AP100N10NF

100V N-Channel Enhancement Mode MOSFET

Description

The AP100N10NF uses advanced **APM-SGT II** technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

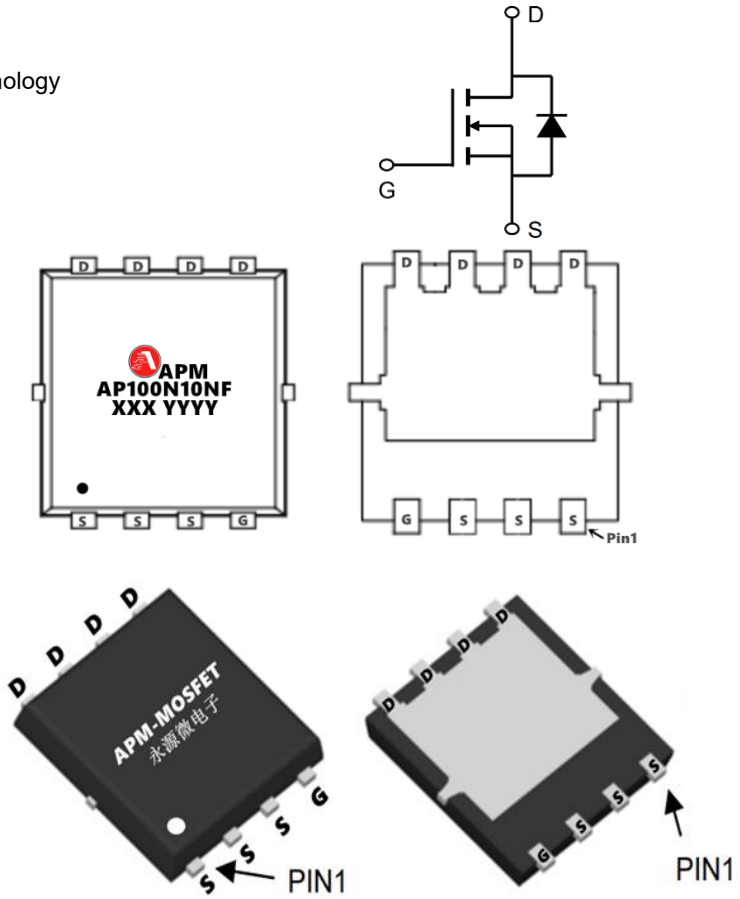
V_{DS} = 100V I_D =100A

$R_{DS(ON)}$ < 5.5mΩ @ V_{GS}=10V **（Type：4.3mΩ）**

Application

BLDC

LED Backlighting



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP100N10NF	PDFN5*6-8L	AP100N10NF XXX YYYY	5000

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

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	100	V
VGSS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ 10V1	100	A
ID@TC=100℃	Continuous Drain Current, VGS @ 10V1	68	A
IDM	Pulsed Drain Current	417	A
EAS	Single Pulsed Avalanche Energy	245	mJ
IAS	Avalanche Current	42	A
PD@TC=25℃	Power Dissipation	24	W
T_J TSTG	Operating Junction Temperature Range	-55 to 150	°C
RθJA	Thermal Resistance Junction-Ambient [1]	25	°C/W
RθJC	Thermal Resistance, Junction to Case	1.0	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
VDSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	100	103	-	V
IGSS	Gate-body Leakage current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T_J=25°C	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	2.9	4.0	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS} = 10V, I_D = 20A	-	4.3	5.5	mΩ
Ciss	Input Capacitance	V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	2816	-	pF
Coss	Output Capacitance		-	614	-	
Crss	Reverse Transfer Capacitance		-	7.4	-	
R_g	Gate Resistance	V_{GS} = 0V, V_{DS} = 0V, f =1MHz	-	2.4	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 50V, I_D=20A	-	42	-	nC
Qgs	Gate-Source Charge		-	9.7	-	
Qgd	Gate-Drain Charge		-	10.6	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DS} =50V, R_G = 3Ω, I_D= 20A	-	13	-	ns
t_r	Rise Time		-	25	-	
td(off)	Turn-off Delay Time		-	43	-	
t_f	Fall Time		-	37	-	
VSD	Diode Forward Voltage[2]	I_F = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	-	-	167	A
trr	Body Diode Reverse Recovery Time	I_F = 20A, dI/dt=100A/μs	-	60	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	61	-	nC

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 ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is VDD =72V,VGS =10V,L=0.1mH,IAS =42A

4、The power dissipation is limited by 150℃ junction temperature

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

Typical Characteristics

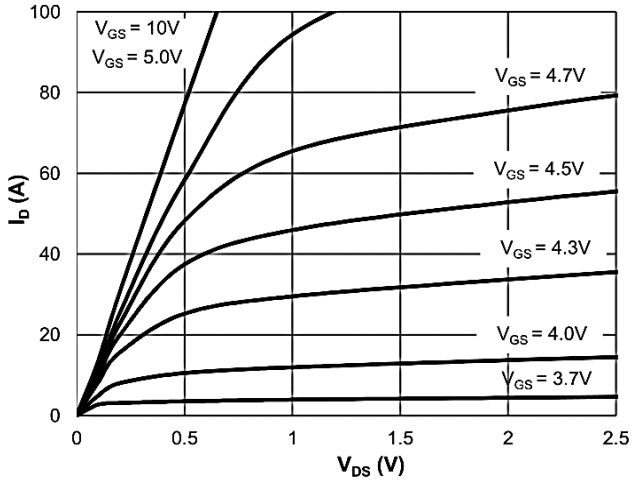


Figure 1: Saturation Characteristics

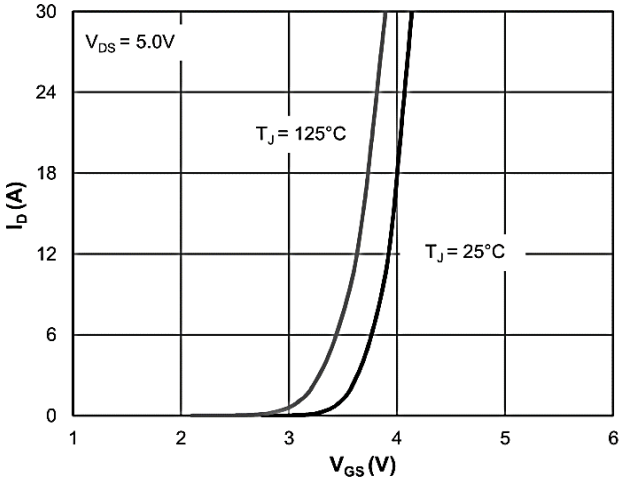


Figure 2: Transfer Characteristics

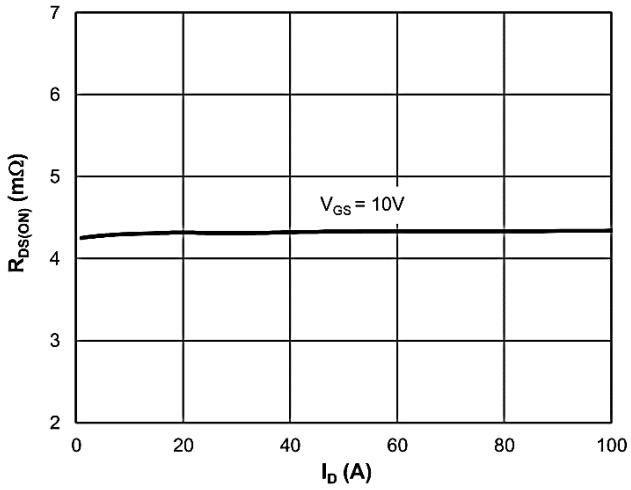


Figure 3: $R_{DS(ON)}$ vs. Drain Current

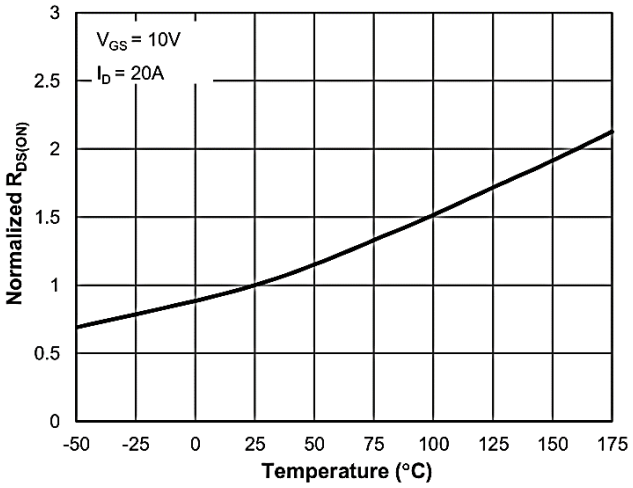


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

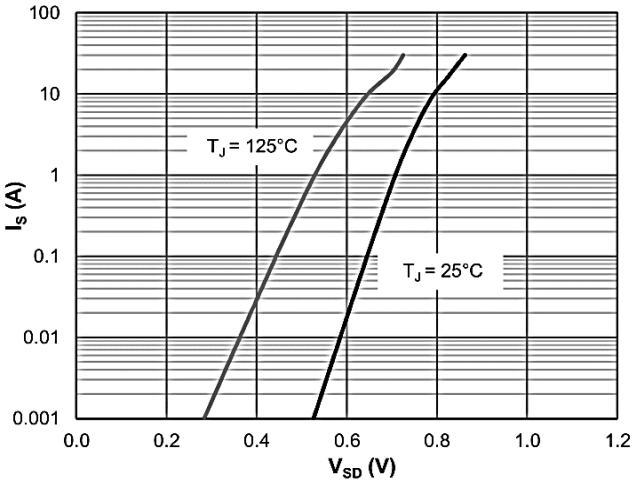


Figure 5: Body-Diode Characteristics

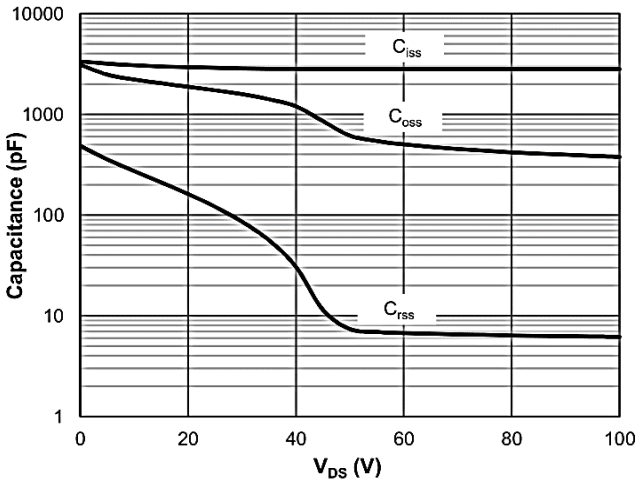


Figure 6: Capacitance Characteristics

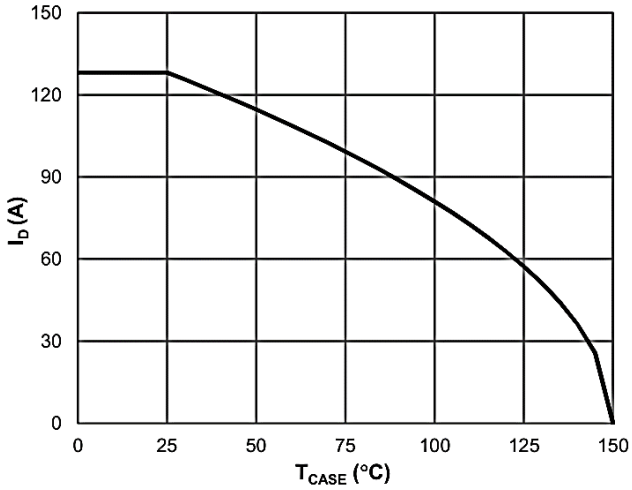


Figure 7: Current De-rating

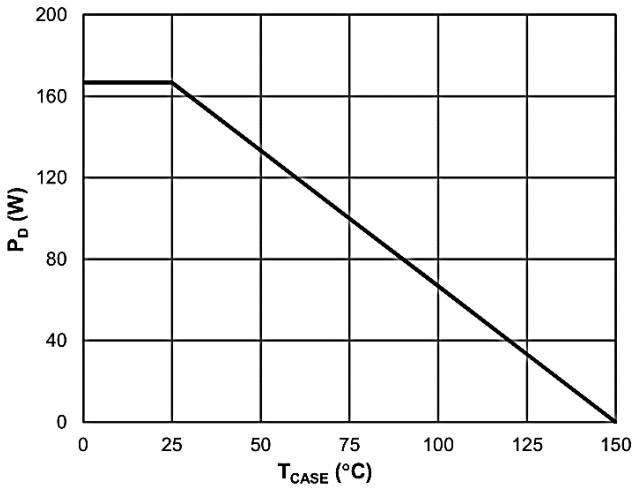


Figure 8: Power De-rating

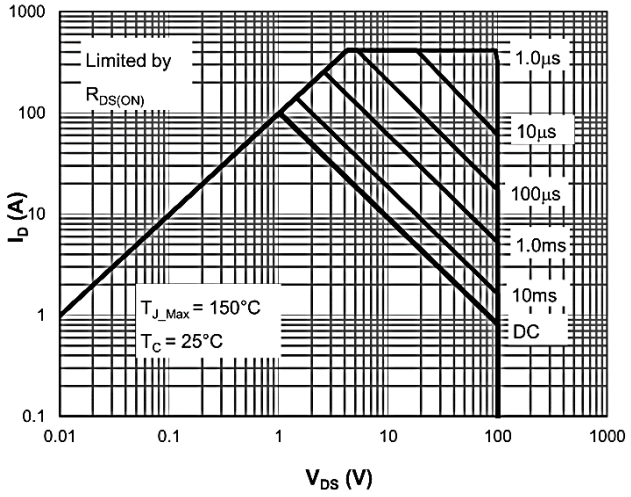


Figure 9: Maximum Safe Operating Area

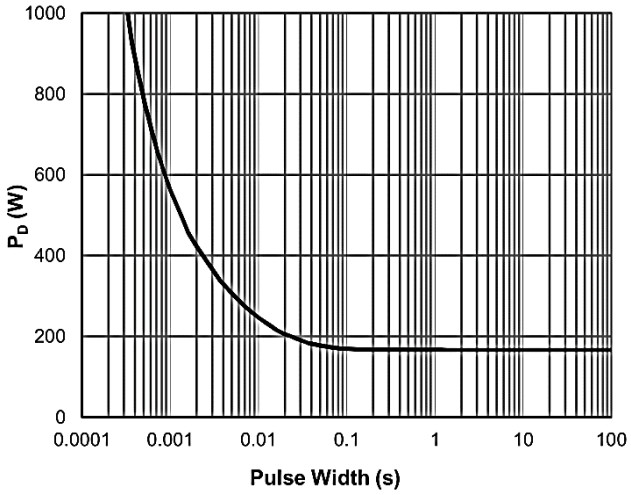


Figure 10: Single Pulse Power Rating, Junction-to-Case

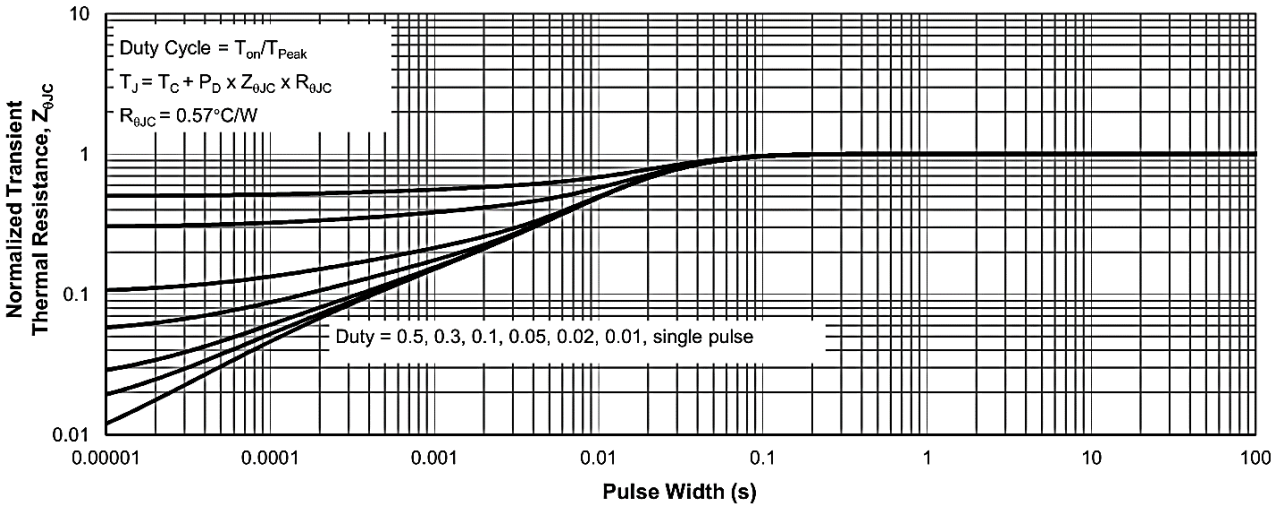
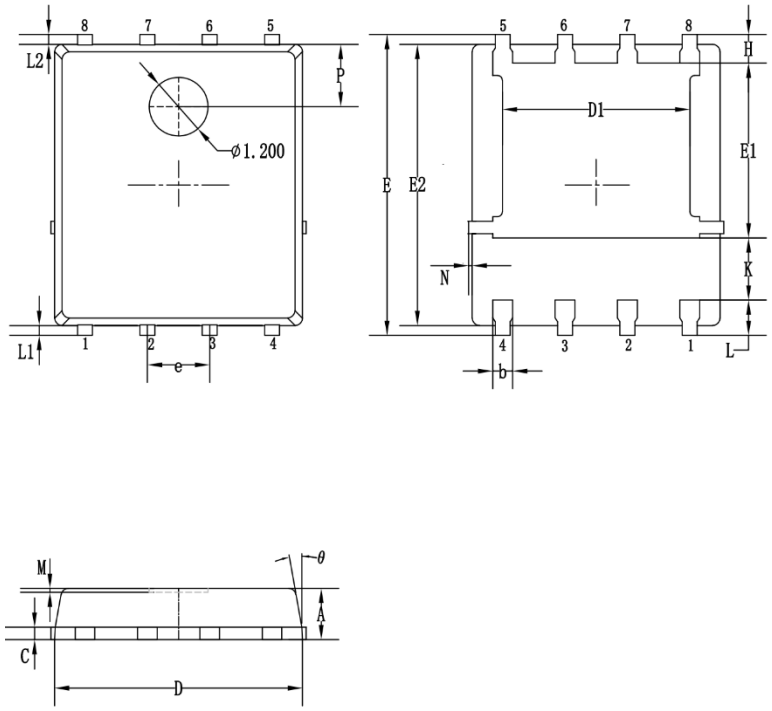


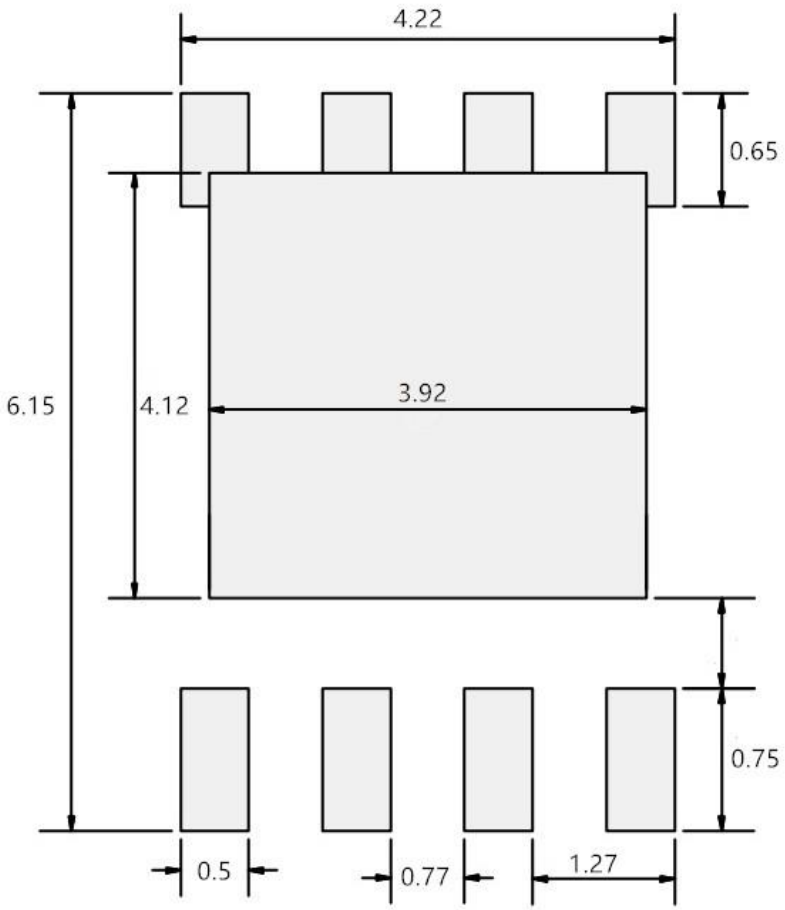
Figure 11: Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-PDFN5*6-8L Single



Symbol	Dim in mm		
	Min	Typ	Max
A	0.9	1.05	1.2
b	0.3	0.4	0.5
C	0.2	0.25	0.35
D	4.9	5.05	5.2
D1	3.72	3.82	4.12
E	5.9	6.1	6.3
E1	3.3	3.5	3.7
E2	5.6	5.75	5.9
e	1.27BSC		
H	0.48	0.58	0.7
K	1.14	1.27	1.4
L	0.54	0.74	0.84
L1/L2	0.1	0.2	0.3
θ	8°	10°	12°
M	0.08REF		
N	0		0.15
P	1.28REF		

Recommended Minimum Pads



Dimensions in (mm)

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Edition	Date	Change
REV1.0	2023/3/31	Initial release