



#### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
60V	25mΩ@10V	20A
	34mΩ@4.5V	

#### Feature

- Trench Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

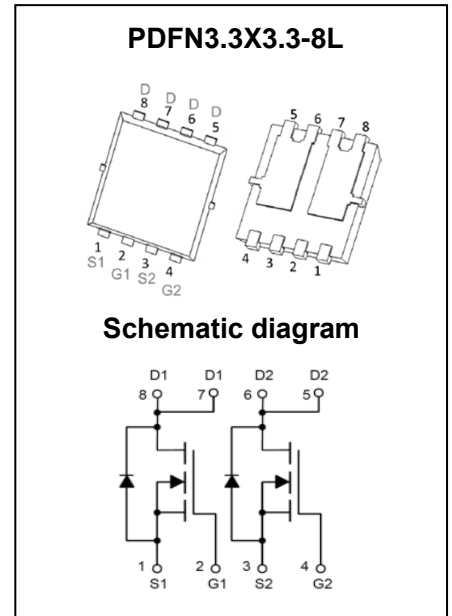
#### Application

- Power Switching Application

#### MARKING:



M300ND06L = Device Code  
XX = Date Code  
Solid Dot = Green Indicator



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

Parameter	Symbol	Value	Unit	
Drain - Source Voltage	$V_{DS}$	60	V	
Gate - Source Voltage	$V_{GS}$	±20	V	
Continuous Drain Current <sup>1</sup>	$T_C = 25^\circ\text{C}$	$I_D$	20	A
	$T_C = 60^\circ\text{C}$	$I_D$	13	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	80	A	
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	12	A	
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	40	mJ	
Power Dissipation <sup>5</sup>	$T_C = 25^\circ\text{C}$	$P_D$	23	W
Thermal Resistance from Junction to Ambient <sup>6</sup>	$R_{\theta JA}$	58	$^\circ\text{C/W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	5.5	$^\circ\text{C/W}$	
Junction Temperature	$T_J$	150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$	

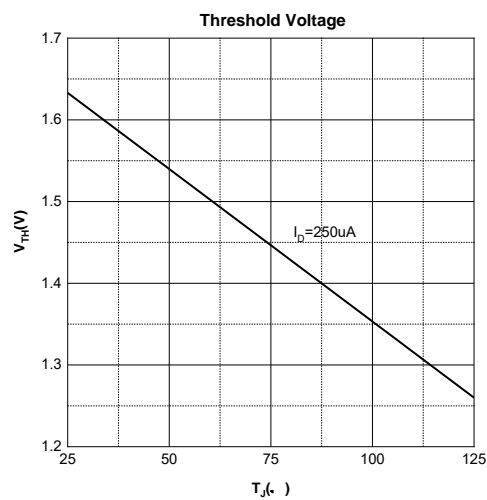
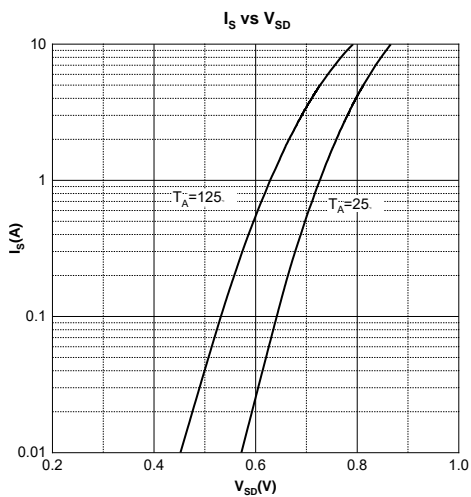
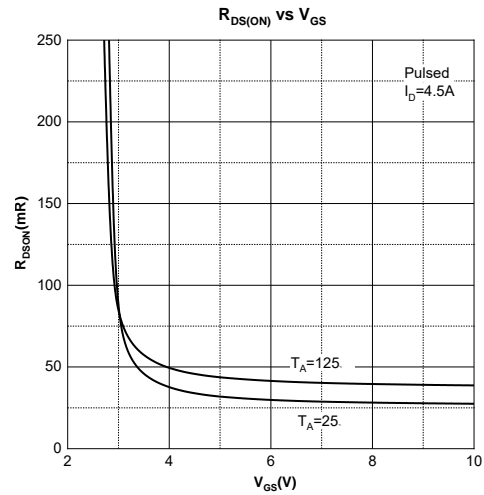
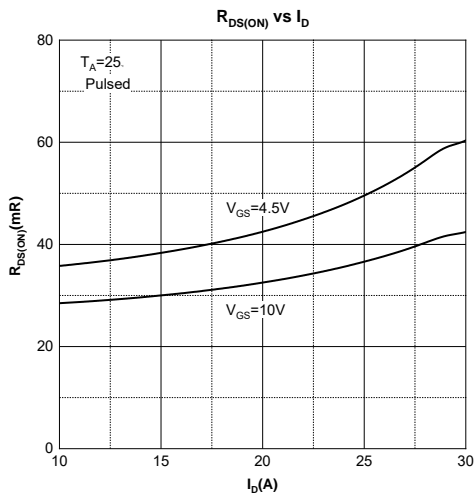
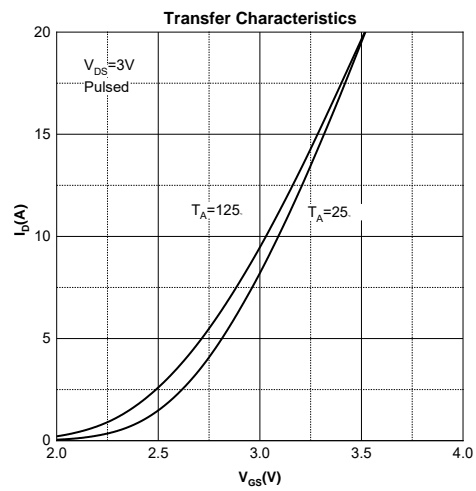
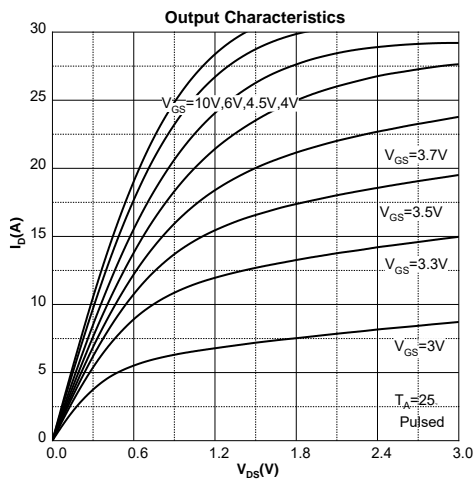
## MOSFET ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 60V, V <sub>GS</sub> = 0V			1	μA
Gate - Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±100	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.8	3	V
Drain-source On-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 4.5A		25	42	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 4A		34	52	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 10A		16		S
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1MHz		894		pF
Output Capacitance	C <sub>oss</sub>			70		
Reverse Transfer Capacitance	C <sub>rss</sub>			59		
Gate Resistance	R <sub>g</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 0.1MHz		1.6		Ω
<b>Switching Characteristics</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 4.5A		21		nC
Gate-source Charge	Q <sub>gs</sub>			2.5		
Gate-drain Charge	Q <sub>gd</sub>			5.4		
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 30V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A, R <sub>G</sub> = 3Ω		7		ns
Turn-on Rise Time	t <sub>r</sub>			17		
Turn-off Delay Time	t <sub>d(off)</sub>			27		
Turn-off Fall Time	t <sub>f</sub>			8		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.7A			1.2	V

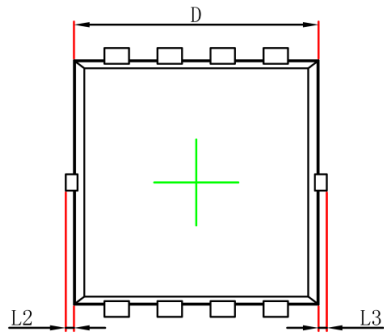
### Notes :

- 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.E<sub>AS</sub> condition: V<sub>DD</sub> = 30V, V<sub>GS</sub> = 10V, L = 0.5mH, R<sub>G</sub> = 25Ω Starting T<sub>J</sub> = 25°C.
- 4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P<sub>D</sub> is limited by T<sub>J(MAX)</sub> = 150°C.And device mounted on a large heatsink
- 6.Device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C.

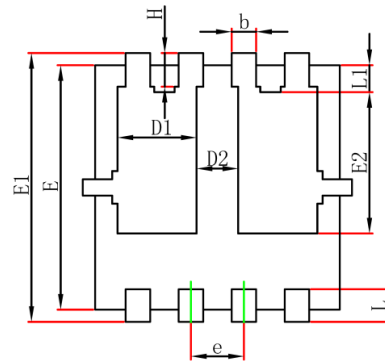
## Typical Characteristics



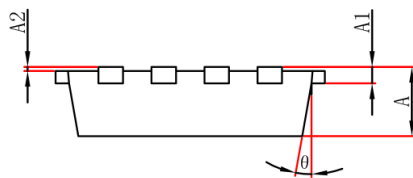
## PDFN3.3X3.3-8L Package Information



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.152REF		0.006REF	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.200	0.114	0.126
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	0°	12°	0°	12°