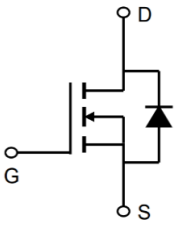
AP140N08NF

85V N-Channel Enhancement Mode MOSFET

Description

The AP140N08NF uses advanced **APM-SGT II** technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V.

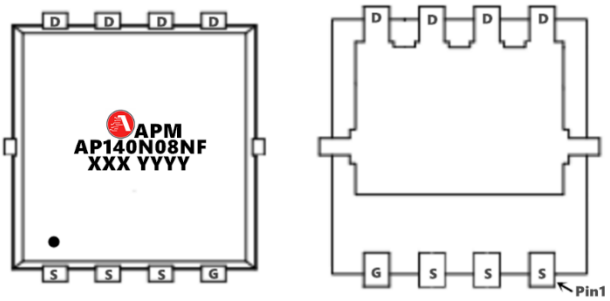
This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 85V I_D =140A

$R_{DS(ON)}$ < 3.2mΩ V_{GS}=10V （**Type：2.5mΩ**）

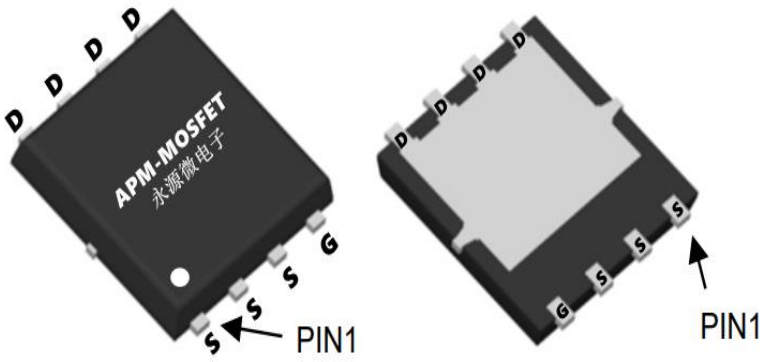


Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP140N08NF	PDFN5X6-8L	AP140N08NF XXX YYYY	5000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	85	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	140	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	115	A
IDM	Pulsed Drain Current	700	A
EAS	Single Pulse Avalanche Energy	900	mJ
P_D@T_C=25℃	Total Power Dissipation[4]	179	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
R_{θ}JA	Thermal Resistance Junction-Ambient	25	℃/W
R_{θ}JC	Thermal Resistance Junction-Case	0.7	℃/W

85V N-Channel Enhancement Mode MOSFET

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-source breakdown voltage	V_{GS}=0V, I_D=250uA	85	91		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS},I_D=250uA T_j=25°C	2.0	3.0	4.0	V
IDSS	Zero gate voltage drain current	V_{DS}=80V,V_{GS}=0V T_j=25°C	-	-	1	μA
IDSS	Zero gate voltage drain current	V_{DS}=80V,V_{GS}=0V T_j=125°C	-	-	- 5	μA
IGSS	Gate-source leakage current	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
RDS(on)	Drain-source on-state resistance	V_{GS}=10V, I_D=20A,T_j=25°C	-	2.5	3.2	mΩ
gfs	Transconductance	V_{DS}=5V,I_D=40A	-	128	-	S
Ciss	Input Capacitance	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	6396	-	pF
Coss	Output Capacitance		-	1224	-	pF
Crss	Reverse Transfer Capacitance		-	23	-	pF
Q_G	Gate Total Charge	V_{GS}=10V, V_{DS}=40V,I_D=20A	-	91	-	nC
Qgs	Gate-Source charge		-	33	-	nC
Qgd	Gate-Drain charge		-	18	-	nC
td(on)	Turn-on delay time	T_j=25°C, V_{GS}=10V, V_{DS}=40V, R_L=3Ω	-	31	-	ns
t_r	Rise time		-	35	-	ns
td(off)	Turn-off delay time		-	61	-	ns
t_f	Fall time		-	31	-	ns
R_G	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	0.8	-	Ω
VSD	Body Diode Forward Voltage	V_{GS}=0V,I_{SD}=20A	-	0.75	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=20A, dI/dt=100A/μs	-	75	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	155	-	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 .The EAS data shows Max. rating .
3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is V_{DD}=64V_{GS}=10V,L=0.1mH,I_{AS}=60A
4、The power dissipation is limited by 175℃ junction temperature
5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

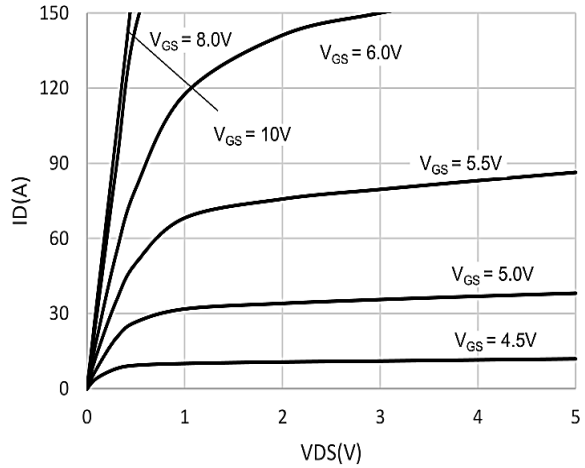


Figure1: Output Characteristics

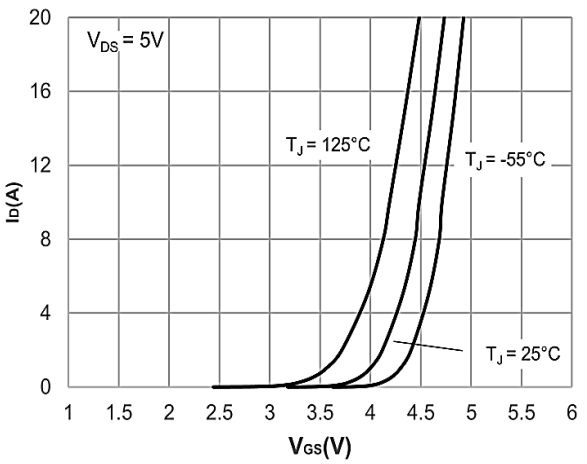


Figure 2: Typical Transfer Characteristics

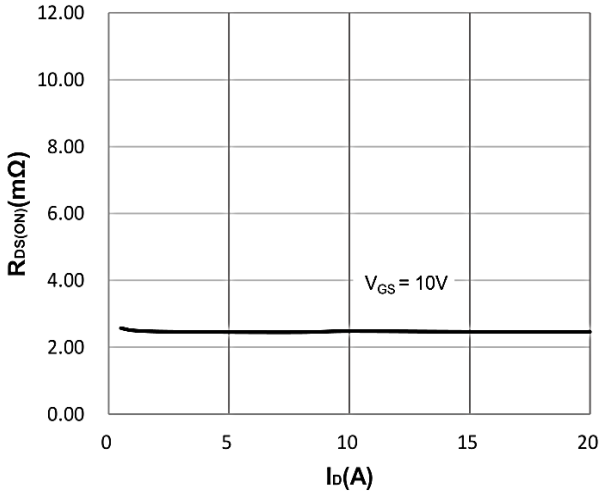


Figure 3:On-resistance vs. Drain Current

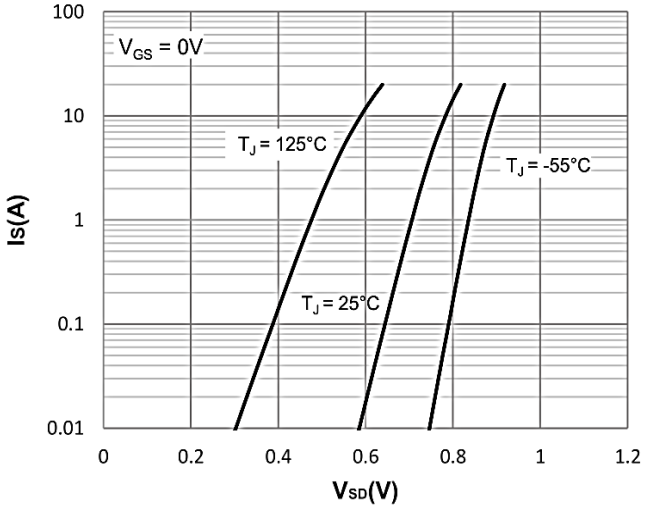


Figure 4: Body Diode Characteristics

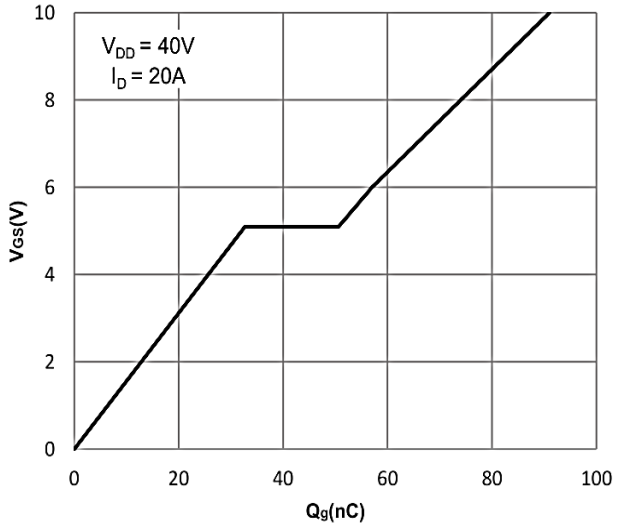


Figure 5: Gate Charge Characteristics

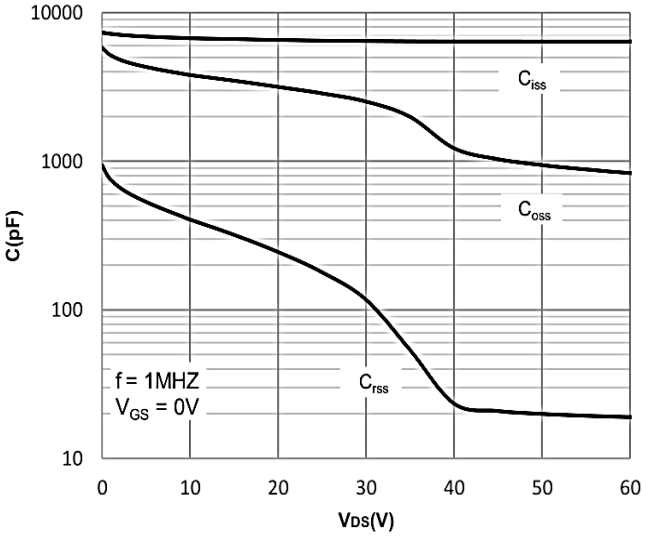


Figure 6: Capacitance Characteristics

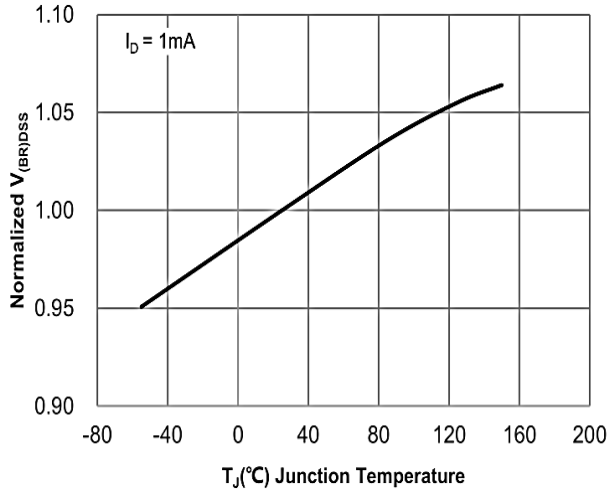


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

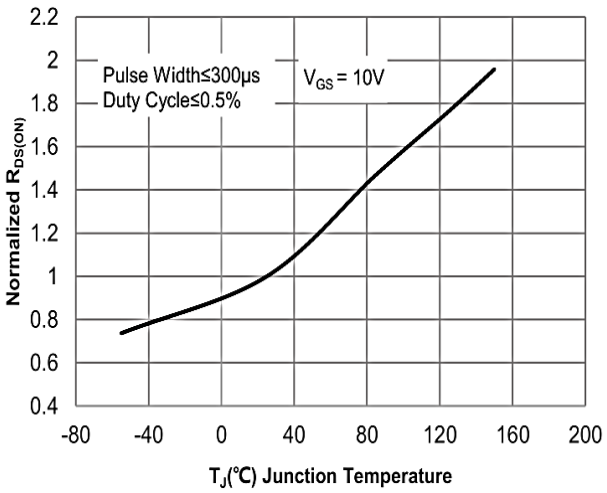


Figure 8: Normalized on Resistance vs Junction Temperature

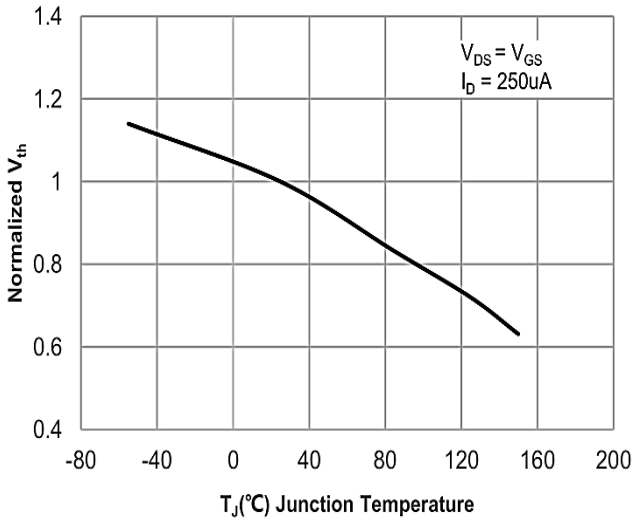


Figure 9: Maximum Safe Operating Area vs. Case Temperature

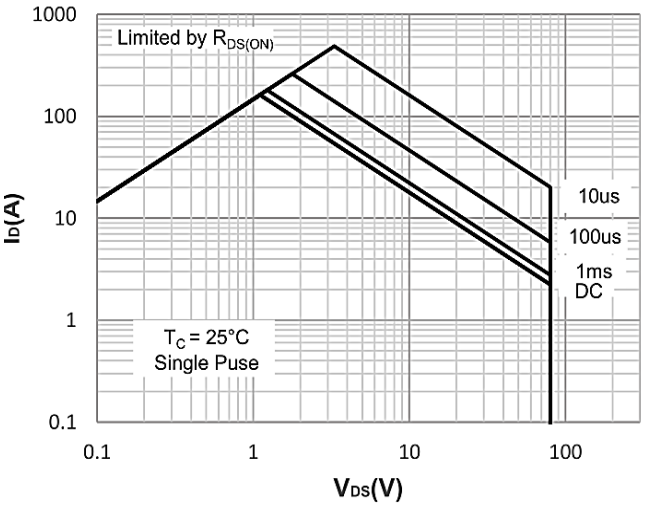


Figure 10: Maximum Safe Operating Area

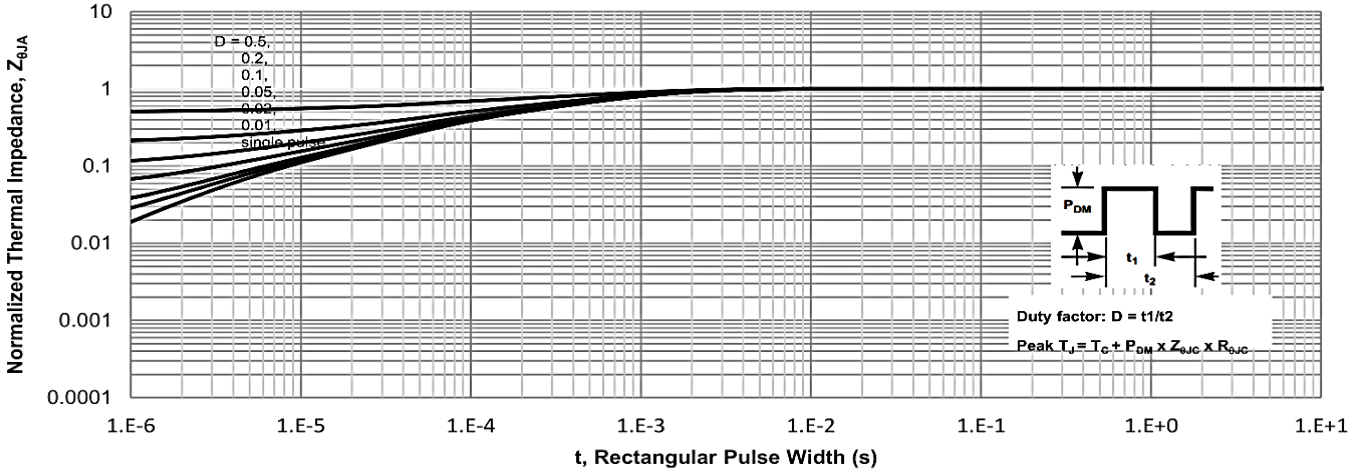
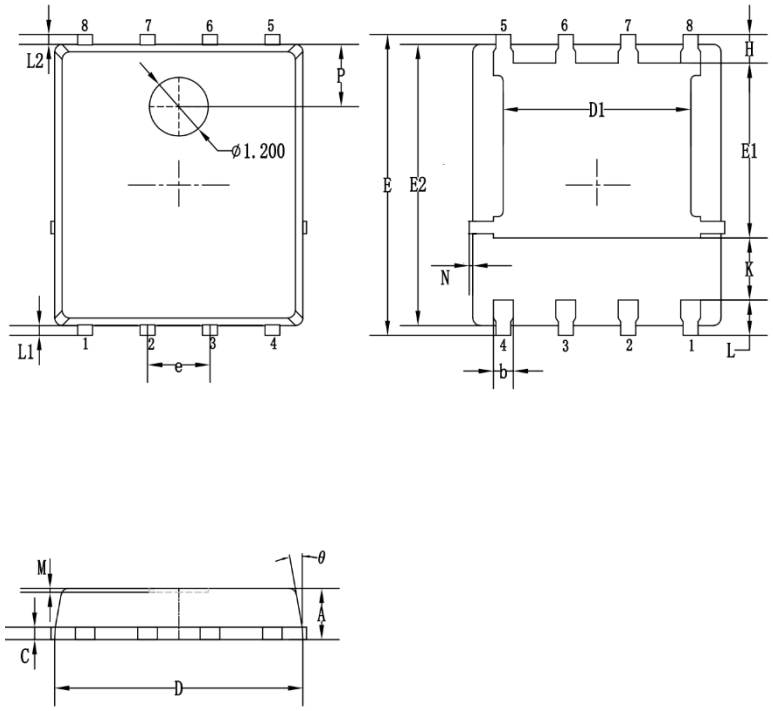


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ca

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	

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Edition	Date	Change
REV1.0	2023/12/31	Initial release