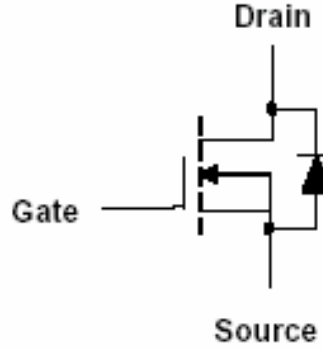**Top View**

TO-252 (D2Pack)

Internal Schematic Diagram

N-Channel MOSFET

Features

Advanced trench process technology
High Density Cell Design For Ultra Low On-Resistance
Specially Designed for DC/DC Converters and Motor Drivers
Fully Characterized Avalanche Voltage and Current

V_{DS} = 25V

$R_{DS(ON)}$, **Vgs@10V**, **Ids@30A** = **8.5mW**

$R_{DS(ON)}$, **Vgs@4.5V**, **Ids@30A** = **13mW**

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	25	V
Gate-Source Voltage		V_{GS}	$\pm$ 20	
Continuous Drain Current		I_D	35	A
Pulsed Drain Current [1]		I_{DM}	350	
Maximum Power Dissipation	T_A = 25°C	P_D	57	W
	T_A = 100°C		23	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	^{o}C
Avalanche Energy with Single Pulse I_D=35A, V_{DD}=25V, L=0.5mH		E_{AS}	300	mJ
Junction-to-Case Thermal Resistance		$R_{\theta Jc}$	2.2	^{o}C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) [2]		$R_{\theta JA}$	50	

Note: 1. Maximum DC current limited by the package

2. 1-in^2 2oz Cu PCB board

FMD50N25   25V N-Channel Enhancement-Mode

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V$, $I_D = 250uA$	25	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V$, $I_D = 30A$		10.0	13	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 10V$, $I_D = 30A$		6.5	8.5	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250uA$	1	1.6	3	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V$, $V_{GS} = 0V$			1	uA
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm20V$, $V_{DS} = 0V$			± 100	nA
Gate Resistance	Rg					
Forward Transconductance	g_{fs}	$V_{DS} = 10V$, $I_D = 35A$				S
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = 15V$, $I_D = 35A$ $V_{GS} = 10V$		24		nC
Gate-Source Charge	Q_{gs}			5.4		
Gate-Drain Charge	Q_{gd}			4.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V$, $R_L = 15\Omega$ $I_D = 1A$, $V_{GEN} = 10V$ $R_G = 24\Omega$		15.0		ns
Turn-On Rise Time	t_r			3.2		
Turn-Off Delay Time	$t_{d(off)}$			36		
Turn-Off Fall Time	t_f			4.8		
Input Capacitance	C_{iss}	$V_{DS} = 15V$, $V_{GS} = 0V$ f = 1.0 MHz		1940		pF
Output Capacitance	C_{oss}			312		
Reverse Transfer Capacitance	C_{rss}			122		
Source-Drain Diode						
Max. Diode Forward Current	I_S				50	A
Diode Forward Voltage	V_{SD}	$I_S = 20A$, $V_{GS} = 0V$		0.87	1.5	V

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