MMN7222E

Data Sheet

M-MOS Semiconductor Hong Kong Limited

20 V N-Channel Enhancement-Mode MOSFET

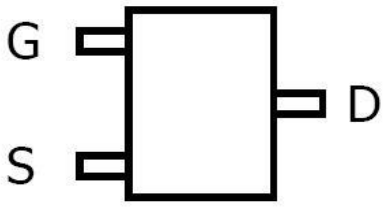
V_{DS}= 20 V ESD Protected Gate: 2.0 kV

$R_{DS(ON)}$, V_{gs}@4.5V , I_{ds}@	4.3	A	=	33.0	mΩ
$R_{DS(ON)}$, V_{gs}@2.5V , I_{ds}@	3.0	A	=	40.0	mΩ
$R_{DS(ON)}$, V_{gs}@1.8V , I_{ds}@	2.1	A	=	55.0	mΩ

Features

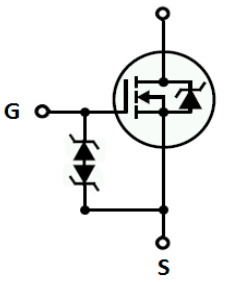
Advanced trench process technology
High Density Cell Design
General Application

SOT- 23



Top View

Internal Schematic Diagram



N-Channel MOSFET

Maximum Ratings and Thermal Characteristics *(T_A = 25°C unless otherwise noted)*

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	+ 20	V
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current [1]		I_D	4.25	A
Pulsed Drain Current [2]		I_{DM}	16.14	A
Maximum Power Dissipation	TA = 25°C	P_D	0.89	W
	TA = 75°C		0.54	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) [3]		$R_{\theta JA}$	140	°C/W

Note: *1. Fused current that based on wire numbers and diameter*
2. Repetitive Rating: Pulse width limited by the maximum junction temperature
3. 1-in² 2oz Cu PCB board

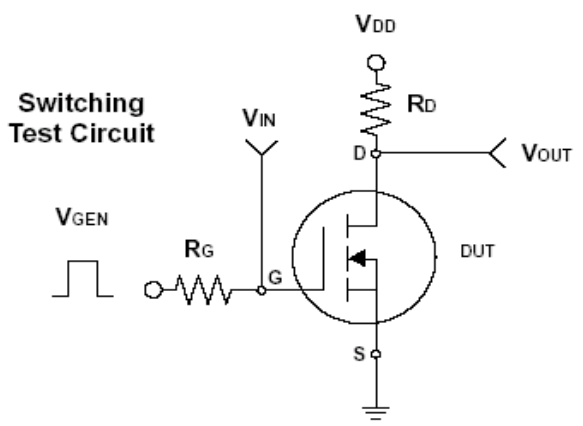
V 1.4C

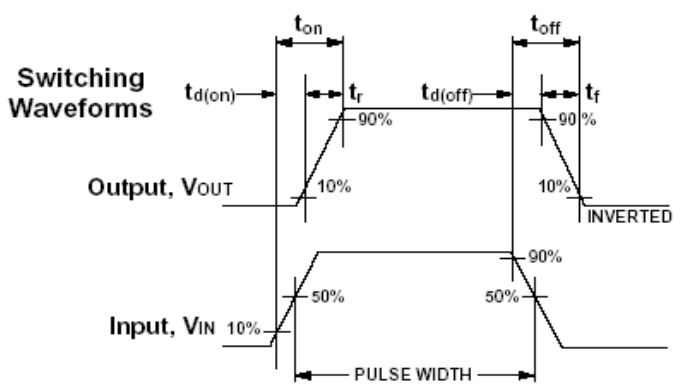
ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250uA	20			V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 4.3 A		24.7	33.0	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 2.5V, I_D = 3.0 A		30.5	40.0	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 1.8V, I_D = 2.1 A		41.6	55.0	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = 250uA	0.5	0.70	1.5	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 20 V, V_{GS} = 0V			1	uA
Gate Body Leakage	I_{GSS}	V_{GS} = ± 8 V, V_{DS} = 0V			±100	nA
Dynamic[3)]						
Total Gate Charge	Q_g	Vds= 6V, Id = 1.5A, Vgs=4.5V		5.69		nC
Gate-Source Charge	Q_{gs}			0.63		
Gate-Drain Charge	Q_{gd}			1.31		
Turn-On Delay Time	$t_{d(on)}$	Vds = 6V,		10.63		ns
Turn-On Rise Time	t_r	ID =1A, VGEN = 4.5V		4.46		
Turn-Off Delay Time	$t_{d(off)}$	RG = 6Ω		34.29		
Turn-Off Fall Time	t_f			5.66		
Input Capacitance	C_{iss}	Vgs=0V,Vds = 6V, f= 200kHz		603.50		pF
Output Capacitance	C_{oss}			75.00		
Reverse Transfer Capacitance	C_{rss}			61.50		
Source-Drain Diode						
Max. Diode Forward Current	I_S					A
Diode Forward Voltage	V_{SD}	I_S = 1.6A, V_{GS} = 0V				V

Note: Pulse test: pulse width <= 300us, duty cycle<= 2%

3. Guaranteed by design; not subject to production testing





V 1.4C

Notice

1. Specification of the products displayed herein are subject to change without notice. Continuous development may necessitate changes in technical data without notice. M-MOS Semiconductor Sdn. Bhd. or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

2. Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.