

60V N-Channel Enhancement Mode MOSFET

Description

The AP100N06D 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

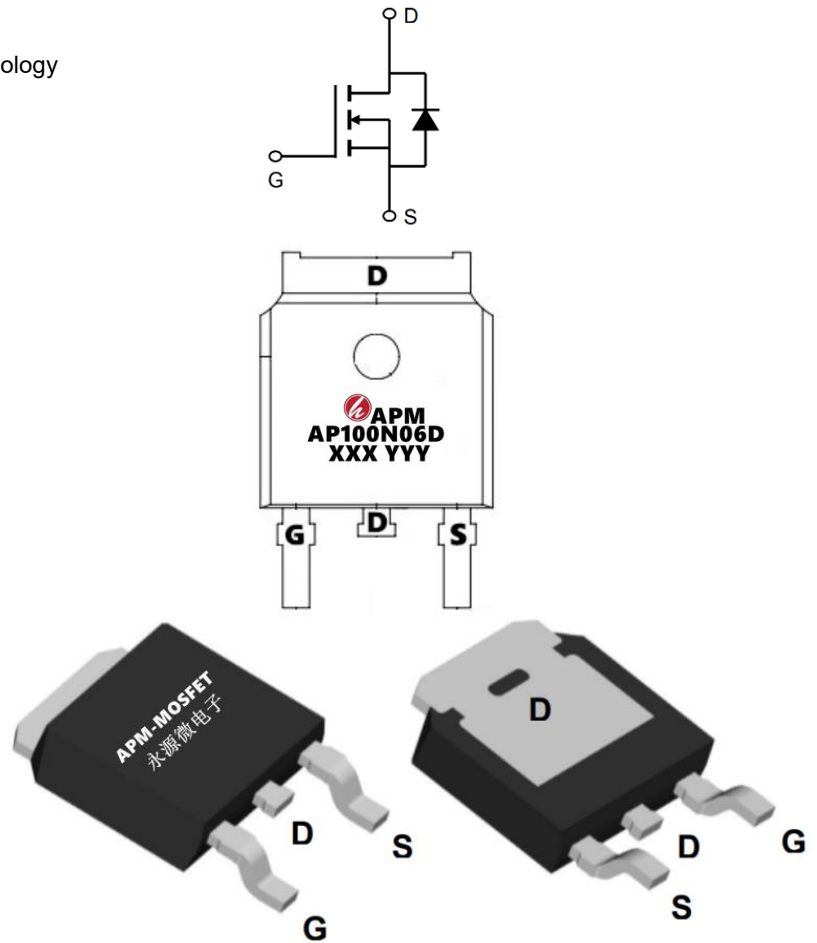
$V_{DS} = 60V$ $I_D = 100A$

$R_{DS(ON)} < 6.0m\Omega$ @ $V_{GS}=10V$ (Type: **4.2mΩ**)

Application

Battery protection

UPS



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP100N06D	TO-252-3L	AP100N06D XXX YYYY	5000

Absolute Maximum Ratings@ $T_J=25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	60	V
V_{GS}	Gate source voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	100	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	70	A
I_{DM}	Pulsed drain current ²⁾	210	A
E_{AS}	Single pulsed avalanche energy ³⁾	265	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴⁾	87	W
T_{stg}, T_J	Operation and storage temperature	-55 to 150	$^\circ C$
$R_{\theta JC}$	Thermal resistance, junction-case	1.44	$^\circ C/W$
$R_{\theta JA}$	Thermal resistance, junction-ambient ⁴⁾	62	$^\circ C/W$

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Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Test condition	Min.	Typ.	Max	Unit
BVDSS	Drain-source breakdown voltage	V _{GS} =0 V, I _D =250 μA	60	65		V
VGS(th)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250 μA	1.0	1.6	2.5	V
RDS(ON)	Drain-source on-state resistance	V _{GS} =10 V, I _D =20 A		4.2	6	mΩ
RDS(ON)	Drain-source on-state resistance	V _{GS} =4.5 V, I _D =10 A		6.4	10	mΩ
IGSS	Gate-source leakage current	V _{GS} =±20 V			±100	nA
IDSS	Drain-source leakage current	V _{DS} =60 V, V _{GS} =0 V			1	μA
Rg	Gate Resistance	f=1MHz, Open drain		2.8		Ω
Ciss	Input capacitance	V _{GS} =0 V, V _{DS} =50 V, f=100 kHz		2136		pF
Coss	Output capacitance			331.5		pF
Crss	Reverse transfer capacitance			10.6		pF
td(on)	Turn-on delay time	V _{GS} =10 V, V _{DS} =50 V, R _G =2 Ω, I _D =25 A		22.9		ns
t _r	Rise time			6.5		ns
td(off)	Turn-off delay time			45.7		ns
t _f	Fall time			20.4		ns
Q _g	Total gate charge	I _D =25 A, V _{DS} =50 V, V _{GS} =10 V		30		nC
Q _{gs}	Gate-source charge			5.8		nC
Q _{gd}	Gate-drain charge			6.1		nC
Vplateau	Gate plateau voltage			3.6		V
VSD	Diode forward voltage	I _S =20 A, V _{GS} =0 V			1.3	V
trr	Reverse recovery time	I _S =25A, di/dt=100 A/μs		50.3		ns
Q _{rr}	Reverse recovery charge			45.1		nC
Irrm	Peak reverse recovery current			1.5		A

Note

- 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 VDD=25V,VGS=10V,L=0.1mH,IAS=15A
- 4、The power dissipation is limited by 150°C 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

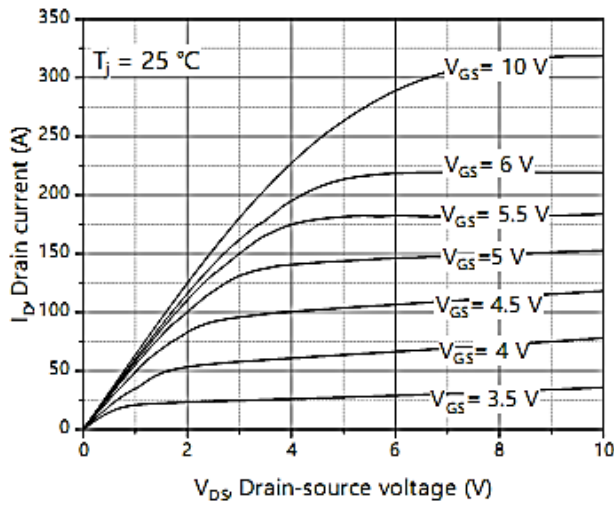


Figure 1. Typ. output characteristics

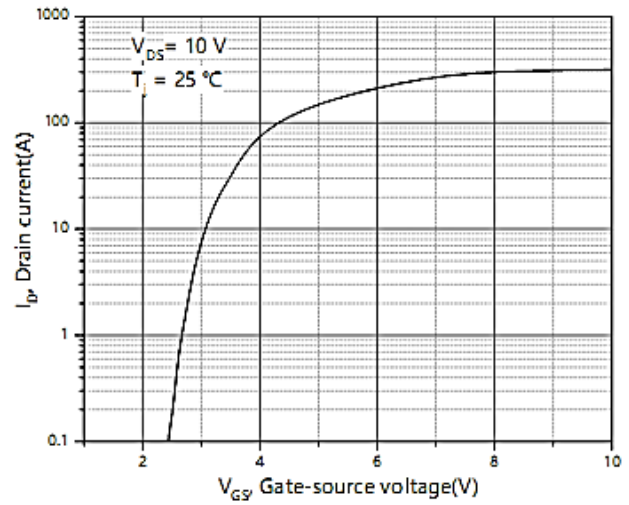


Figure 2. Typ. transfer characteristics

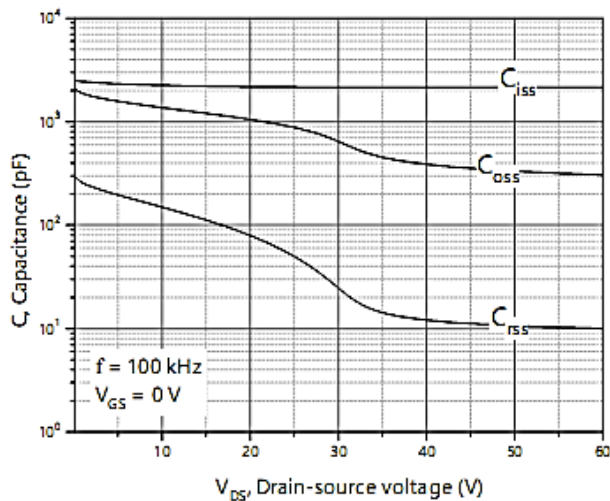


Figure 3. Typ. capacitances

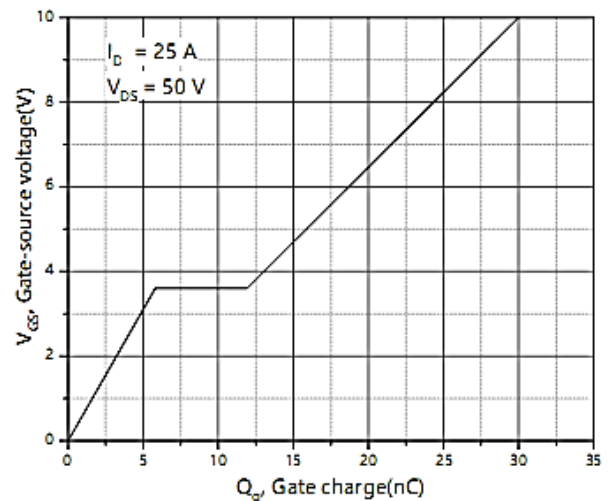


Figure 4. Typ. gate charge

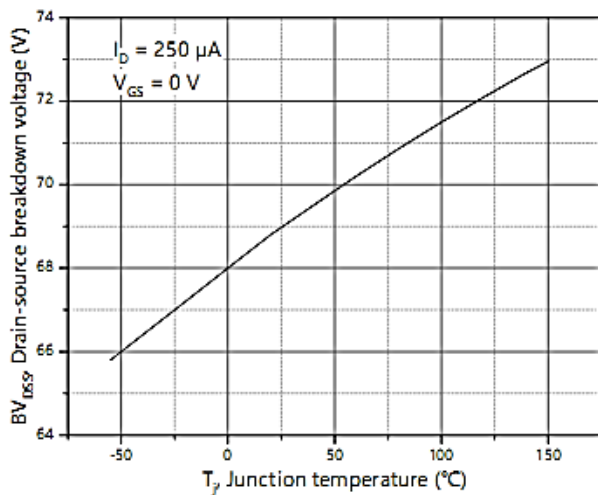


Figure 5. Drain-source breakdown voltage

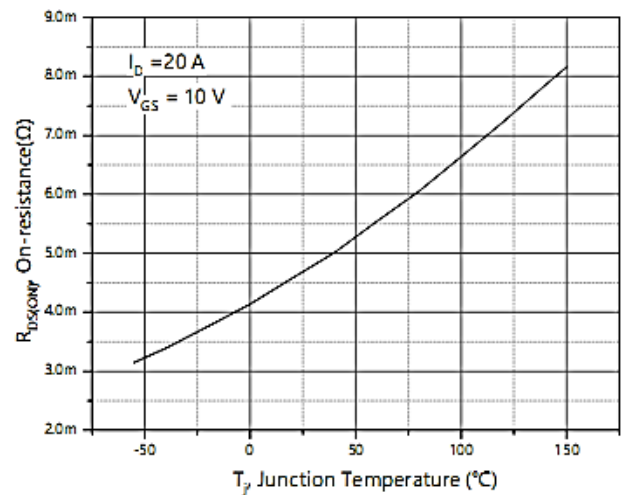


Figure 6. Drain-source on-state resistance



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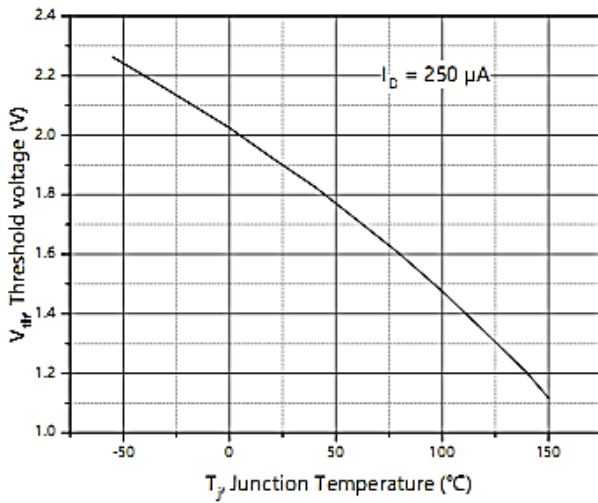


Figure 7. Threshold voltage

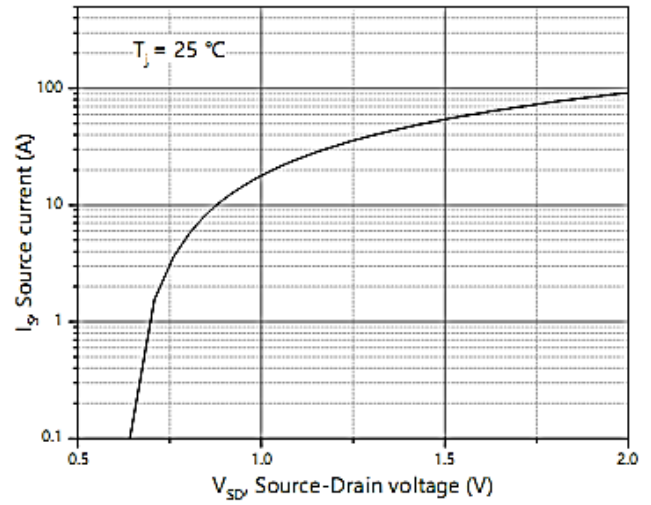


Figure 8. Forward characteristic of body diode

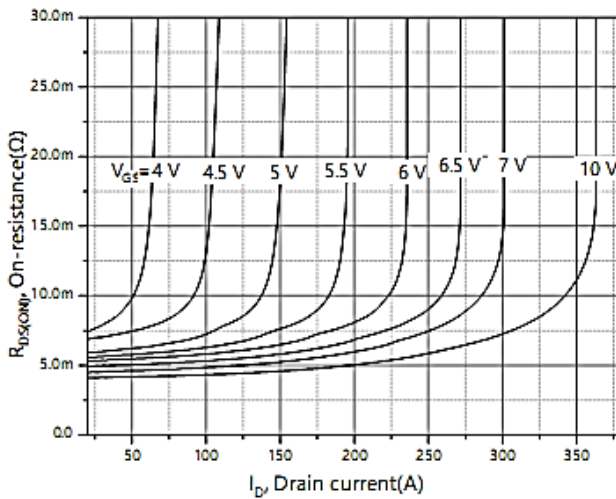


Figure 9. Drain-source on-state resistance

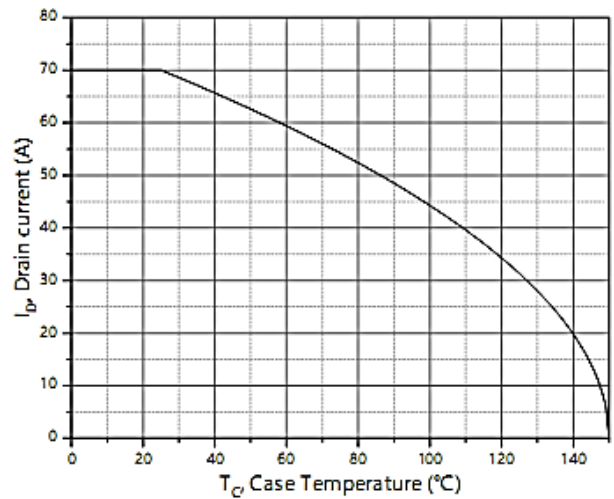


Figure 10. Drain current

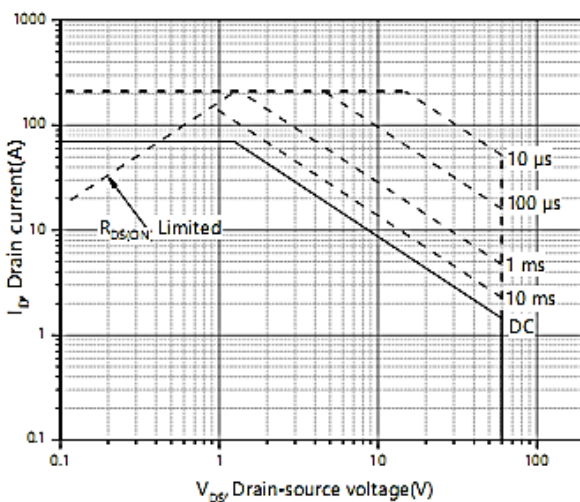
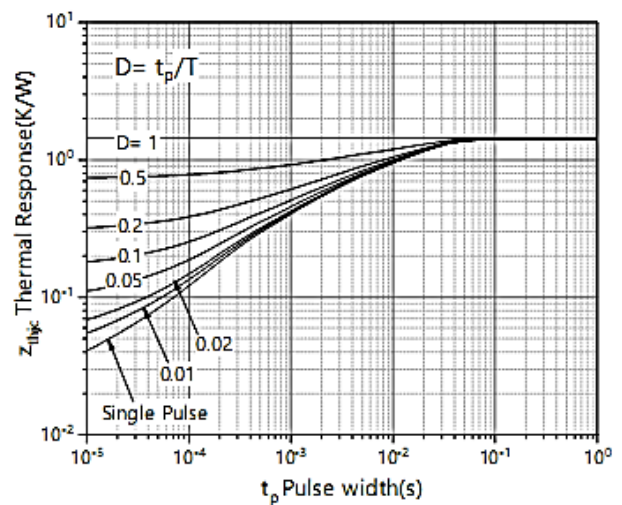
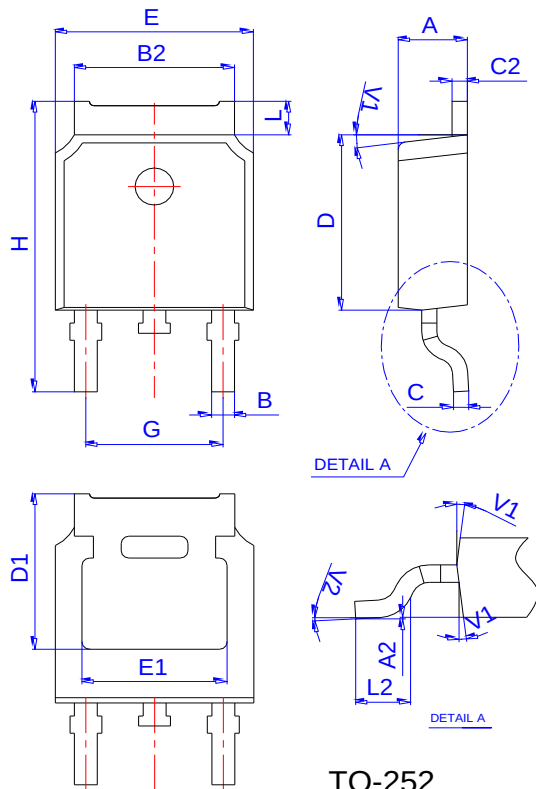
Figure 11. Safe operation area $T_C = 25^\circ C$ 

Figure 12. Max. transient thermal impedance

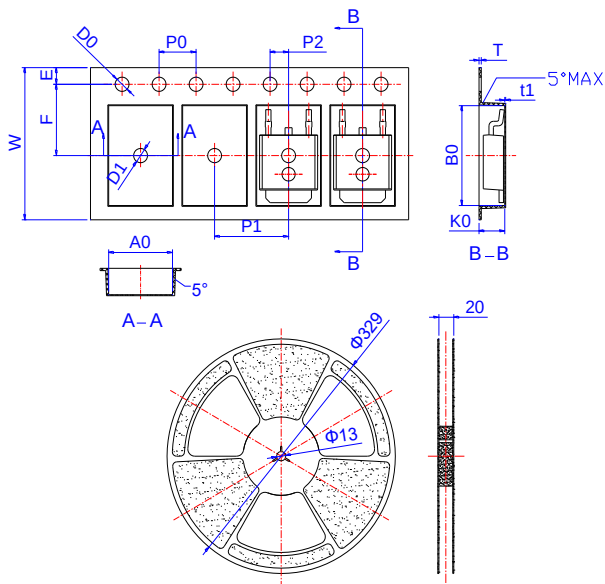
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Package Mechanical Data: TO-252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

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Edition	Date	Change
Rve1.0	2019/8/1	Initial release

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