V, R_{gen} = 50 ohms)	$t_{d(on)}$	14 (Typ)	—	ns
Rise Time		t_r	50 (Typ)	—	
Turn-Off Delay Time		$t_{d(off)}$	60 (Typ)	—	
Fall Time		t_f	46 (Typ)	—	
Total Gate Charge	(V_{DS} = 120 V, I_D = 8 A, V_{GS} = 5 Vdc) See Figures 9 and 10	Q_g	10.5 (Typ)	18	nC
Gate-Source Charge		Q_{gs}	1.8 (Typ)	—	
Gate-Drain Charge		Q_{gd}	6 (Typ)	—	
SOURCE DRAIN DIODE CHARACTERISTICS					
Forward On-Voltage	(I_S = 8 A, V_{GS} = 0)	V_{SD}	1.02 (Typ)	1.25	Vdc
Forward Turn-On Time	(I_S = 20 A, dI_S/dt = 100 A/μs, V_R = 70 V)	t_{on}	Limited by stray inductance		
Reverse Recovery Time		t_{rr}	125 (Typ)	—	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 (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 = 2%.

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