AP150N06D

65V N-Channel Enhancement Mode MOSFET

Description

The AP150N06D 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

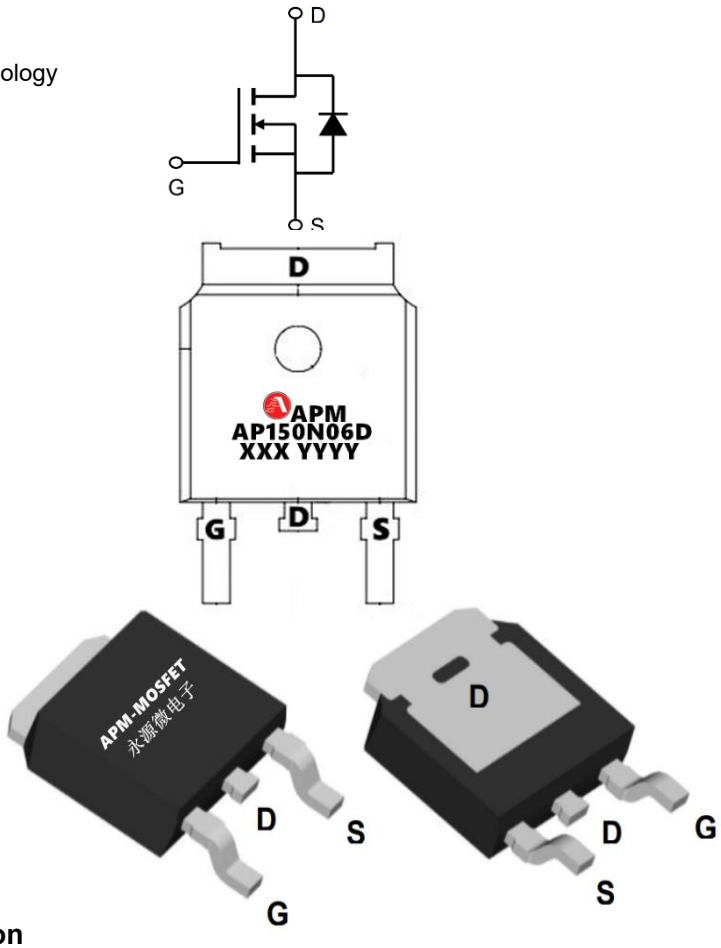
V_{DS} = 60V I_D =150A

$R_{DS(ON)}$ < 2.8mΩ @ V_{GS}=10V **（Type：2.1mΩ）**

Application

Battery protection

UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP150N06D	TO-252-3L	AP150N06D XXX YYYY	2500

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]	150	A
I_D@T_C=100℃	Continuous Drain Current[1,6]	105	A
IDM	Pulsed Drain Current[2]	450	A
EAS	Single Pulse Avalanche Energy[3]	585	mJ
IAS	Avalanche Current	55	A
P_D@T_C=25℃	Total Power Dissipation[4]	168	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]	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	1.5	℃/W

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	60	68	-	V
IGSS	Gate-body Leakage Current	VDS=0V, VGS=±20V	-	-	±100	nA
IDSS TJ=25°C	Zero Gate Voltage Drain Current	VDS=60V, VGS=0V	-	-	1	μA
IDSS TJ=100°C	Zero Gate Voltage Drain Current		-	-	100	
VGS(th)	Gate-Threshold Voltage	VDS=VGS, ID=250μA	2.0	2.8	4.0	V
RDS(on)	Drain-Source On-Resistance4	VGS=10V, ID=20A	-	2.1	2.8	mΩ
gfs	Forward Transconductance4	VDS=10V, ID=20A	-	89	-	S
Ciss	Input Capacitance	VDS=30V, VGS=0V, f =1MHz	-	4080	-	pF
Coss	Output Capacitance		-	1053	-	
Crss	Reverse Transfer Capacitance		-	31	-	
RG	Gate Resistance	f =1MHz	-	2.2	-	Ω
Qg	Total Gate Charge	VGS=10V, VDS=30V, ID=20A	-	68	-	nC
Qgs	Gate-Source Charge		-	16	-	
Qgd	Gate-Drain Charge		-	20.5	-	
td(on)	Turn-on Delay Time	VGS=10V, VDD=30V, RG=3Ω, ID=20A	-	17	-	ns
tr	Rise Time		-	17.8	-	
td(off)	Turn-off Delay Time		-	40	-	
tf	Fall Time		-	21	-	
trr	Body Diode Reverse Recovery Time	IF=20A , dI/dt=100A/μs	-	56	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	67.5	-	nC
VSD	Diode Forward Voltage4	IS=20A, VGS=0V	-	-	1.2	V
IS	Continuous Source Current	TC=25°C	-	-	140	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℃, VDD=48V, VG=10V, RG=25Ω, L=0.1mH, IAS= 55A

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

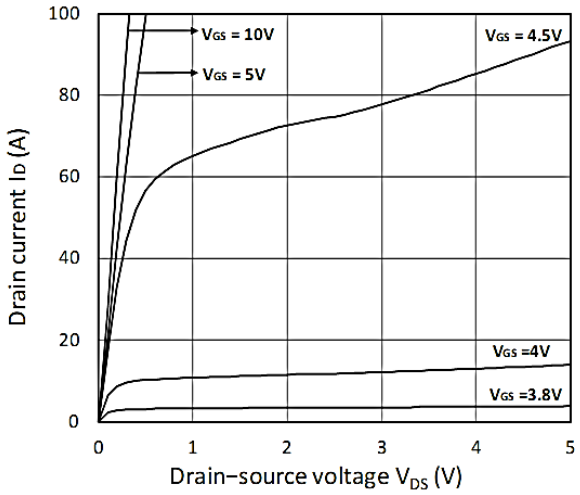


Figure 1. Output Characteristics

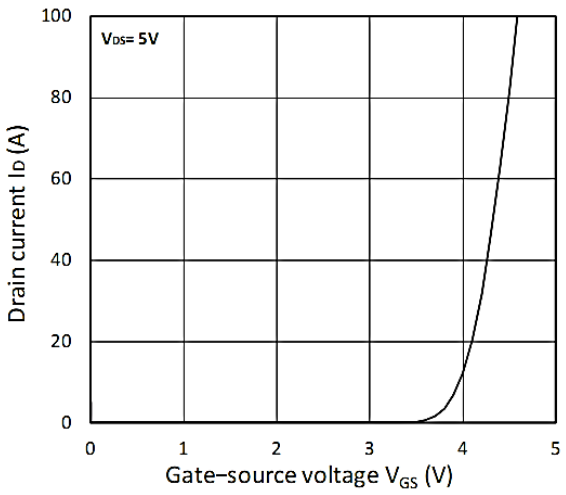


Figure 2. Transfer Characteristics

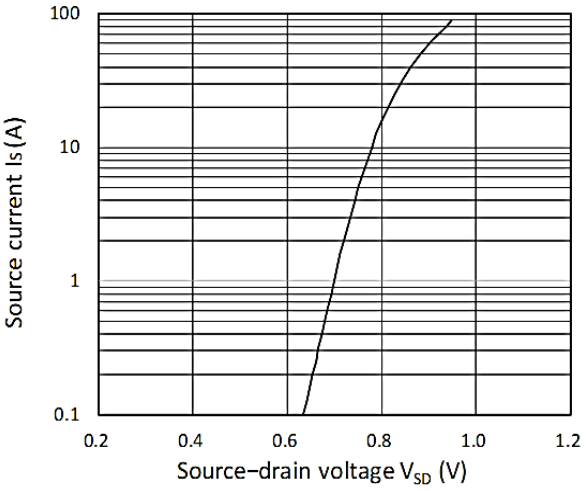


Figure 3. Forward Characteristics of Reverse

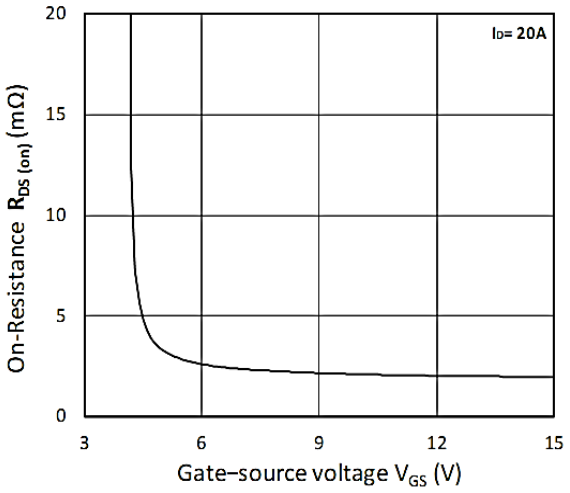


Figure 4. RDS(ON) vs. VGS

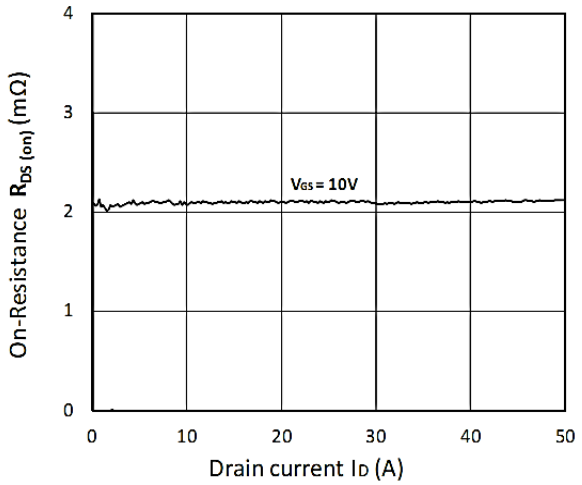


Figure 5. R DS(ON) vs. ID

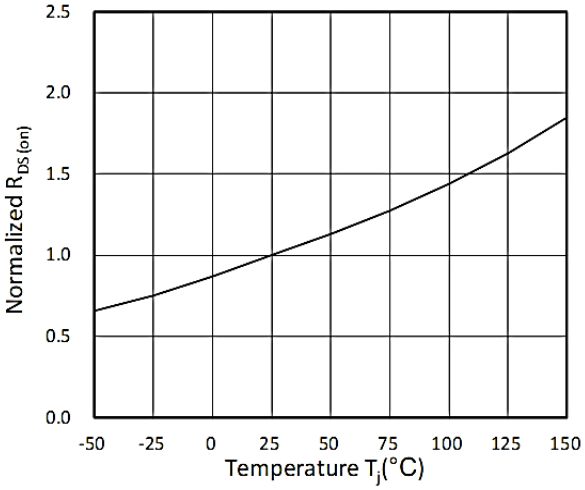


Figure 6. Normalized R DS(on) vs. Temperature

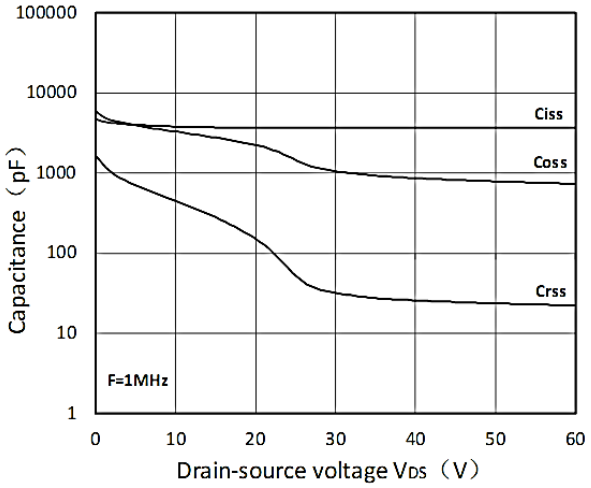


Figure 7. Capacitance Characteristics

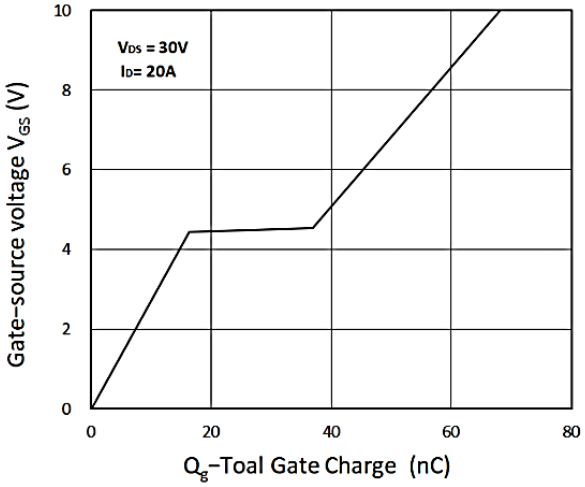


Figure 8. Gate Charge Characteristics

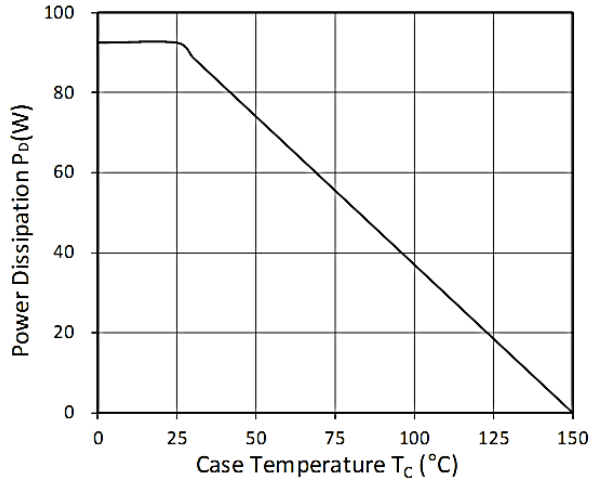


Figure 9. Power Dissipation

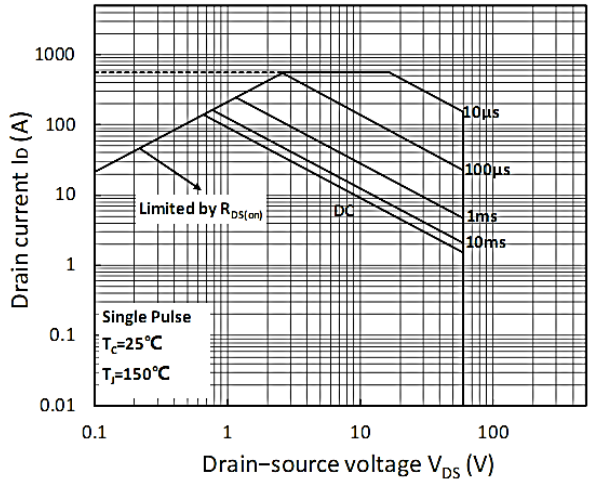


Figure10. Safe Operating Area

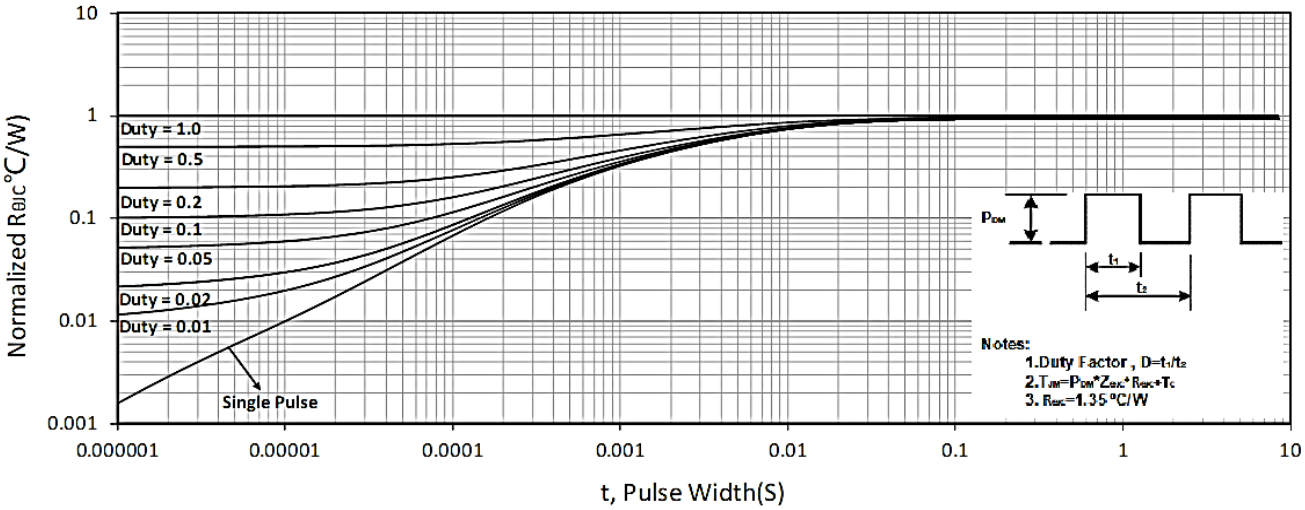
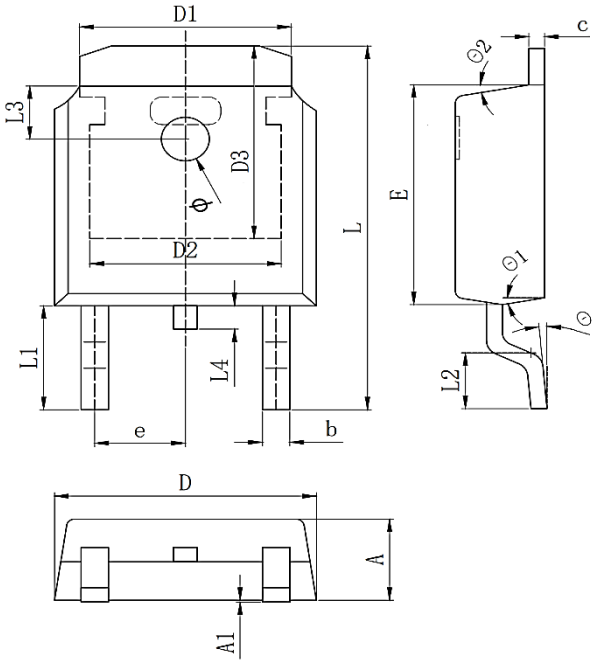


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TO-252-3L



Symbol	Dim in mm		
	Min	Typ	Max
A	2.1	2.3	2.5
A1	0	0.064	0.128
b	0.64	0.75	0.86
c	0.45	0.52	0.6
D	6.4	6.6	6.8
D1	5.33REF		
D2	4.83REF		
D3	5.25REF		
E	5.9	6.1	6.3
e	2.286TYP		
L	9.8	10.1	10.4
L1	2.888REF		
L2	1.4	1.5	1.7
L3	1.65REF		
L4	0.6	0.8	1
ϕ	1.1	1.2	1.3
θ	0°		10°
θ1	5°		10°
θ2	5°		10°

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Edition	Date	Change
REV1.0	2024/3/20	Initial release