



UNI-SEMICONDUCTOR CO., LTD

宇力半导体有限公司



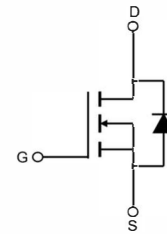
AP6888 Data Sheet

V 1.1

版权归宇力半导体有限公司

Feature

- 68V,88A
 $R_{DS(ON)} < 8.5 m\Omega @ V_{GS}=10V$ TYP:6.5 m Ω
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Good heat dissipation



Schematic Diagram

Application

- PWM applications
- Load Switch
- Power management



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
6888	AP6888	TO-220C	-	-	1000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

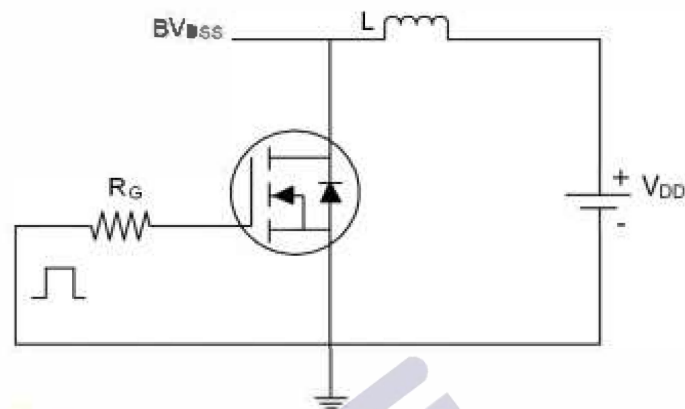
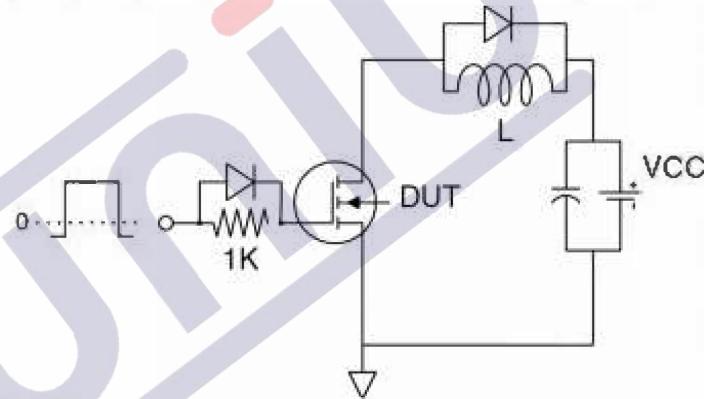
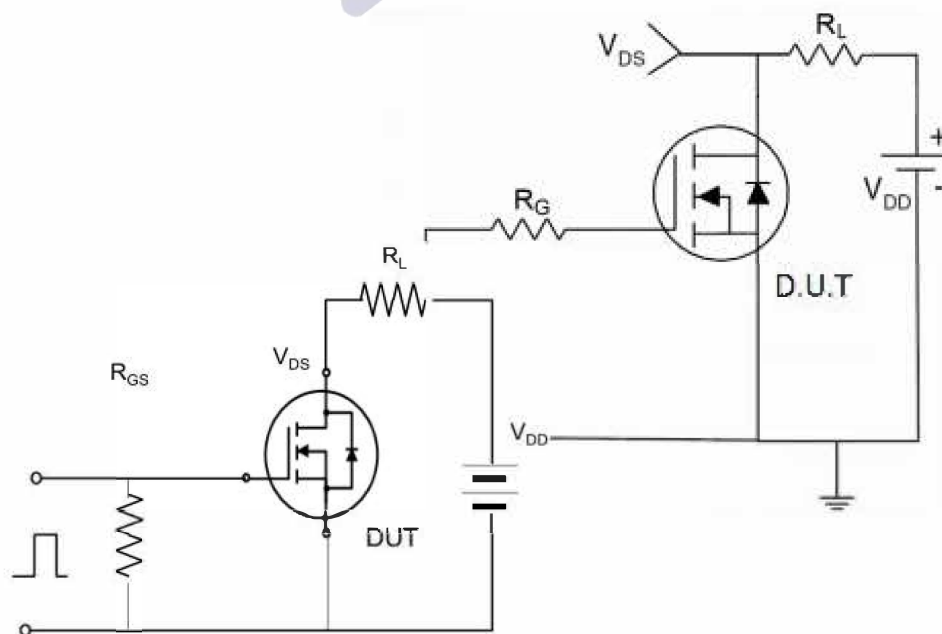
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	68	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a=25^{\circ}C$)	I_D	88	A
Continuous Drain Current ($T_a=100^{\circ}C$)	I_D	54	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	320	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	320	mJ
Power Dissipation	P_D	140	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.15	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	68	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =68V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =40A	-	6.5	8.5	mΩ
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =6V, I _D =30A	-	8.3	11.5	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz	-	3600	-	pF
Output Capacitance	C _{OSS}		-	320	-	
Reverse Transfer Capacitance	C _{rSS}		-	300	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =35V, I _D =40A, V _{GS} =10V, R _G =4.7Ω	-	20	-	ns
Turn-on rise time	t _r		-	52	-	
Turn-off delay time	t _{d(off)}		-	49	-	
Turn-off fall time	t _f		-	23	-	
Total Gate Charge	Q _g	V _D S=35V, I _D =40A, V _G S=10V	-	75	-	nC
Gate-Source Charge	Q _{gs}		-	26	-	
Gate-Drain Charge	Q _{gd}		-	20	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =30A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	88	A
Body Diode Reverse Recovery Time	t _{rr}	T _J =25° , I _F =20A,di/dt=100A/us		23		ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _J =25° , I _F =20A,di/dt=100A/us		16		nc

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J = 25°C, V_{DD} = 30V, R_G = 25Ω, L = 0.5mH
3. Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%
4. Surface Mounted on FR4 Board, t ≤ 10 sec

Test Circuit**1) E_{AS} Test Circuits****2) Gate Charge Test Circuit:****3) Switch Time Test Circuit:**

Typical Characteristics and Thermal Characteristics (Curves)

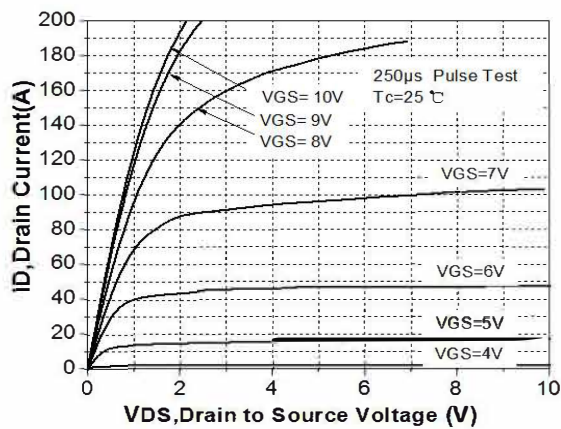


Figure 1 Output Characteristics

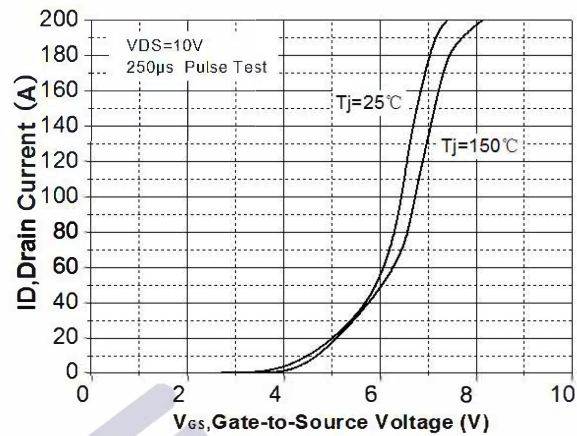


Figure 2 Transfer Characteristics

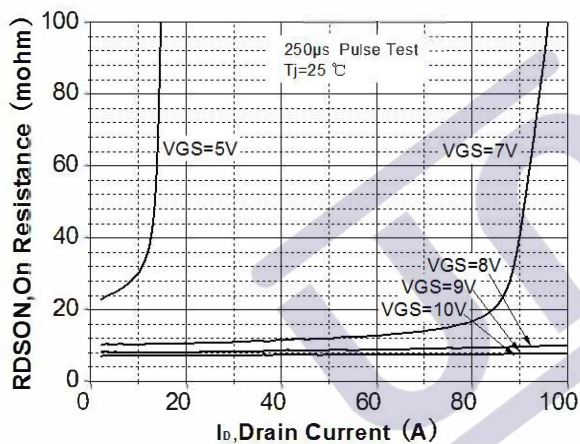


Figure 3 Rdson- Drain Current

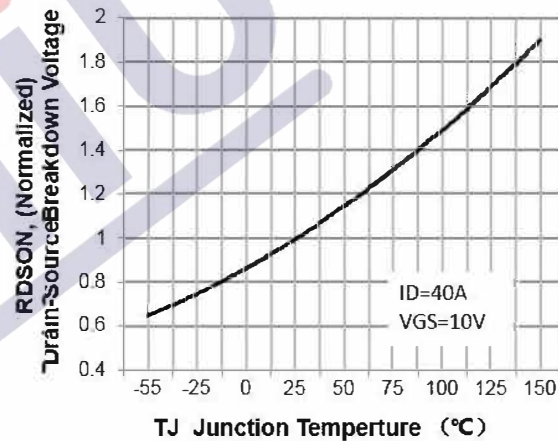


Figure 4 Rdson-Junction Temperature

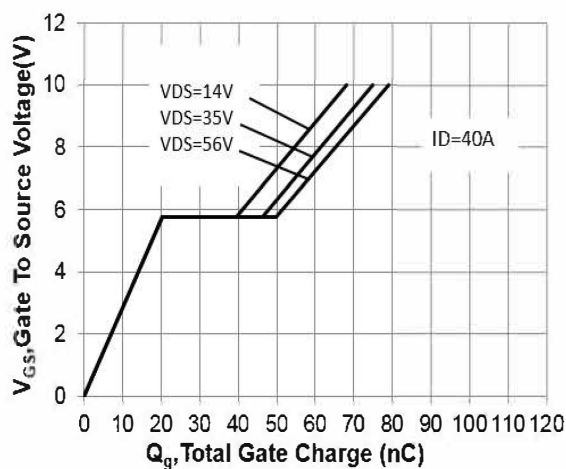


Figure 5 Gate Charge

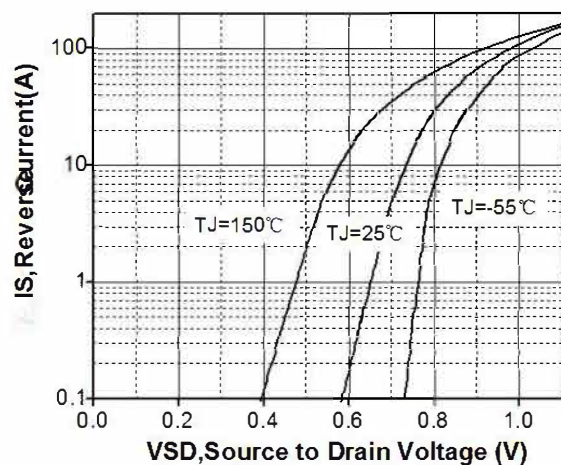


Figure 6 Source- Drain Diode Forward

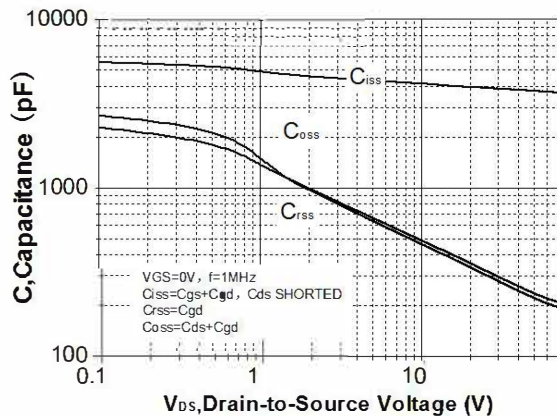


Figure 7 Capacitance vs Vds

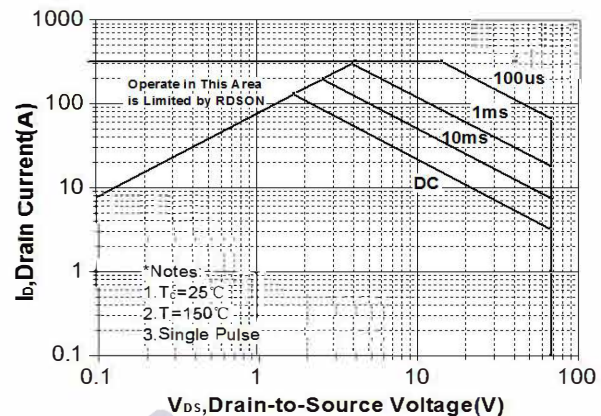


Figure 8 Safe Operation Area

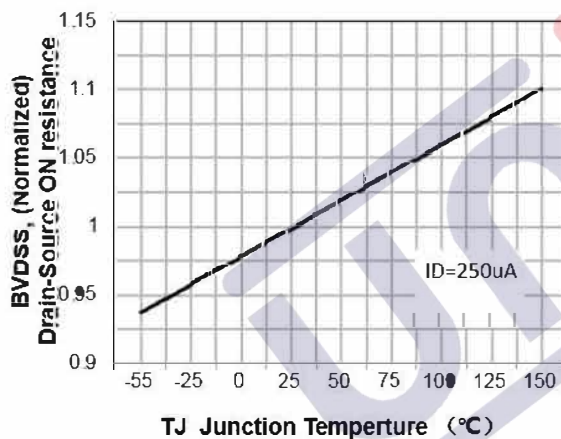


Figure 9 BVDSS vs Junction Temperature

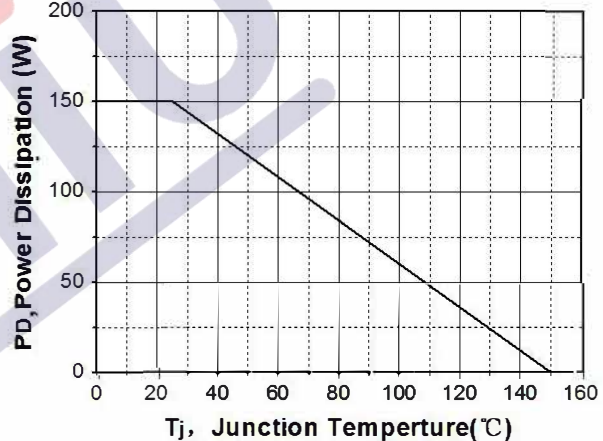
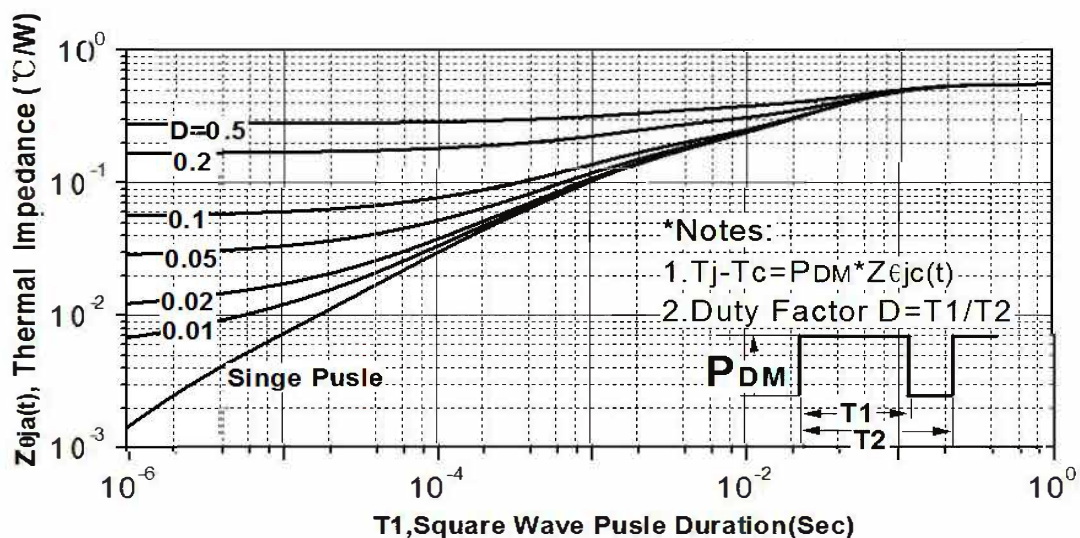
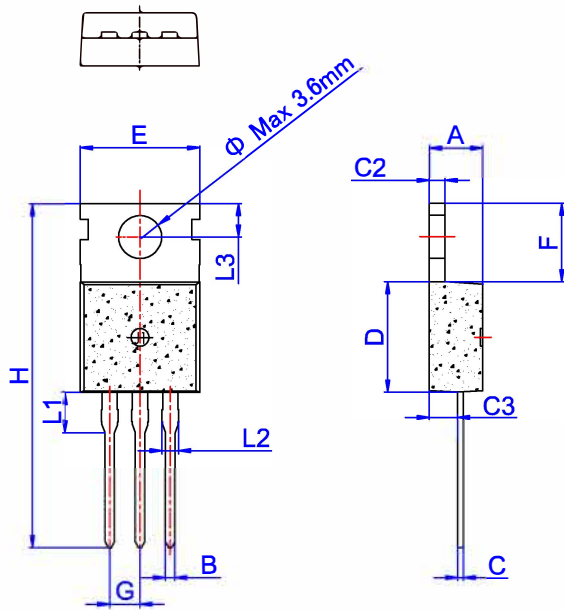
Figure 10 $V_{GS(th)}$ vs Junction Temperature

Figure 11 Normalized Maximum Transient Thermal Impedance

TO-220C Package Information



TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

1.版本记录

DATE	REV.	DESCRIPTION
2018/08/19	1.0	First Release
2021/08/12	1.1	Layout adjustment

2.免责声明

浙江宇力微新能源科技有限公司保留对本文档的更改和解释权力，不另行通知！客户在下单前应获取我司最新版本资料，并验证相关信息是否最新和完整。量产方案需使用方自行验证并自担所有批量风险责任。未经我司授权，该文件不得私自复制和修改。产品不断提升，以追求高品质、稳定性强、可靠性高、环保、节能、高效为目标，我司将竭诚为客户提供性价比高的系统开发方案、技术支持等更优秀的服务。

版权所有 浙江宇力微新能源科技有限公司/绍兴宇力半导体有限公司

3.联系我们

浙江宇力微新能源科技有限公司

总部地址：绍兴市越城区斗门街道袍渎路25号中节能科创园45幢4/5楼

电话：0575-85087896（研发部）

传真：0575-88125157

E-mail: htw@uni-semic.com

无锡地址：无锡市锡山区先锋中路 6 号中国电子（无锡）数字芯城 1#综合楼 503室

电 话：0510-85297939

E-mail: zh@uni-semic.com

深圳地址：深圳市宝安区西乡街道南昌社区宝源路泳辉国际商务大厦410

电 话：0755-84510976

E-mail: htw@uni-semic.com