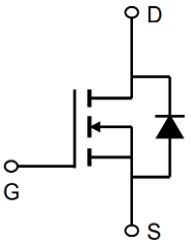
APG110N10NF

100V N-Channel Enhancement Mode MOSFET

Description

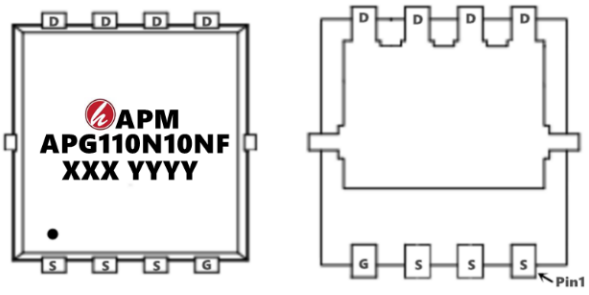
The APG110N10NF uses advanced APM-SGT II technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 100V I_D =110A

$R_{DS(ON)}$ < 6mΩ @ V_{GS}=10V (Type：4.2mΩ)

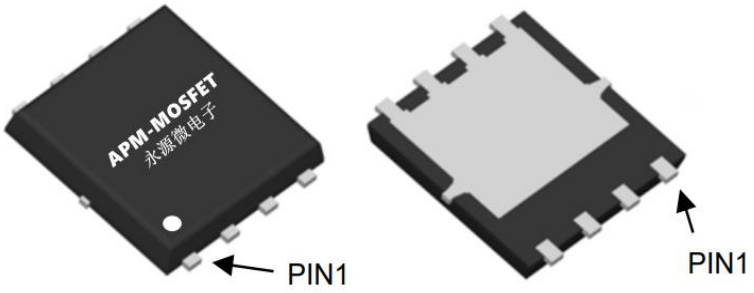


Application

DC/DC Converter

LED Backlighting

Power Management Switches



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
APG110N10NF	PDFN5*6-8L	APG110N10NF XXX YYYY	5000

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

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	100	V
VGS	Gate source voltage	±20	V
ID	Continuous drain current, TC=25℃	110	A
IDM	Pulsed drain current, TC=25 ℃	380	A
PD	Power dissipation, TC=25 ℃	113.6	W
EAS	Single pulsed avalanche energy4)	205	mJ
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	1.1	°C/W
RθJA	Thermal resistance, junction-ambient4)	58	°C/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
VDSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	100	-	-	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	1.2	1.8	2.5	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS} = 10V, I_D = 20A	-	4.2	6	mΩ
		V_{GS} = 4.5V, I_D = 15A	-	6.6	9	
Ciss	Input Capacitance	V_{DS} = 50V, V_{GS} =0V, f =1MHz	-	4400	-	pF
Coss	Output Capacitance		-	645	-	
Crss	Reverse Transfer Capacitance		-	20	-	
R_g	Gate Resistance	V_{GS} = 0V, V_{DS} = 0V, f =1MHz	-	1.7	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 50V, I_D=20A	-	75	-	nC
Qgs	Gate-Source Charge		-	17	-	
Qgd	Gate-Drain Charge		-	13	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DS} =50V, R_G = 3Ω, I_D= 20A	-	15.4	-	ns
t_r	Rise Time		-	13	-	
td(off)	Turn-off Delay Time		-	34	-	
t_f	Fall Time		-	6.2	-	
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	-	-	95	A
trr	Body Diode Reverse Recovery Time	I_F = 20A, dI/dt=100A/μs	-	55	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	101	-	nC

Notes:

1、The data tested by surface mounted on a 1 inch2 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 V_{DD}=50V, V_{GS}=10V, L=0.4mH, I_{AS}=32A

4、The power dissipation is limited by 150°C 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

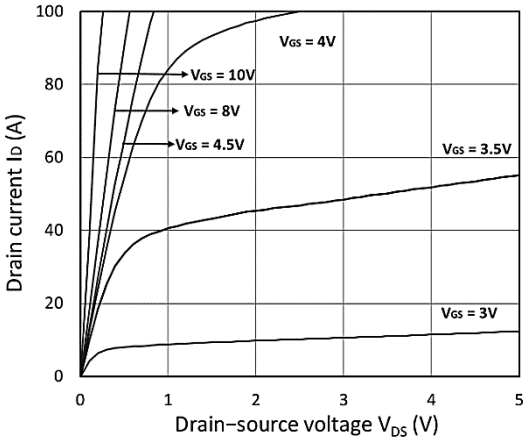


Figure 1. Output Characteristics

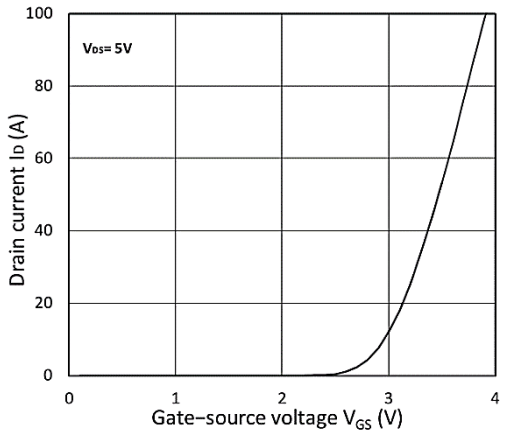


Figure 2. Transfer Characteristics

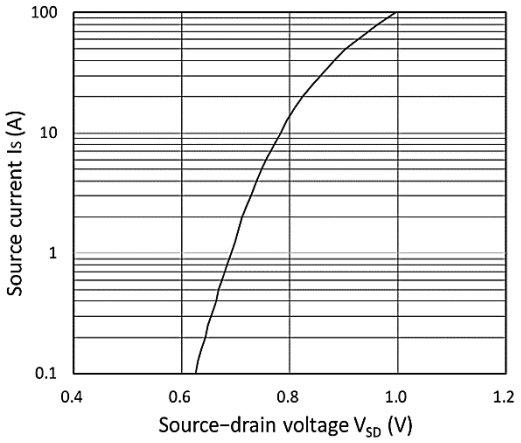


Figure 3. Forward Characteristics of Reverse

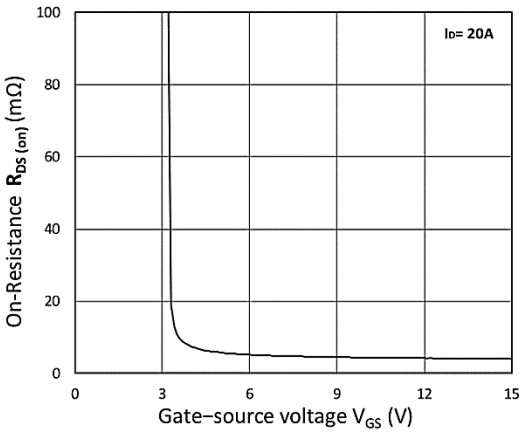


Figure 4. RDS(ON) vs. VGS

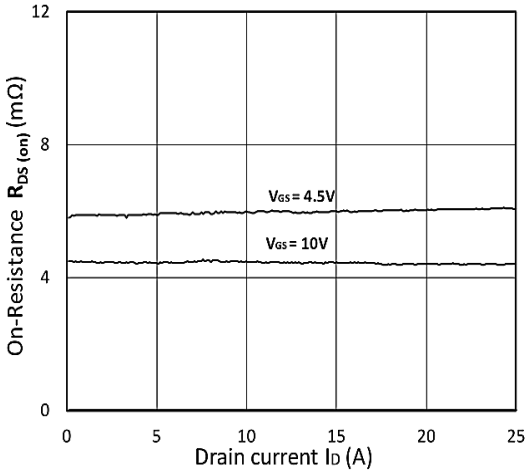


Figure 5. R DS(ON) vs. I D

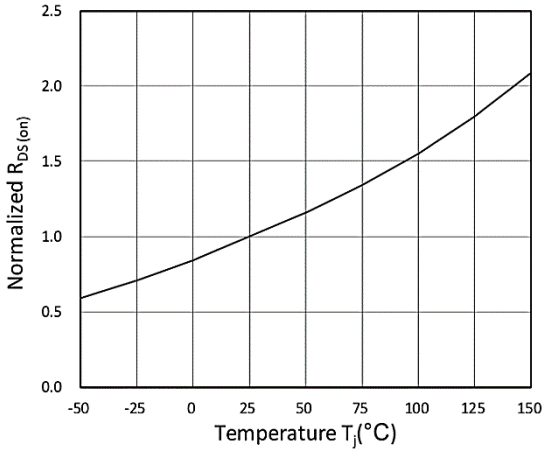


Figure 6. Normalized R DS(on) vs. Temperature

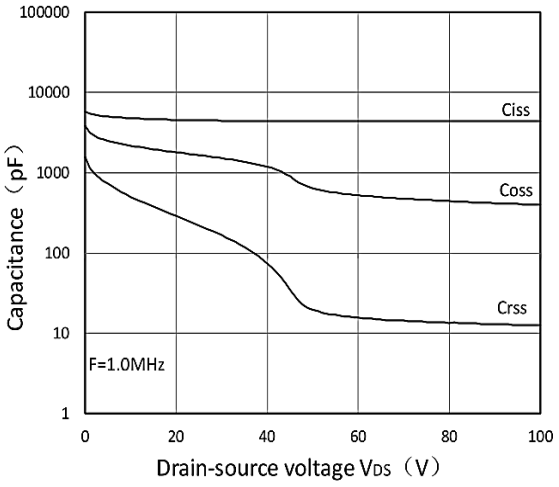


Figure 7. Capacitance Characteristics

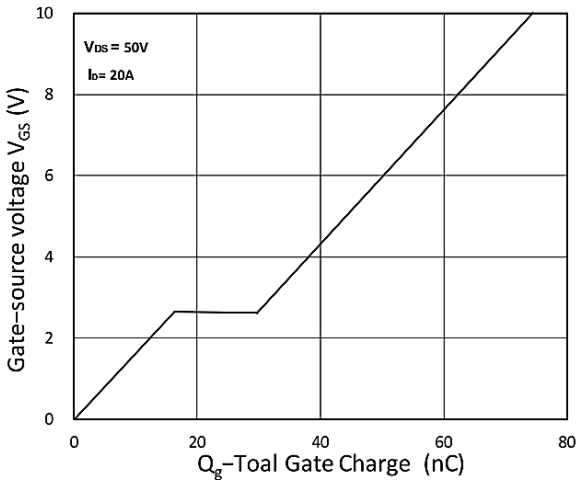


Figure 8. Gate Charge Characteristics

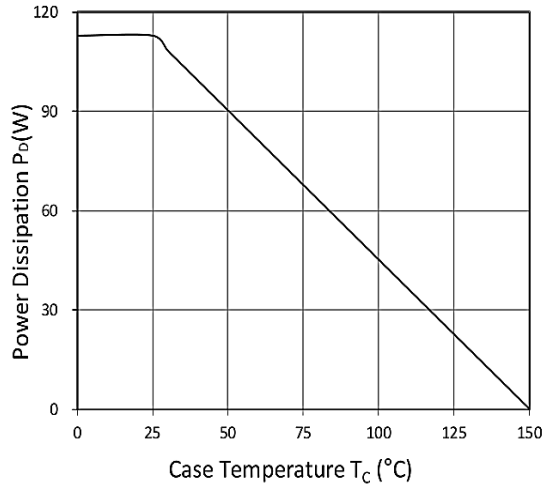


Figure 9. Power Dissipation

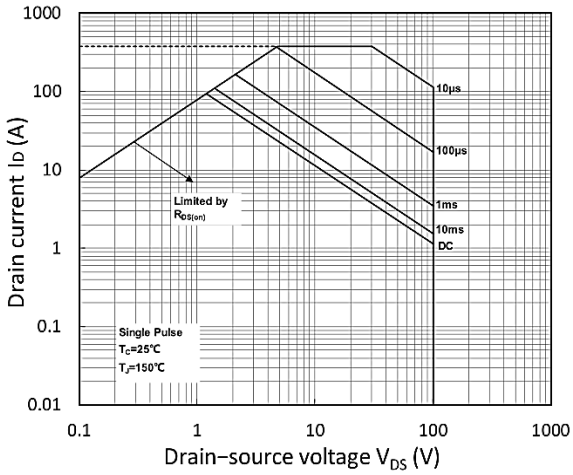


Figure10. Safe Operating Area

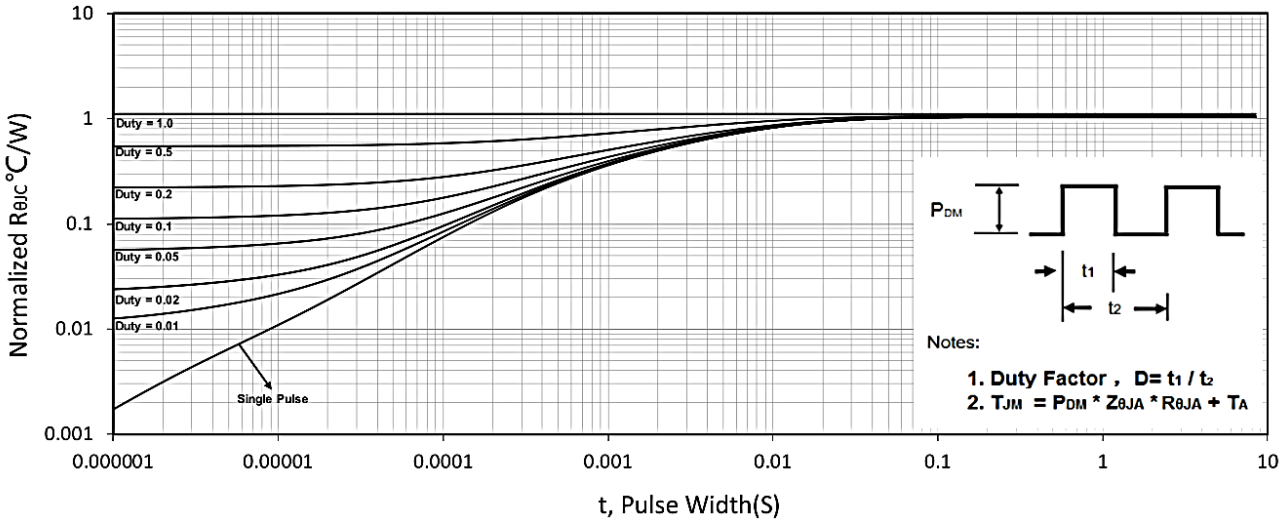
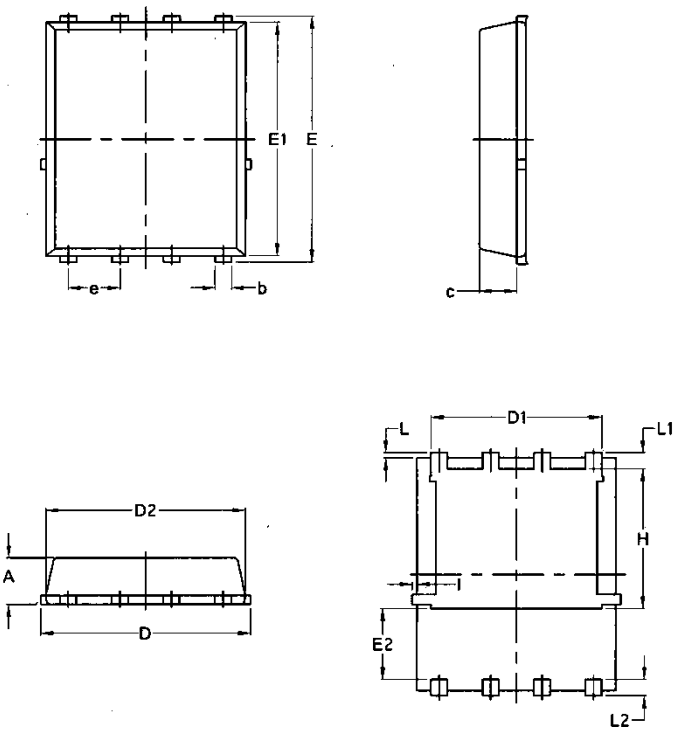


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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100V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2021/8/5	Initial release