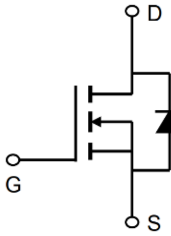
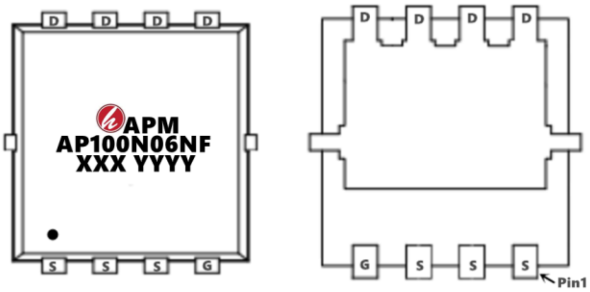
AP100N06NF

60V N-Channel Enhancement Mode MOSFET

Description

The AP100N06NF uses advanced **APM-SGT II** technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.





General Features

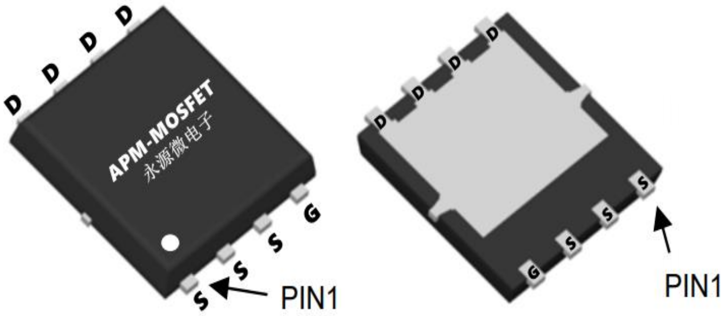
V_{DS} = 60V I_D =100A

$R_{DS(ON)}$ < 4.5mΩ @ V_{GS}=10V （**Type：3.5mΩ**）

Application

Battery protection

UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP100N06NF	PDFN5*6-8L	AP100N06NF XXX YYYY	5000

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1,6]	100	A
I_D@T_C=100℃	Continuous Drain Current[1,6]	61	A
IDM	Pulsed Drain Current[2]	380	A
EAS	Single Pulse Avalanche Energy[3]	80	mJ
IAS	Avalanche Current	40	A
P_D@T_C=25℃	Total Power Dissipation[4]	73.5	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction-Ambient [1]	51	℃/W
$R_{\theta}JC$	Thermal Resistance Junction-Case[1]	1.7	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	65	-	-	V
I_{GSS}	Gate-body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current T_J=25°C	V_{DS} = 65V, V_{GS} = 0V	-	-	1	μA
	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.7	2.5	V
$R_{DS(on)}$	Drain-Source On-Resistance[4]	V_{GS} = 10V, I_D = 20A	-	3.5	4.5	mΩ
		V_{GS} = 4.5V, I_D = 10A	-	4.8	6.6	
g_{fs}	Forward Transconductance[4]	V_{DS} = 10V, I_D = 20A	-	89	-	S
C_{iss}	Input Capacitance	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	2180	-	pF
C_{oss}	Output Capacitance		-	735	-	
C_{rss}	Reverse Transfer Capacitance		-	42	-	
R_g	Gate Resistance	f = 1MHz	-	1.8	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 30V, I_D= 20A	-	35	-	nC
Q_{gs}	Gate-Source Charge		-	6.6	-	
Q_{gd}	Gate-Drain Charge		-	8.4	-	
$t_{d(on)}$	Turn-On Delay Time	V_{GS} =10V, V_{DD} = 30V, R_G = 3Ω, I_D= 20A	-	9.4	-	ns
t_r	Rise Time		-	8.4	-	
$t_{d(off)}$	Turn-Off Delay Time		-	32.5	-	
t_f	Fall Time		-	12.5	-	
t_{rr}	Body Diode Reverse Recovery Time	I_F=20A, dI/dt=100A/μs	-	50	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	20	-	nC
V_{SD}	Diode Forward Voltage[4]	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
I_S	Continuous Source Current	T_C=25°C	-	-	100	A

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .

3、The power dissipation is limited by 175℃ junction temperature

4、EAS condition: TJ=25℃, V_{DD}=25V,V_{GS}=10V,L=0.1mH，I_{AS}=40A

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

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Typical Characteristics

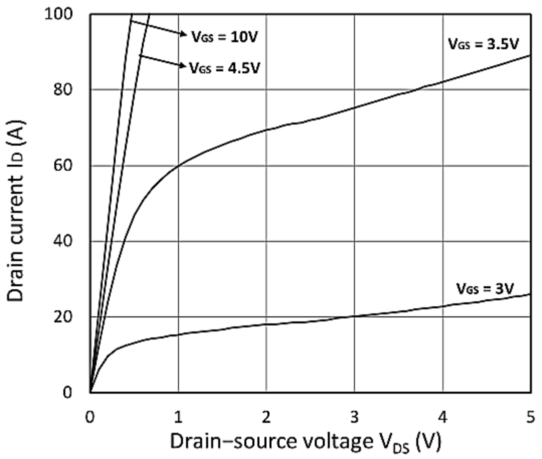


Figure 1. Output Characteristics

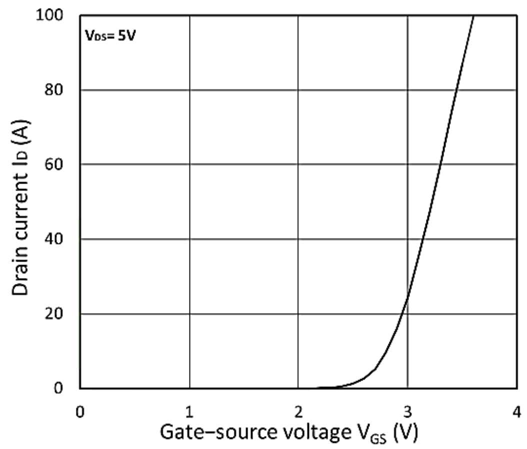


Figure 2. Transfer Characteristics

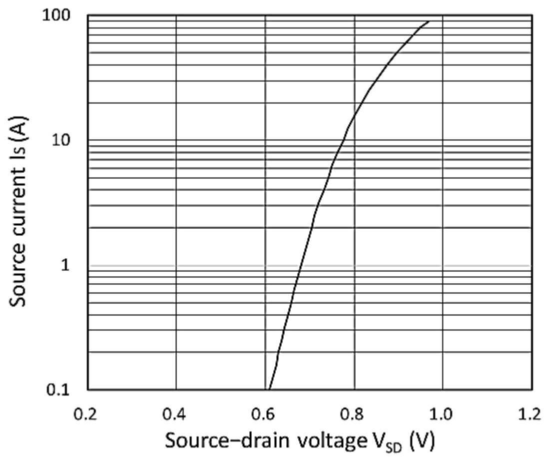


Figure 3. Forward Characteristics of Reverse

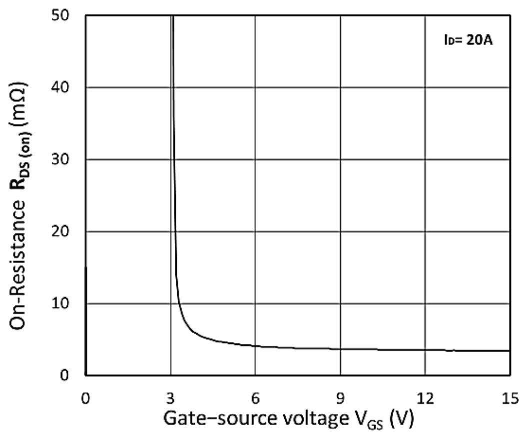


Figure 4. RDS(ON) vs. VGS

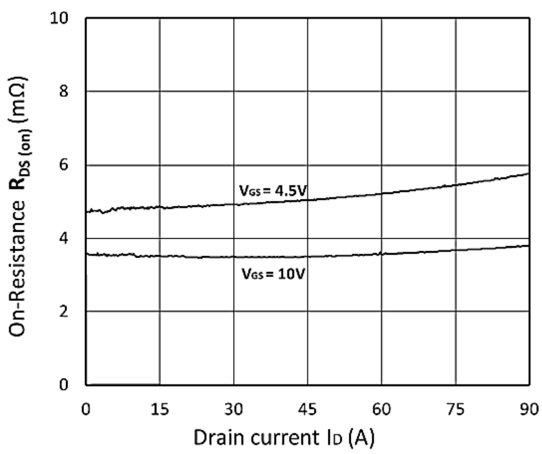


Figure 5. R DS(ON) vs. ID

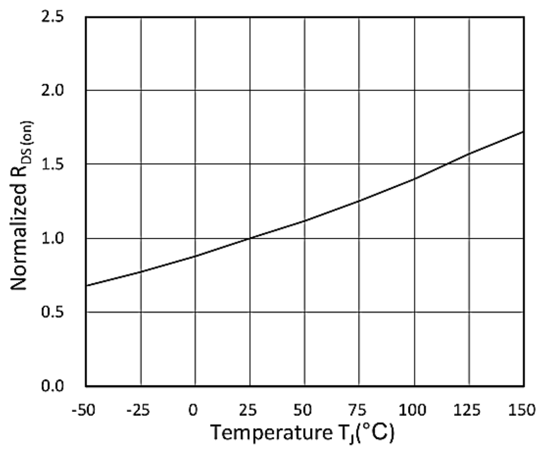


Figure 6. Normalized R DS(on) vs. Temperature

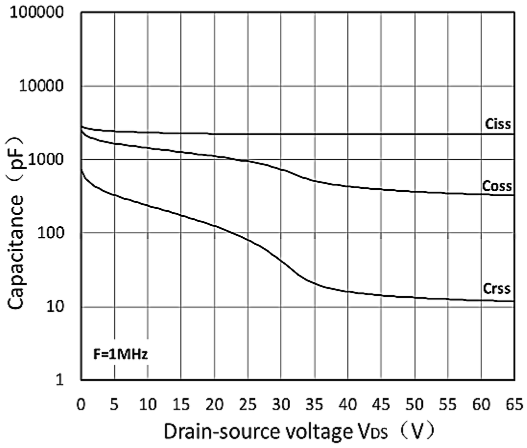


Figure 7. Capacitance Characteristics

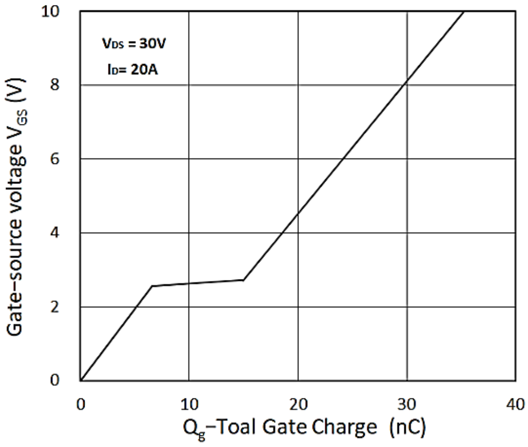


Figure 8. Gate Charge Characteristics

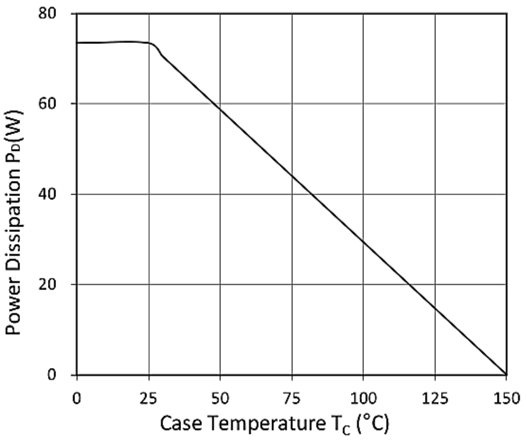


Figure 9. Power Dissipation

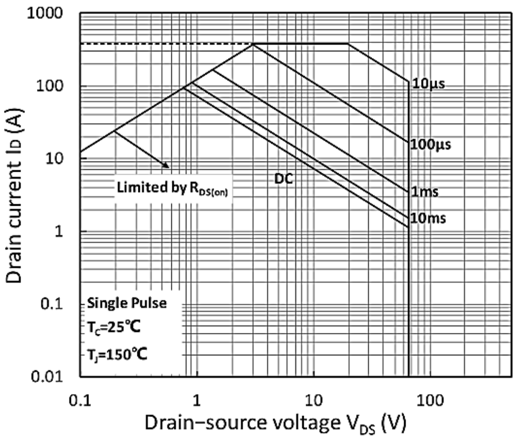


Figure10. Safe Operating Area

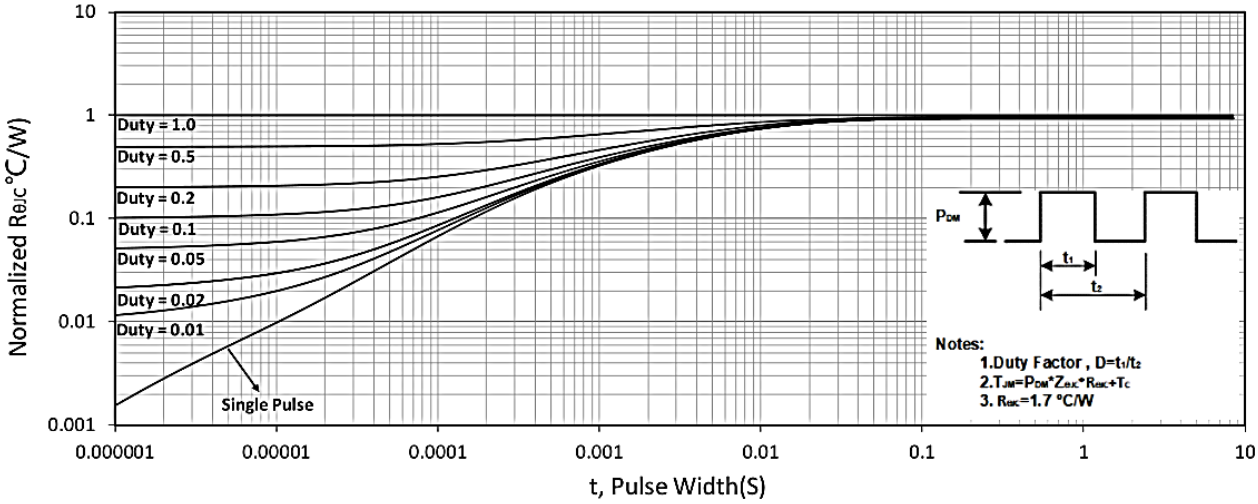
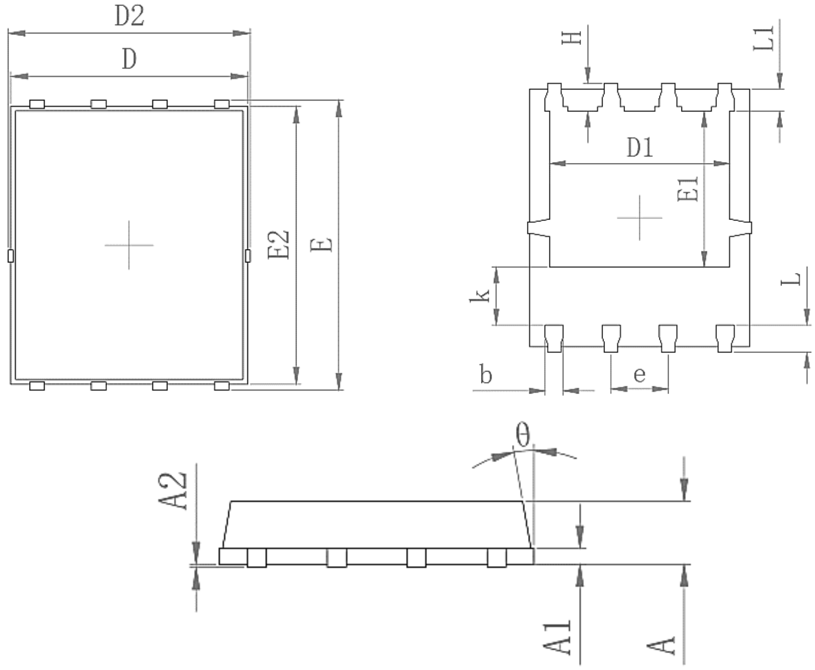


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-PDFN5X6-8L-XZT Single



Symbol	Common	
	mm	
	Mim	Max
A	0.90	1.10
A1	0.254 REF	
A2	0-0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270	
L	0.534	0.686
L1	0.424	0.576
K	1.190	1.390
H	0.549	0.701
Φ	8°	12°

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Edition	Date	Change
Rve1.0	2021/3/20	Initial release