



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	18m Ω @10V	13A
	26m Ω @4.5V	

Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

Application

- Power Switching Application

MARKING:

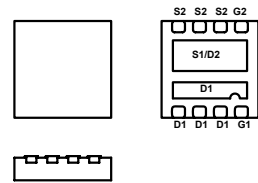


M190ND03L = Device Code

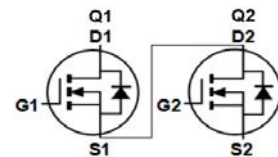
XX = Date Code

Solid Dot = Green Indicator

DFN3X3-8L



Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	30	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	13 A
	$T_C = 100^\circ\text{C}$	I_D	8 A
Pulsed Drain Current ²	I_{DM}	52	A
Power Dissipation ³	$T_C = 25^\circ\text{C}$	P_D	10 W
Thermal Resistance from Junction to Ambient ⁴	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	13	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

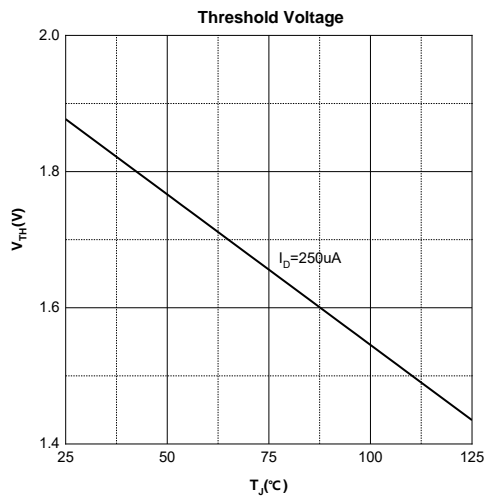
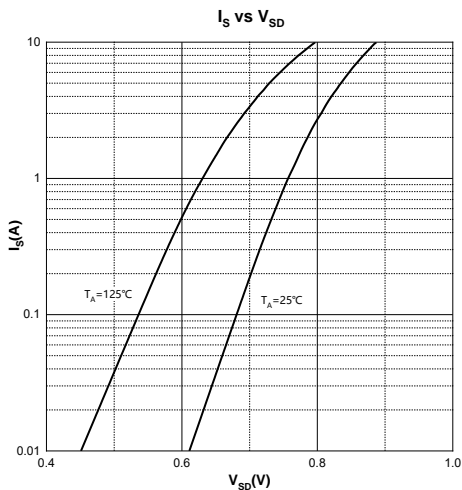
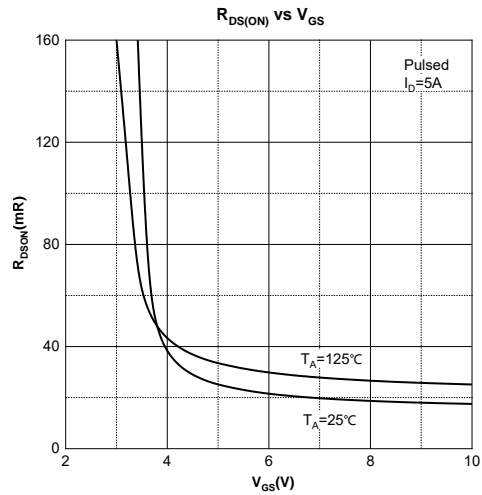
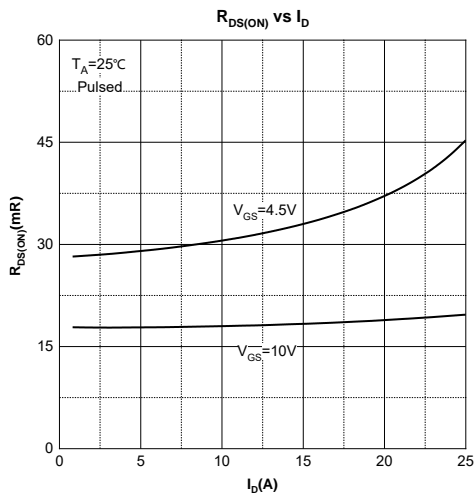
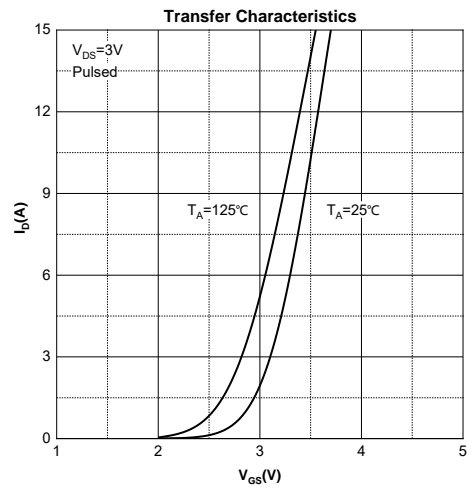
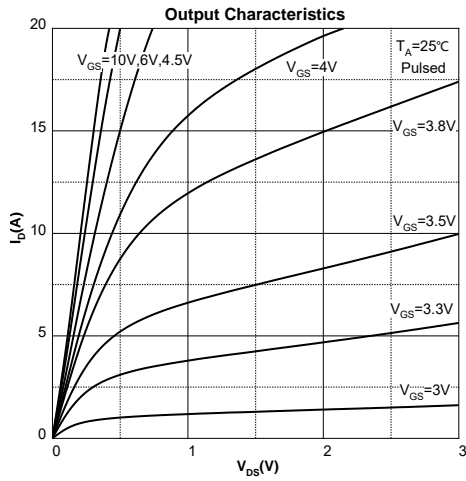
MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.8	3.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 5A		18	25	mΩ
		V _{GS} = 4.5V, I _D = 3A		26	35	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		521		pF
Output Capacitance	C _{oss}			64		
Reverse Transfer Capacitance	C _{rss}			48		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		3.4		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 5A		13		nC
Gate-source Charge	Q _{gs}			1.8		
Gate-drain Charge	Q _{gd}			2.4		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V, I _D = 10A R _G = 3Ω		8		ns
Turn-on Rise Time	t _r			12		
Turn-off Delay Time	t _{d(off)}			3		
Turn-off Fall Time	t _f			5		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 3A			1.2	V

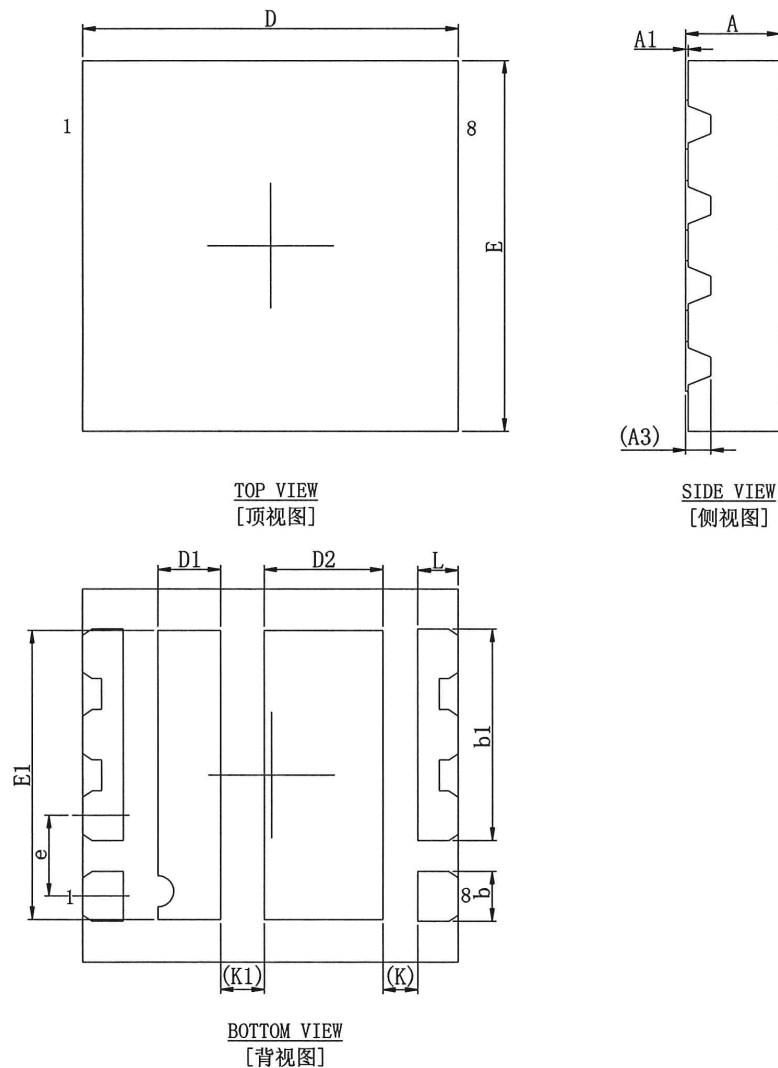
Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.The power dissipation P_D is limited by T_{J(MAX)} = 150°C.And device mounted on a large heatsink
- 4.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Characteristics



DFN3X3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
b	0.350	0.450	0.014	0.018
b1	1.600	1.800	0.063	0.071
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
e	0.650BSC		0.026BSC	
D1	0.400	0.600	0.016	0.024
D2	0.850	1.050	0.033	0.041
E1	2.225	2.425	0.088	0.095
L	0.220	0.420	0.009	0.017
K	0.280REF		0.011REF	
K1	0.350REF		0.014REF	