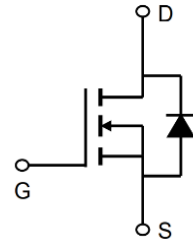


100V N-Channel Enhancement Mode MOSFET

Description

The APG110N10NF uses advanced **APM-SGT₁₁** 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

$V_{DS} = 100V$ $I_D = 110A$

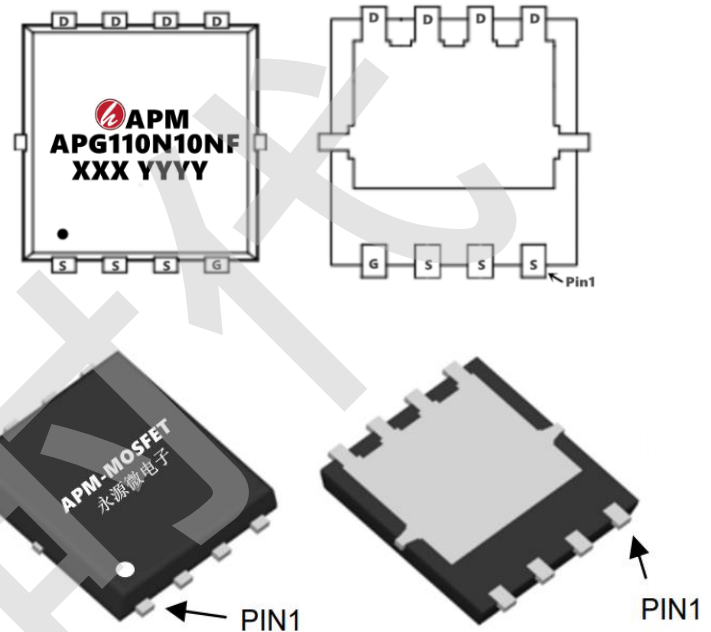
$R_{DS(ON)} < 6m\Omega$ @ $V_{GS}=10V$ (Type: 4.2m Ω)

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 ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	100	V
VGS	Gate source voltage	± 20	V
ID	Continuous drain current, $T_C=25^\circ\text{C}$	110	A
IDM	Pulsed drain current, $T_C=25^\circ\text{C}$	380	A
PD	Power dissipation, $T_C=25^\circ\text{C}$	113.6	W
EAS	Single pulsed avalanche energy ⁴⁾	205	mJ
Tstg, Tj	Operation and storage temperature	-55 to 150	$^\circ\text{C}$
R θ JC	Thermal resistance, junction-case	1.1	$^\circ\text{C/W}$
R θ JA	Thermal resistance, junction-ambient ⁴⁾	58	$^\circ\text{C/W}$

100V N-Channel Enhancement Mode MOSFET

Electrical Characteristics (T_C=25°C 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
Q _{gs}	Gate-Source Charge		-	17	-	
Q _{gd}	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
I _S	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

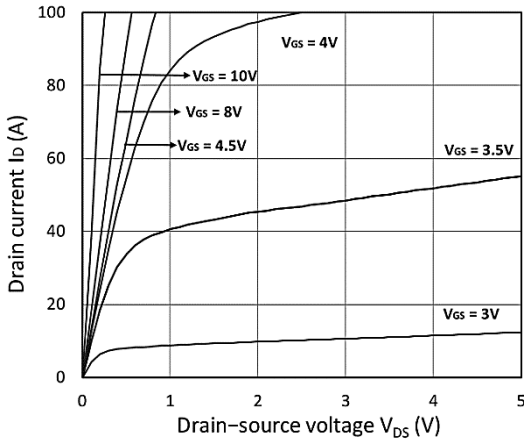


Figure 1. Output Characteristics

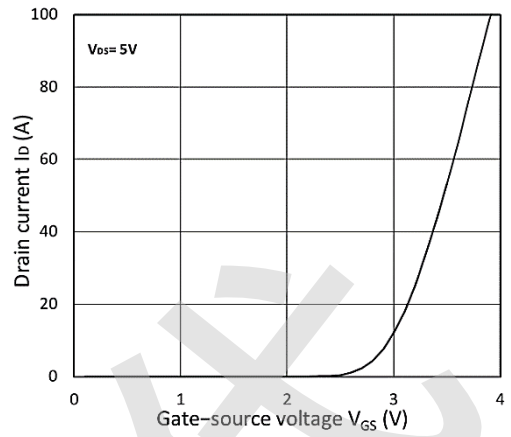


Figure 2. Transfer Characteristics

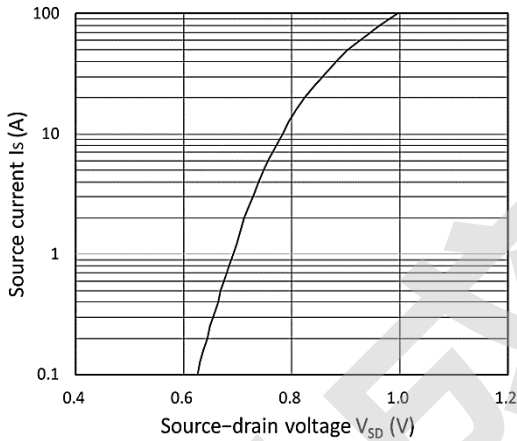


Figure 3. Forward Characteristics of Reverse

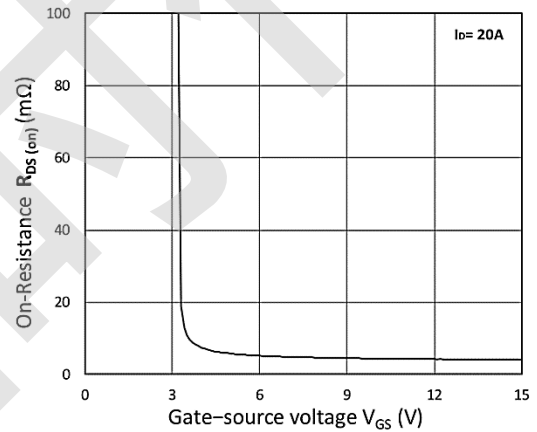


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

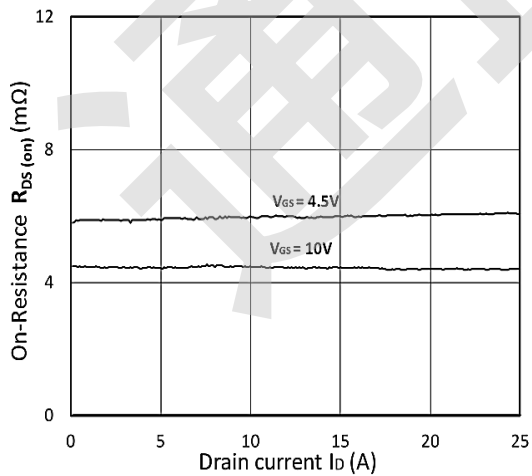


Figure 5. $R_{DS(ON)}$ vs. I_D

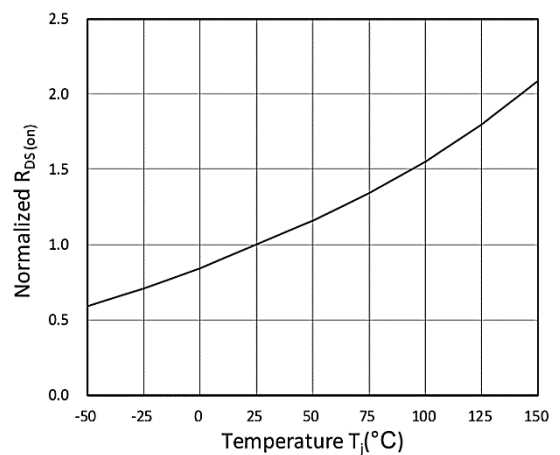


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

100V N-Channel Enhancement Mode MOSFET

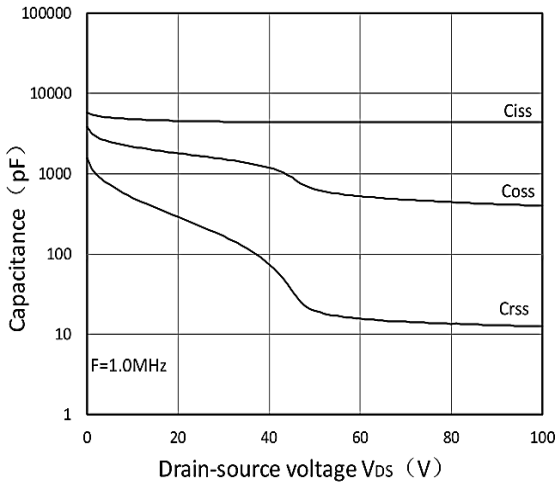


Figure 7. Capacitance Characteristics

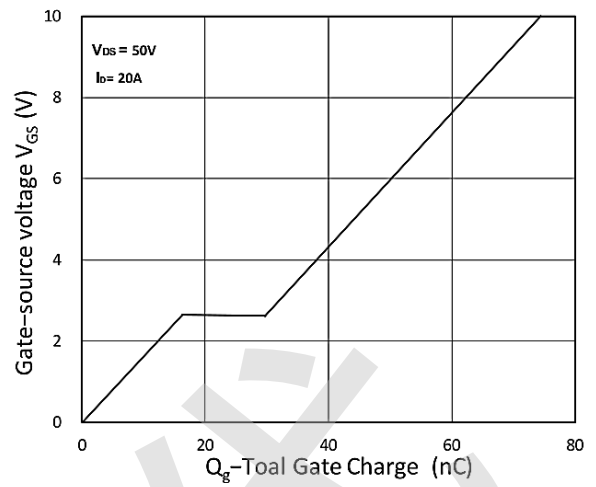


Figure 8. Gate Charge Characteristics

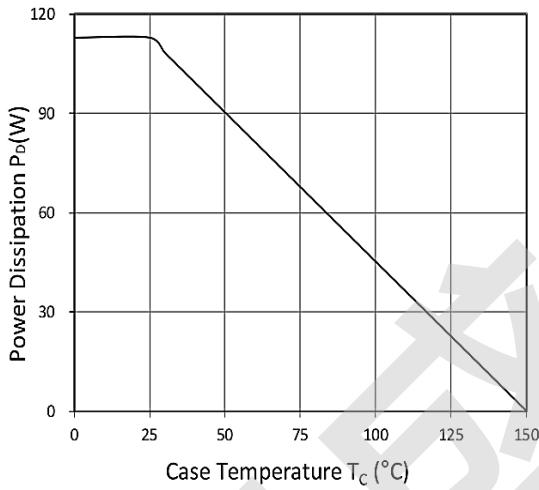


Figure 9. Power Dissipation

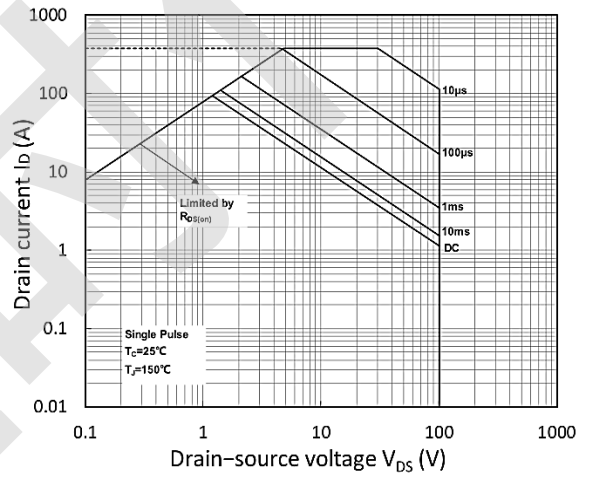


Figure 10. Safe Operating Area

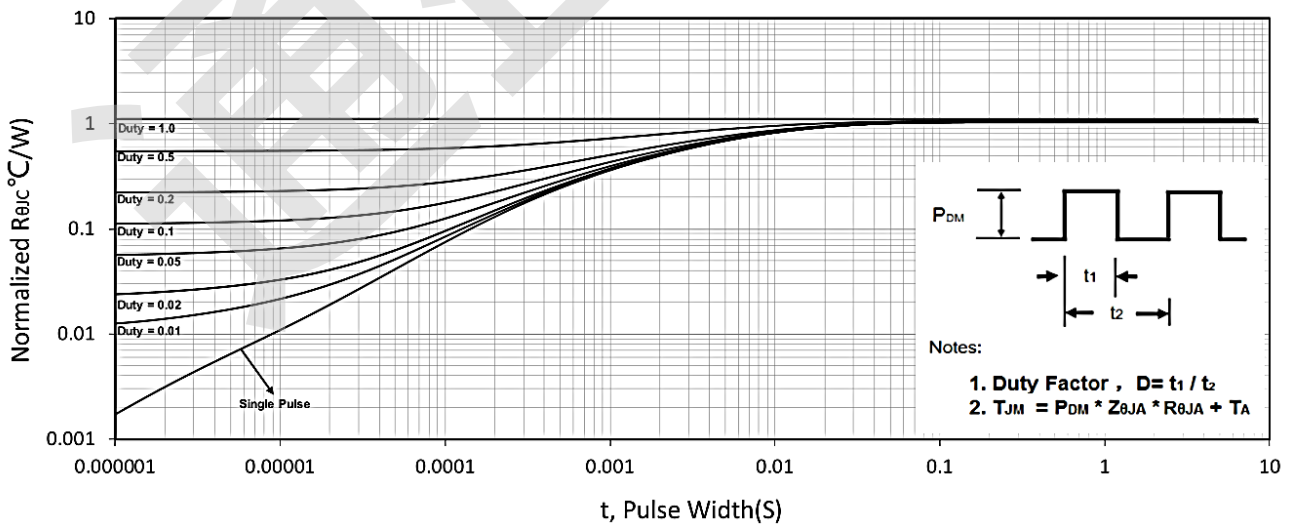
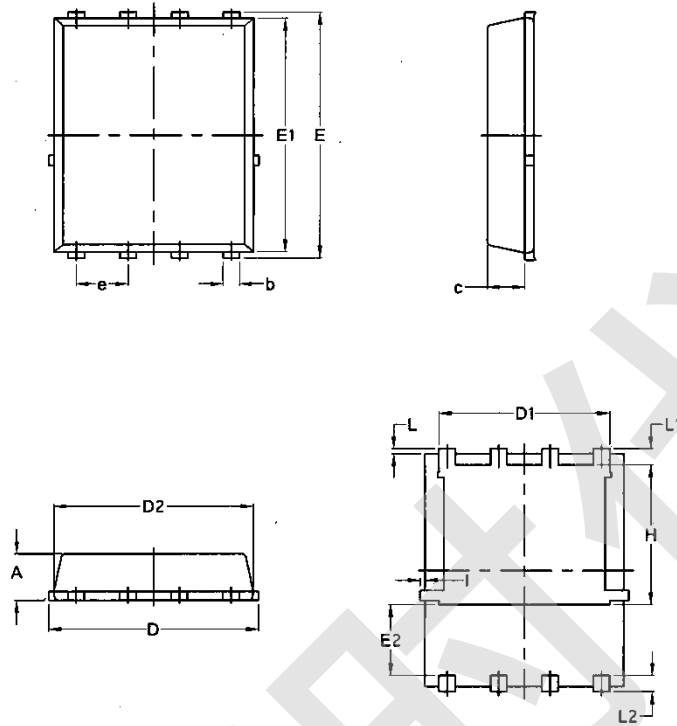


Figure 11. Normalized Maximum Transient Thermal Impedance

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



Symbol	Common			
	mm		Inch	
	Min	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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Edition	Date	Change
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