



UNI-SEMICONDUCTOR CO., LTD

宇力半导体有限公司

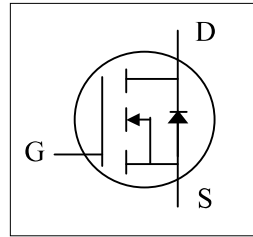


AP68N06G Data Sheet

V 1.1

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- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Surface Mount Package
- ▼ RoHS Compliant & Halogen-Free

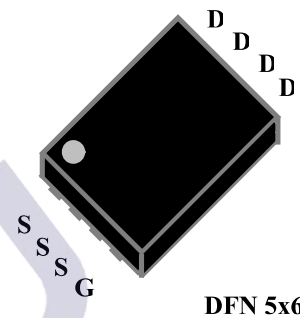


BV_{DSS}	60V
$R_{DS(ON)}$	14m Ω
I_D	50A

Description

AP68N06 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The DFN5*6 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance.



DFN 5x6

Absolute Maximum Ratings@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	+20	V
$I_D@T_C=25^\circ\text{C}$	Drain Current, V_{GS} @ 10V	50	A
$I_D@T_C=100^\circ\text{C}$	Drain Current, V_{GS} @ 10V	33	A
I_{DM}	Pulsed Drain Current ¹	120	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	104	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	1.2	$^\circ\text{C}/\text{W}$
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	62.5	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =25A	-	14	16	mΩ
		V _{GS} =4.5V, I _D =15A	-	-	18	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =30A	-	71	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V	-	-	10	uA
	Drain-Source Leakage Current (T _j =125°C)	V _{DS} =48V, V _{GS} =0V	-	-	250	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =20A	-	33	45	nC
Q _{gs}	Gate-Source Charge	V _{DS} =48V	-	5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	21	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =30V	-	10	-	ns
t _r	Rise Time	I _D =20A	-	43	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	47	-	ns
t _f	Fall Time	V _{GS} =10V	-	80	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	1920	2300	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	185	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	80	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =20A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =10A, V _{GS} =0V,	-	30	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	18	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board

Typical Electrical and Thermal Characteristics (Curves)

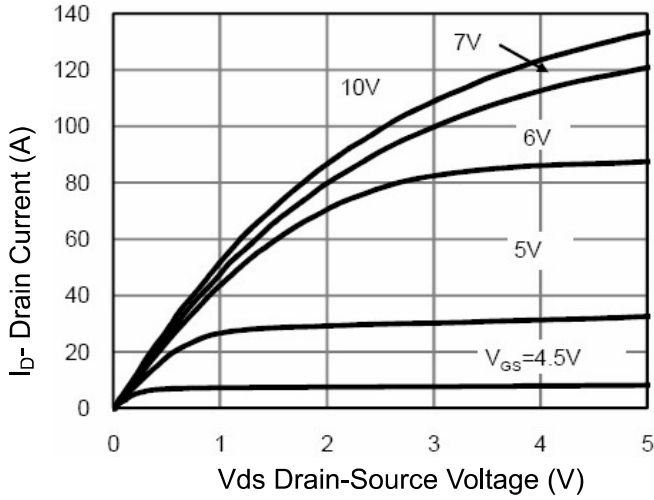


Figure 1 Output Characteristics

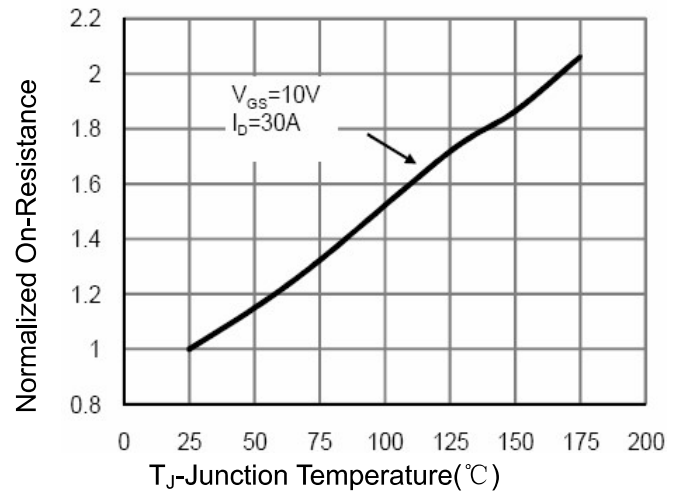


Figure 4 $R_{ds(on)}$ -Junction Temperature

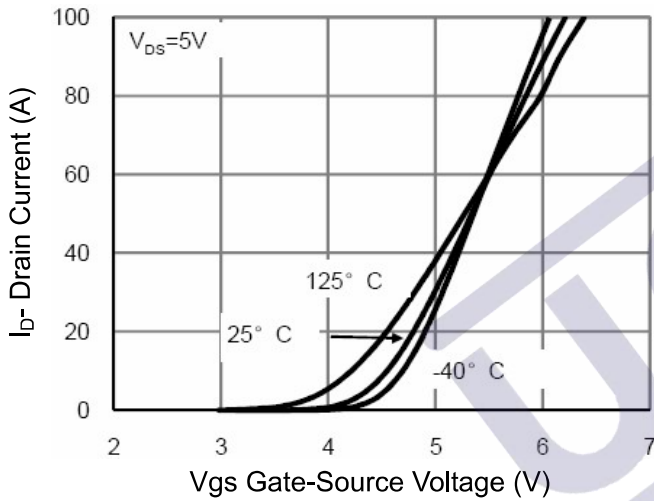


Figure 2 Transfer Characteristics

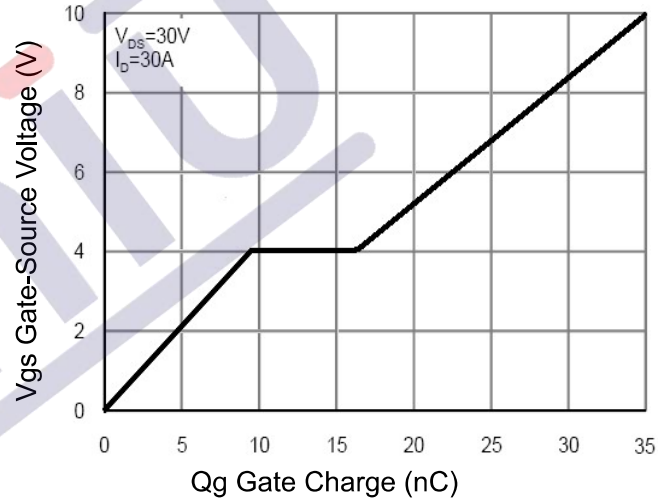


Figure 5 Gate Charge

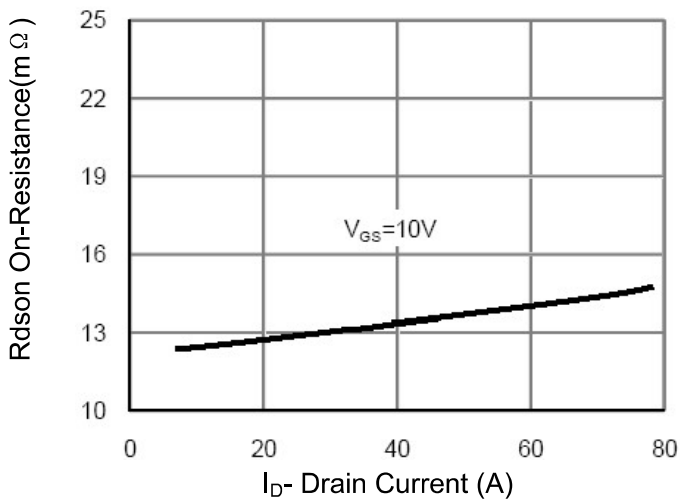


Figure 3 $R_{ds(on)}$ - Drain Current

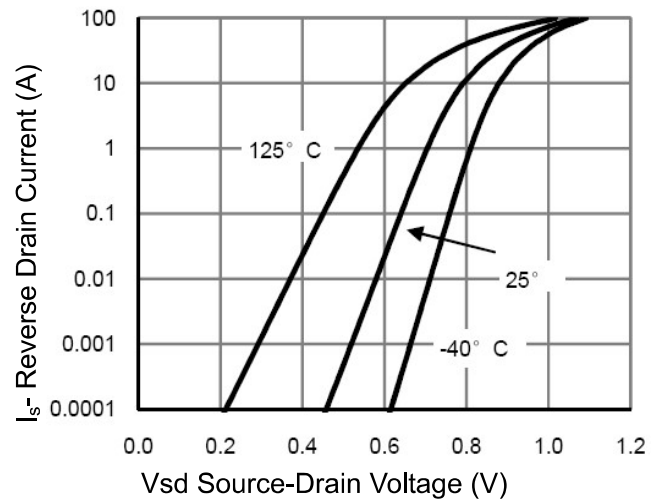


Figure 6 Source- Drain Diode Forward

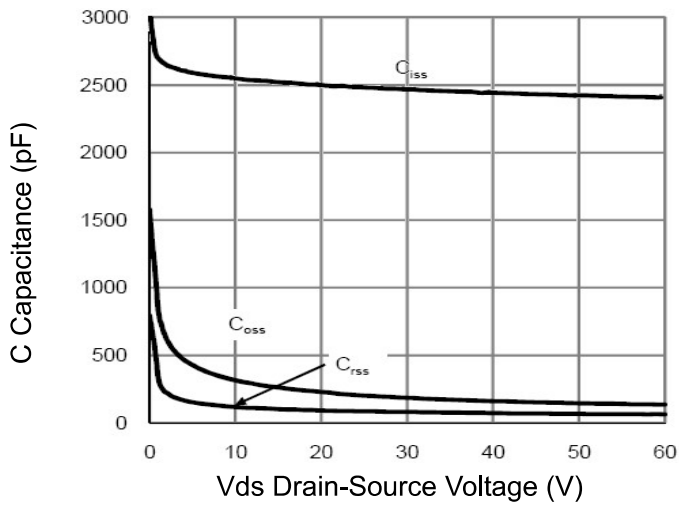


Figure 7 Capacitance vs Vds

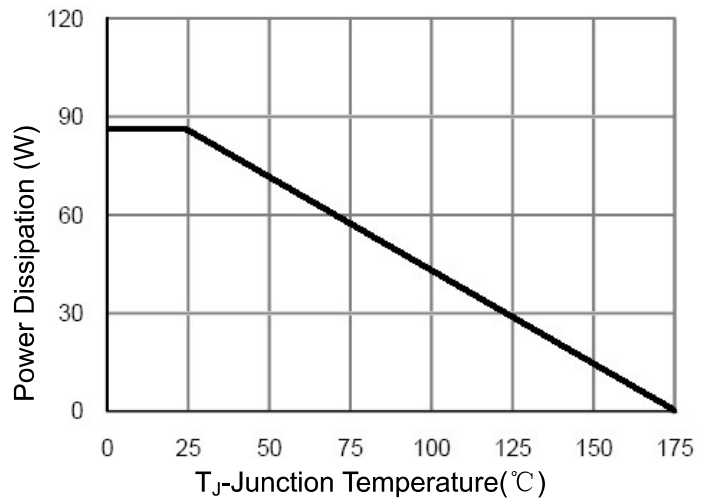


Figure 9 Power De-rating

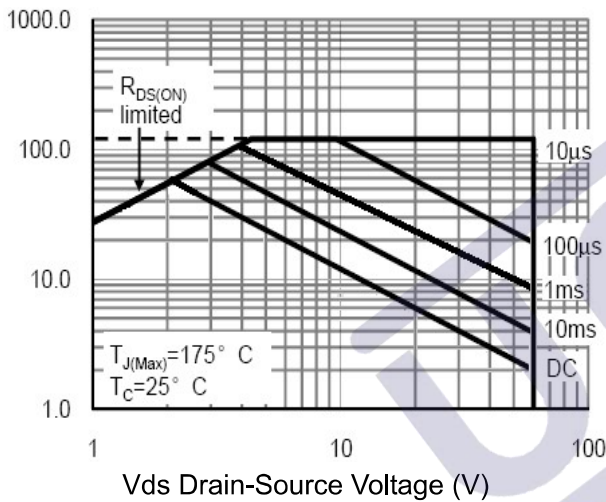


Figure 8 Safe Operation Area

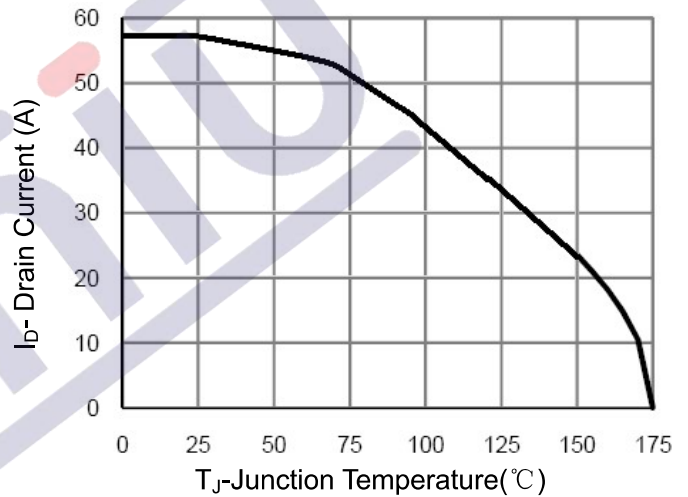


Figure 10 ID Current- Junction Temperature

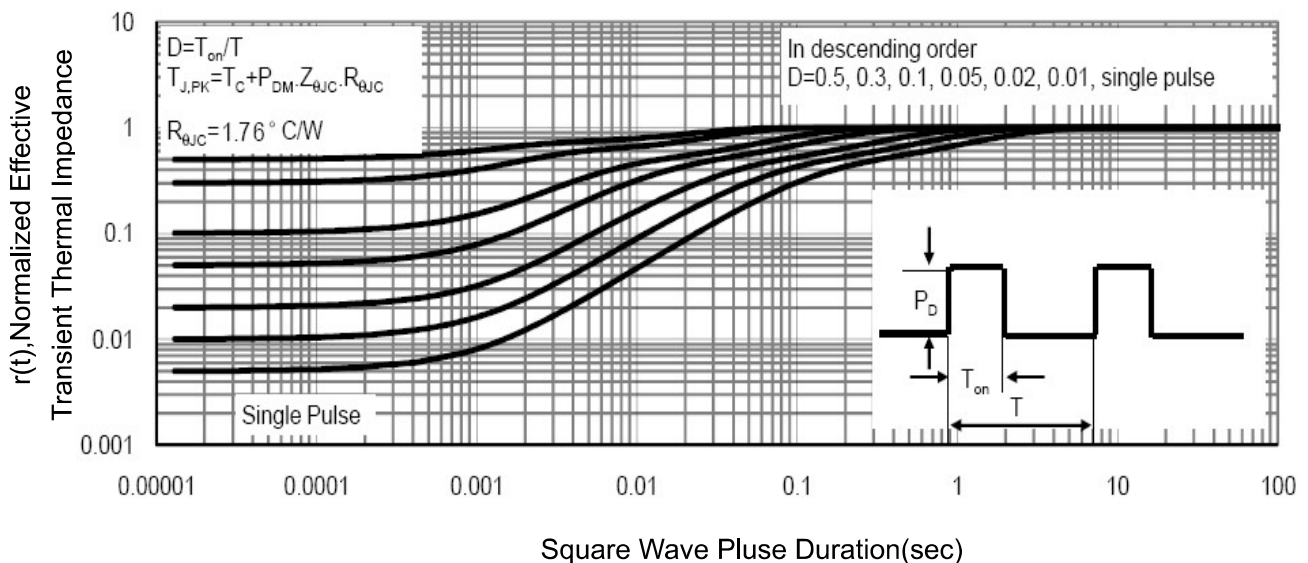


Figure 11 Normalized Maximum Transient Thermal Impedance

1.版本记录

DATE	REV.	DESCRIPTION
2018/04/19	1.0	First Release
2021/08/10	1.1	Layout adjustment

2.免责声明

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