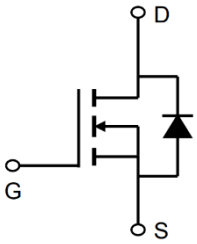
AP65N06NF

60V N-Channel Enhancement Mode MOSFET

Description

The AP65N06NF uses advanced trench 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 =65A

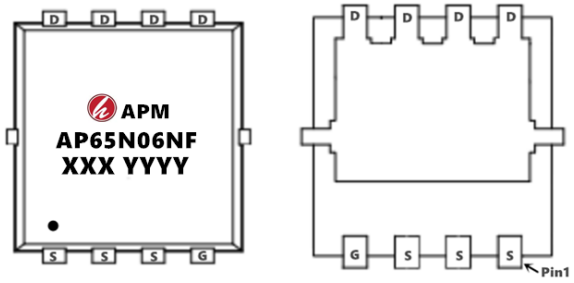
$R_{DS(ON)}$ < 10mΩ @ V_{GS}=10V

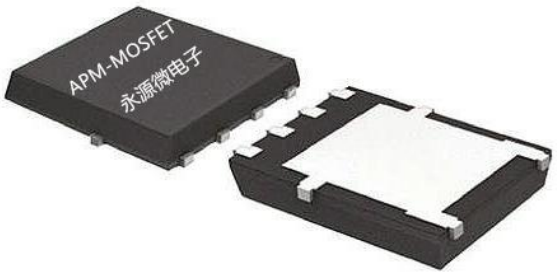
Application

Battery protection

Load switch

Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP65N06NF	PDN5*6-8L	AP65N06NF XXX YYYY	5000

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	60	V
VGS	Gate source voltage	±20	V
ID	Continuous drain current[1)]	65	A
ID, pulse	Pulsed drain current[2)]	138	A
P_D	Power dissipation[3)]	60	W
EAS	Single pulsed avalanche energy[4)]	30	mJ
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	2.1	°C/W
RθJA	Thermal resistance, junction-ambient[5)]	62	°C/W

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

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
BVDSS	Drain-source breakdown voltage	V_{GS}=0 V, I_D=250 μA	60	68		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250 μA	1.2	1.5	2.5	V
RDS(ON)	Drain-source on-state resistance	V_{GS}=10 V, I_D=20 A		7.5	10	mΩ
RDS(ON)	Drain-source on-state resistance	V_{GS}=4.5 V, I_D=10 A		10	13	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
Ciss	Input capacitance	V_{GS}=0 V, V_{DS}=50 V, f=100 kHz		1182.1		pF
Coss	Output capacitance			199.5		pF
Crss	Reverse transfer capacitance			4.1		pF
td(on)	Turn-on delay time	V_{GS}=10 V, V_{DS}=50 V, R_G=2 Ω, I_D=10 A		17.9		ns
t_r	Rise time			4.0		ns
td(off)	Turn-off delay time			34.9		ns
t_f	Fall time			5.5		ns
Q_g	Total gate charge	I_D=10 A, V_{DS}=50 V, V_{GS}=10 V		18.4		nC
Q_{gs}	Gate-source charge			3.3		nC
Qgd	Gate-drain charge			3.1		nC
Vplateau	Gate plateau voltage			2.8		V
I_S	Diode forward current	VGS<Vth			60	A
ISP	Pulsed source current				180	
VSD	Diode forward voltage	I_S=20 A, V_{GS}=0 V			1.3	V
trr	Reverse recovery time	I_S=10 A, di/dt=100 A/μs		41.8		ns
Q_{rr}	Reverse recovery charge			36.1		nC
Irrm	Peak reverse recovery current			1.4		A

Note

1、Calculated continuous current based on maximum allowable junction temperature.

2、Repetitive rating; pulse width limited by max. junction temperature.

3、Pd is based on max. junction temperature, using junction-case thermal resistance.

4、V_{DD}=50 V, R_G=50 Ω, L=0.3 mH, starting T_j=25 ℃.

5、The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 ℃.

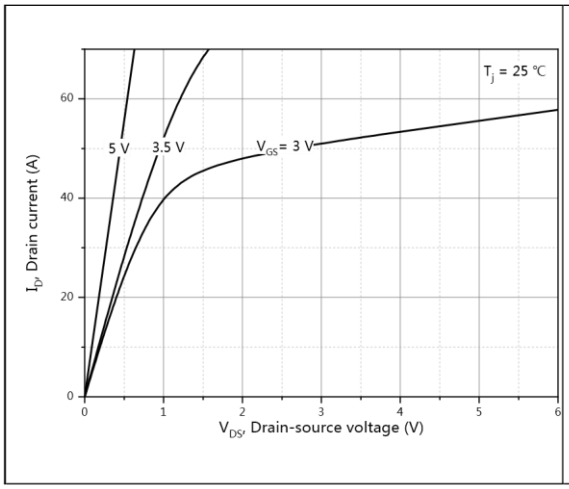


Figure 1, Typ. output characteristics

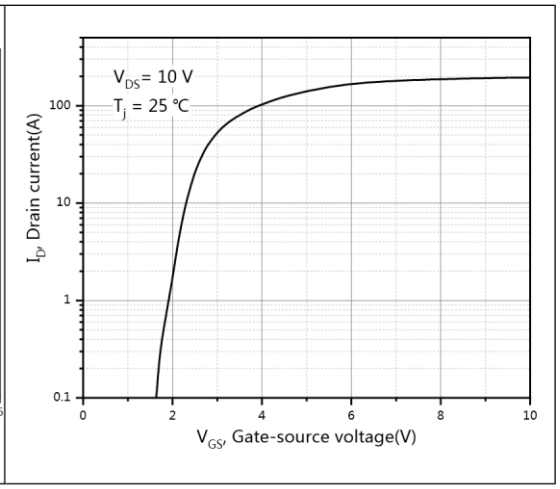


Figure 2, Typ. transfer characteristics

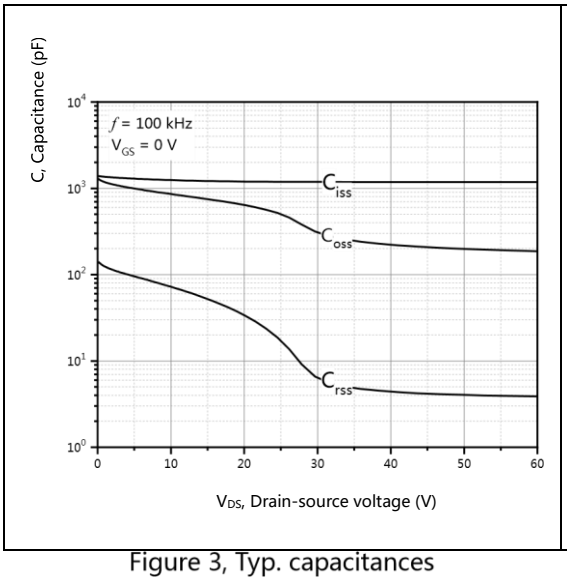


Figure 3, Typ. capacitances

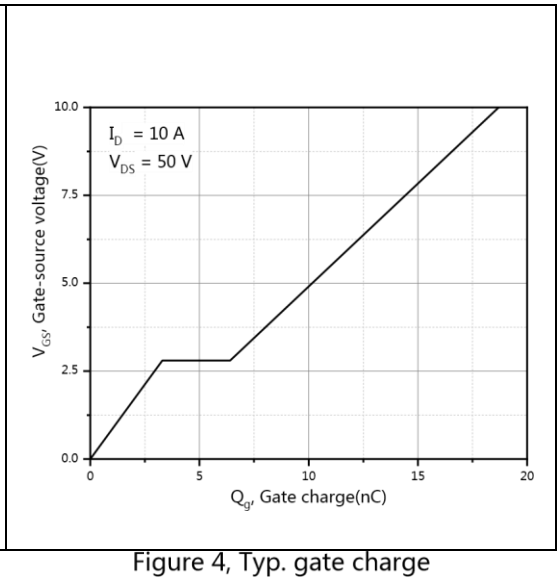


Figure 4, Typ. gate charge

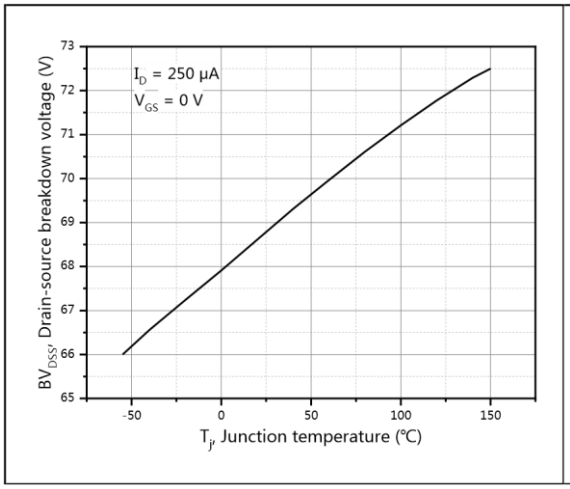


Figure 5, Drain-source breakdown voltage

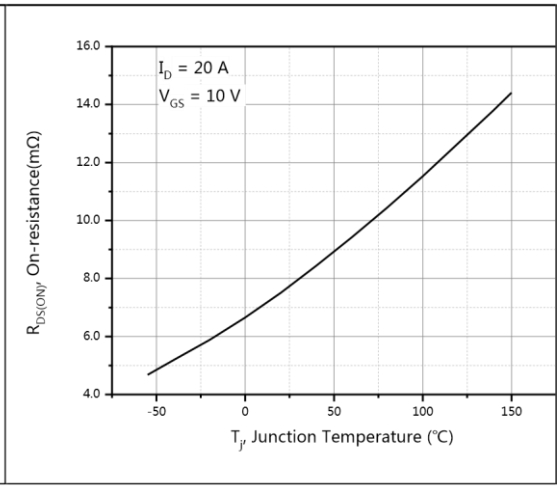


Figure 6, Drain-source on-state resistance

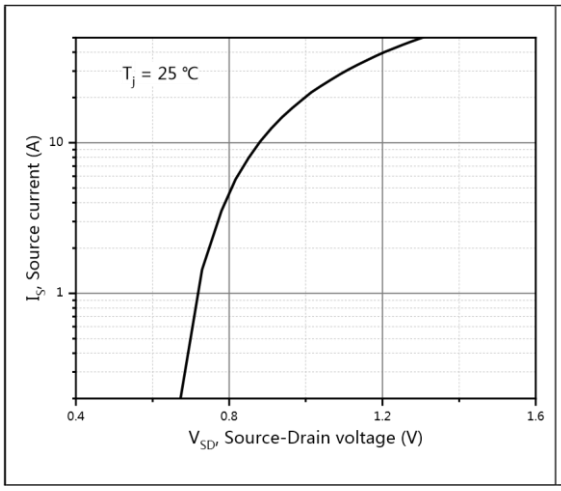


Figure 7, Forward characteristic of body

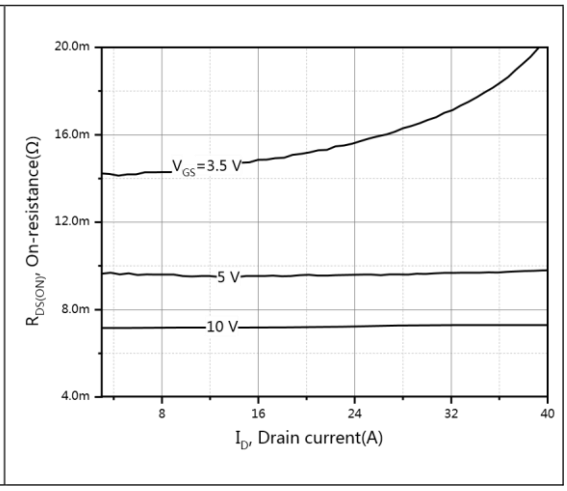


Figure 8, Drain-source on-state resistance diode

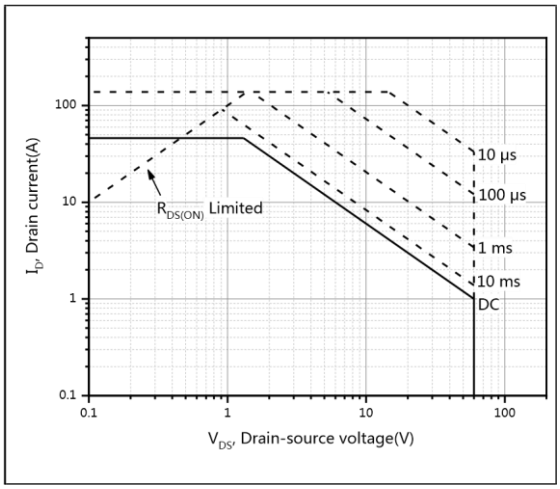
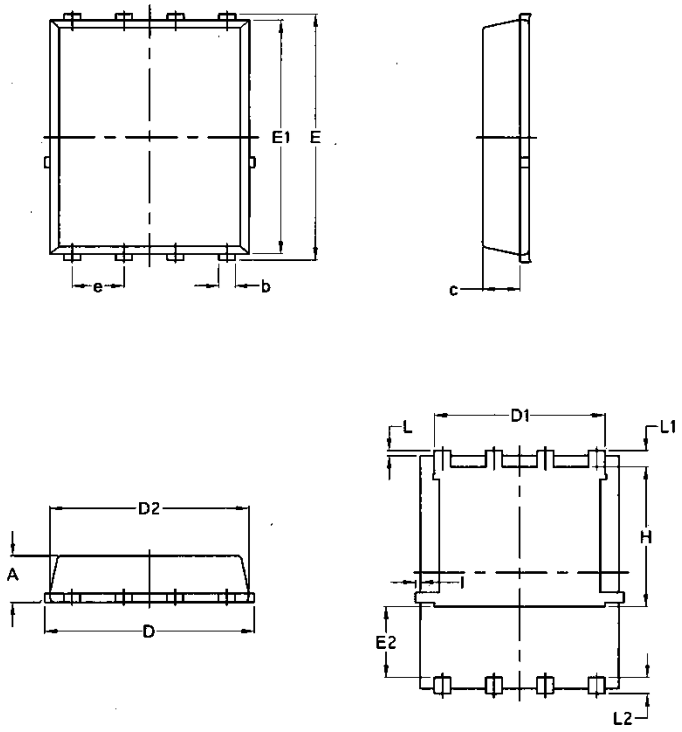


Figure 9, Safe operation area T_C=25 ℃

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