FMM23N20 2.3A 20V N-Channel Enhancement-Mode MOSFET

20V N-Channel Enhancement-Mode MOSFET

V_{DS}= 20V

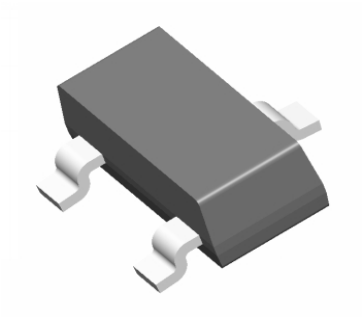
$R_{DS(ON)}$, Vgs@4.5V, Ids@2.8A = 60mΩ

$R_{DS(ON)}$, Vgs@2.5V, Ids@2.0A = 115mΩ

Features

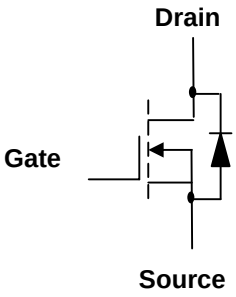
Advanced trench process technology
High Density Cell Design For Ultra Low On-Resistance
Fully Characterized Avalanche Voltage and Current
Improved Shoot-Through FOM

TO-236
(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	
Continuous Drain Current		I_D	2.3	A
Pulsed Drain Current 1)		I_{DM}	10	
Maximum Power Dissipation	T_A = 25°C	P_D	0.9	W
	T_A = 75°C		0.57	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Avalanche Energy with Single Pulse I_D=50A, V_{DD}=25V, L=0.5mH		E_{AS}		mJ
Junction-to-Case Thermal Resistance		$R_{\theta JC}$		°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) 2)		$R_{\theta JA}$	145	

Note: 1. Maximum DC current limited by the package
2. 1-in^2 2oz Cu PCB board

N-Channel Enhancement-Mode MOSFET

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -10uA	20	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 2.8A		45	60	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 2.5V, I_D = 2.0A		70	115	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = 250uA	0.65	0.95	1.20	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 9.6V, V_{GS} = 0V			-1	uA
Gate Body Leakage	I_{GSS}	V_{GS} = ±8V, V_{DS} = 0V			±100	nA
Gate Resistance	Rg					Ω
Forward Transconductance	g_{fs}	V_{DS} = 5V, I_D = 4.0A		6.5		S
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 6V, I_D = 2.8A V_{GS} = 4.5V		3.69		nC
Gate-Source Charge	Q_{gs}			0.70		
Gate-Drain Charge	Q_{gd}			1.06		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 6V, R_L = 6Ω I_D = 1A, V_{GEN} = 4.5V R_G = 6Ω		6.16		ns
Turn-On Rise Time	t_r			7.56		
Turn-Off Delay Time	$t_{d(off)}$			16.61		
Turn-Off Fall Time	t_f			4.07		
Input Capacitance	C_{iss}	V_{DS} = 6V, V_{GS} = 0V f = 1.0 MHz		427.12		pF
Output Capacitance	C_{oss}			80.56		
Reverse Transfer Capacitance	C_{rss}			57.00		
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%