



#### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
30V	7mΩ@10V	45A
	12mΩ@4.5V	
-30V	20mΩ@-10V	-24A
	32mΩ@-4.5V	

#### Feature

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

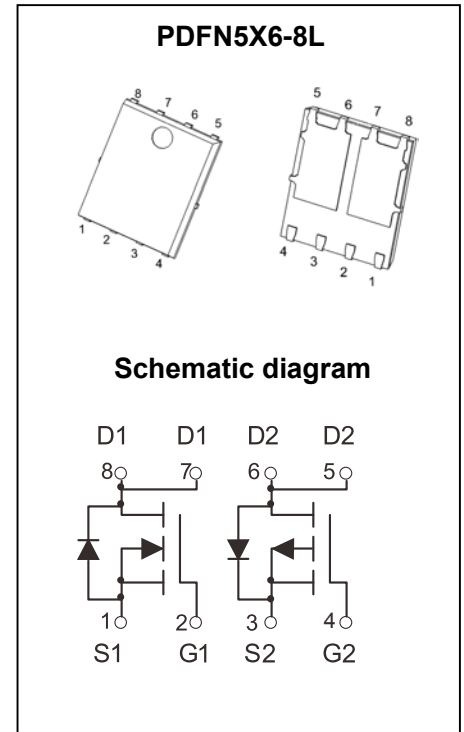
#### Application

- PWM Applications
- Loas Switch
- Power Management

#### MARKING:



M350NP03N = Device Code  
 XX = Data Code  
 Solid Dot = Green Device Indicator



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

Parameter	Symbol	NMOS	PMOS	Unit	
Drain - Source Voltage	$V_{DS}$	30	-30	V	
Gate - Source Voltage	$V_{GS}$	$\pm 20$	$\pm 20$	V	
Continuous Drain Current <sup>1</sup>	$I_D$	$T_C = 25^\circ\text{C}$	45	-24	A
		$T_C = 100^\circ\text{C}$	29	-16	
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	180	-96	A	
Single Pulsed Avalanche Current <sup>3,4</sup>	$I_{AS}$	19	-16	A	
Single Pulsed Avalanche Energy <sup>3,4</sup>	$E_{AS}$	82	55	mJ	
Power Dissipation <sup>6</sup>	$P_D$	25	20.8	W	
Thermal Resistance from Junction to Ambient <sup>7</sup>	$R_{\theta JA}$	50	65	$^\circ\text{C/W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	5	6	$^\circ\text{C/W}$	
Junction Temperature	$T_J$	150	150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55~ +150	-55~ +150	$^\circ\text{C}$	

## MOSFET ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

### NMOS:

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>3</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.5	2.5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$		7	12	m $\Omega$
		$V_{GS} = 4.5V, I_D = 6A$		12	20	
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		953		pF
Output Capacitance	$C_{oss}$			160		
Reverse Transfer Capacitance	$C_{rss}$			151		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.9		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15V, V_{GS} = 10V, I_D = 7A$		23		nC
Gate-source Charge	$Q_{gs}$			2.6		
Gate-drain Charge	$Q_{gd}$			5.9		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V, R_L = 1.25\Omega$ $R_G = 3\Omega$		4.4		ns
Turn-on Rise Time	$t_r$			9		
Turn-off Delay Time	$t_{d(off)}$			17		
Turn-off Fall Time	$t_f$			6		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 10A$			1.2	V

**PMOS:**

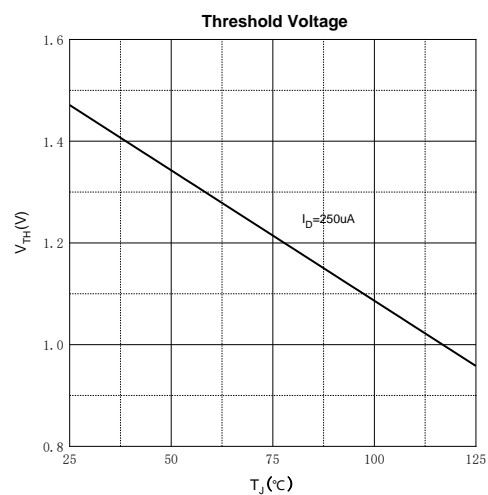
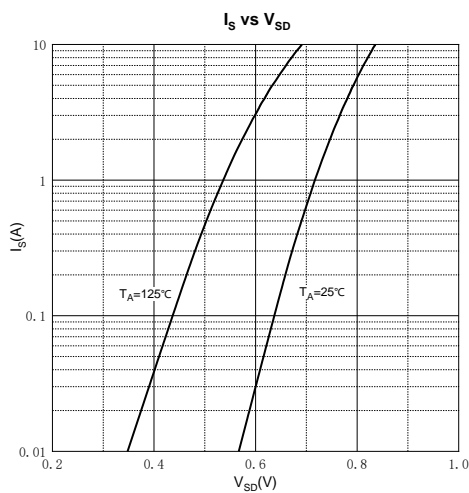
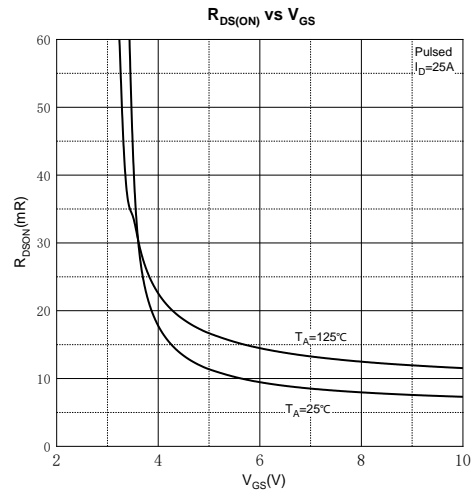
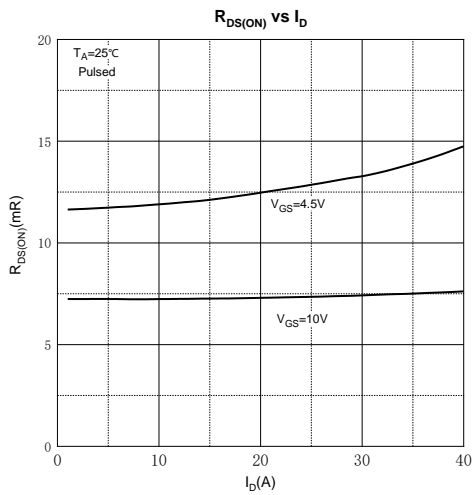
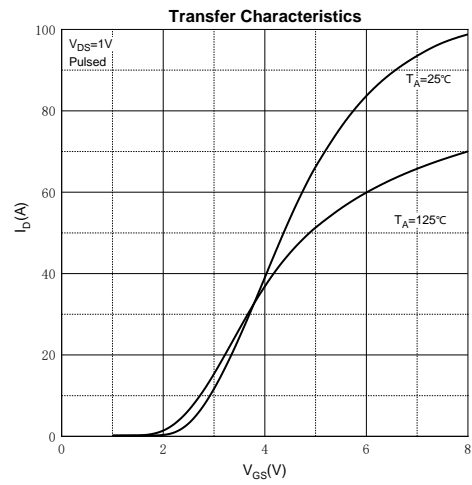
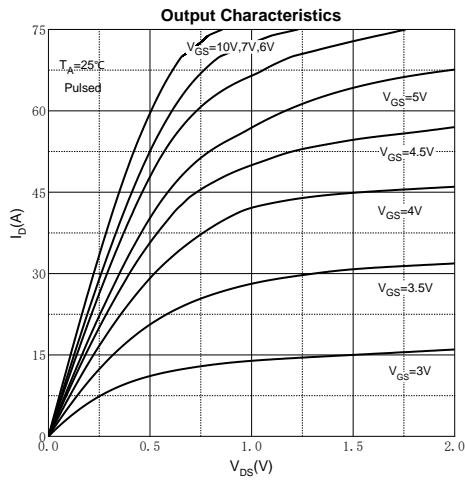
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1	$\mu A$
Gate - Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>3</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.3	-1.7	-2.5	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -6.0A$		20	26	m $\Omega$
		$V_{GS} = -4.5V, I_D = -5.0A$		32	48	
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		761		pF
Output Capacitance	$C_{oss}$			117		
Reverse Transfer Capacitance	$C_{rss}$			100		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		5		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15V, V_{GS} = -10V, I_D = -6A$		15.7		pC
Gate-source Charge	$Q_{gs}$			2.3		
Gate-drain Charge	$Q_{gd}$			3.5		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V, R_L = 1.5\Omega$ $R_G = 3\Omega$		10		ns
Turn-on Rise Time	$t_r$			5.5		
Turn-off Delay Time	$t_{d(off)}$			26		
Turn-off Fall Time	$t_f$			9		
<b>Source - Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = -5A$			-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  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
3. $E_{AS}$  condition:  $V_{DD} = 15V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ C$ .
4. $E_{AS}$  condition:  $V_{DD} = -15V, V_{GS} = -10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ C$ .
- 5.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 6.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ C$ .And device mounted on a large heatsink
- 7.Device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ C$ .

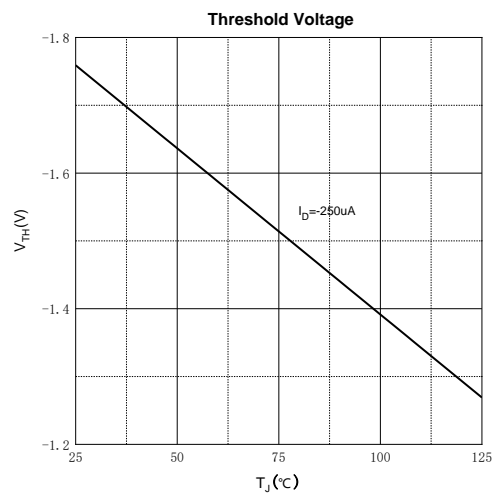
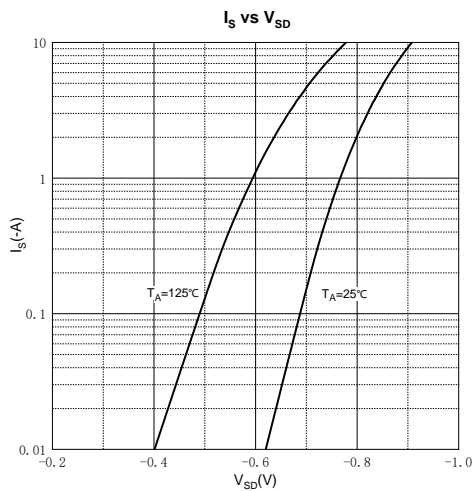
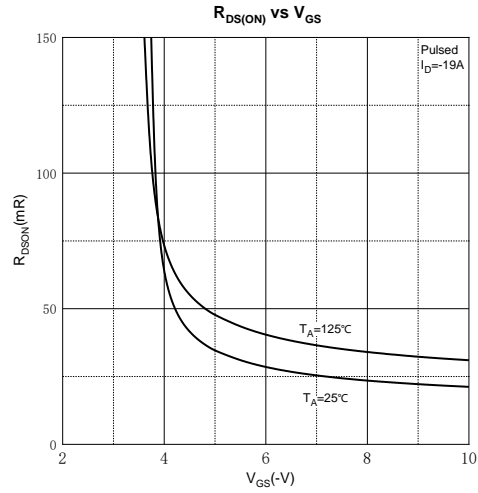
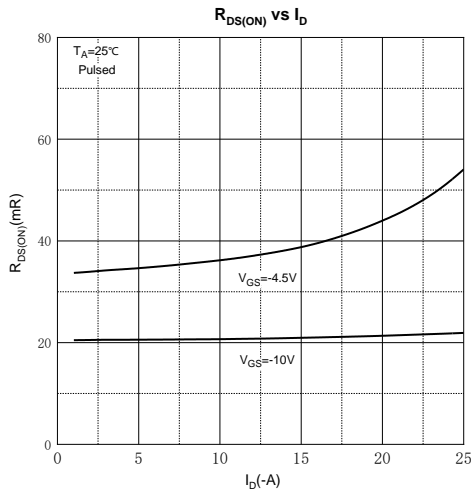
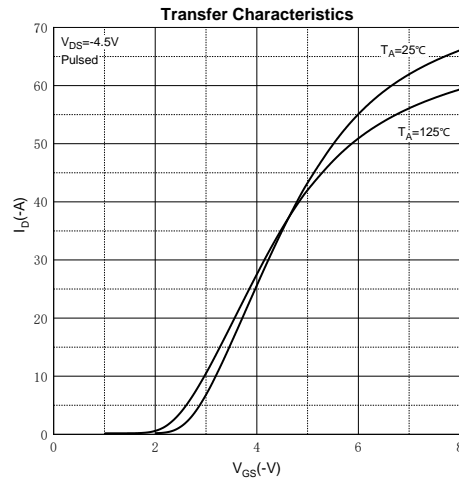
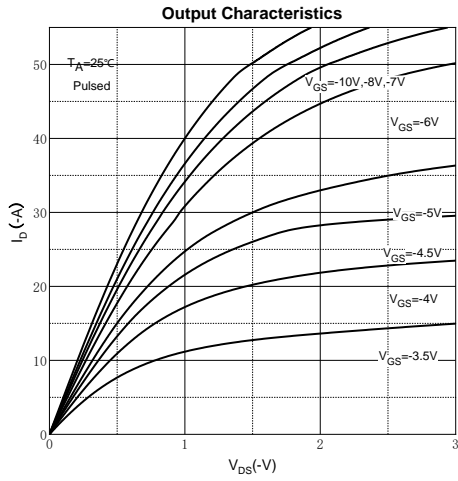
**Typical Characteristics**

**NMOS:**

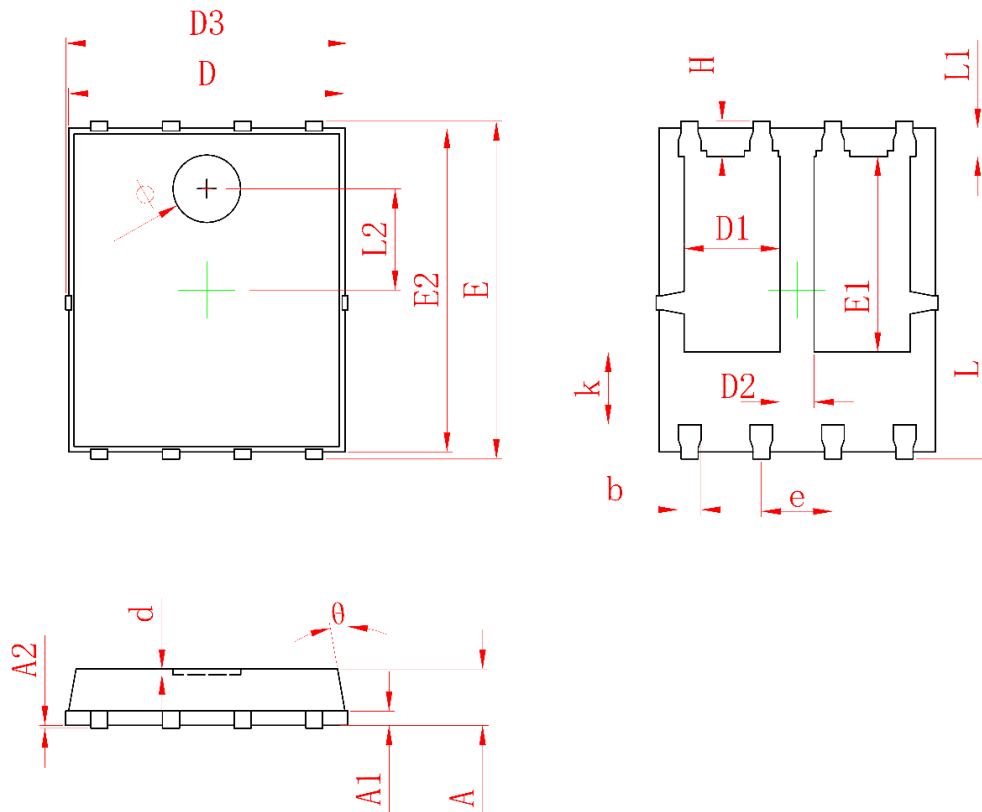


**Typical Characteristics**

**PMOS:**



## PDFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.254REF		0.010REF	
A2	0	0.05	0.000	0.002
D	4.824	4.976	0.190	0.196
D1	1.605	1.805	0.063	0.071
D2	0.500	0.700	0.020	0.028
D3	4.924	5.076	0.194	0.200
E	5.924	6.076	0.233	0.239
E1	3.375	3.575	0.133	0.141
E2	5.674	5.826	0.223	0.229
b	0.350	0.450	0.014	0.018
e	1.270TYP		0.050TYP	
L	0.534	0.686	0.021	0.027
L1	0.424	0.576	0.017	0.023
L2	1.800REF		0.071REF	
k	1.190	1.390	0.047	0.055
H	0.549	0.701	0.022	0.028
$\theta$	8°	12°	8°	12°
$\Phi$	1.100	1.300	0.043	0.051
d	-	0.100	-	0.004

单击下面可查看定价，库存，交付和生命周期等信息

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