



UNI-SEMICONDUCTOR CO., LTD

宇力半导体有限公司

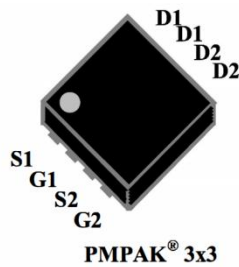


AP0803QD Data Sheet

V 1.1

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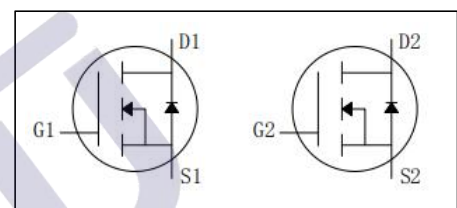
- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching Performance
- ▼ RoHS Compliant & Halogen-Free



BV_{DSS}	30V
$R_{DS(on)}$	9m Ω
I_D	20A

Description

AP0803QD series are from All 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.



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	20	A
$I_D@T_A=70^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^3$	14.1	A
I_{DM}	Pulsed Drain Current ¹	75	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	20	W
E_{AS}	Single Pulse Avalanche Energy ⁴	65	mJ
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	Unit
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	6.25	$^\circ\text{C}/\text{W}$

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	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =10A	-	9	11.5	mΩ
		V _{GS} =4.5V, I _D =5A	-	-	18	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =1mA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =10A	-	40	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =5A	-	14	22.4	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	4.4	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	5.4	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V	-	9	-	ns
t _r	Rise Time	I _D =1A	-	8	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	29	-	ns
t _f	Fall Time	V _{GS} =10V	-	9	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	790	1280	pF
C _{oss}	Output Capacitance	V _{DS} =15V	-	225	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	160	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2.5	5	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.7A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _S =10A, V _{GS} =0V,	-	11	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	4	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤10sec ; 135 °C/W when mounted on Min. copper pad.
- 4.Starting T_j=25°C , V_{DD}=15V , L=0.5mH , R_G=25Ω

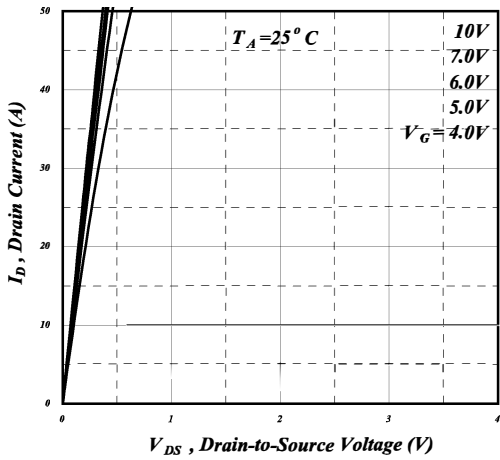


Fig 1. Typical Output Characteristics

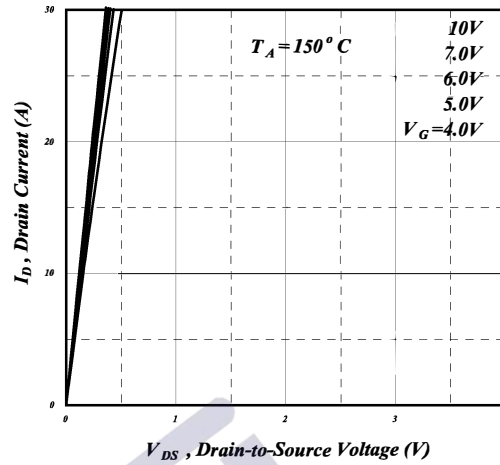


Fig 2. Typical Output Characteristics

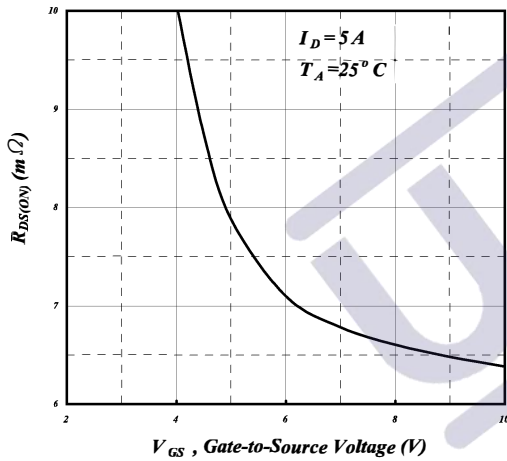


Fig 3. On-Resistance vs. Gate Voltage

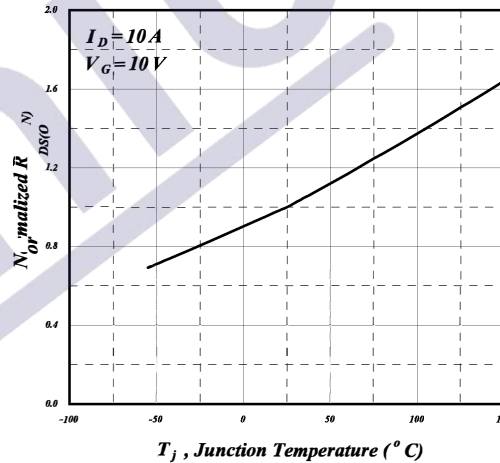


Fig 4. Normalized On-Resistance vs. Junction Temperature

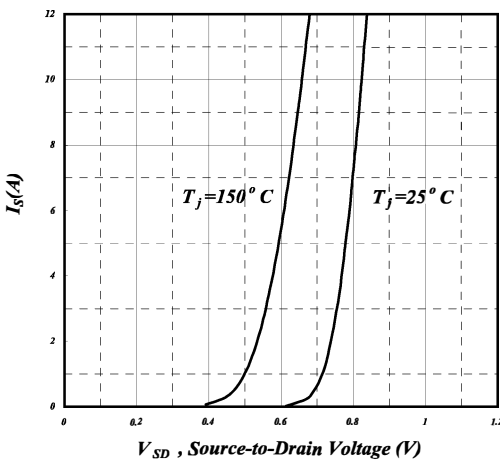


Fig 5. Forward Characteristic of Reverse Diode

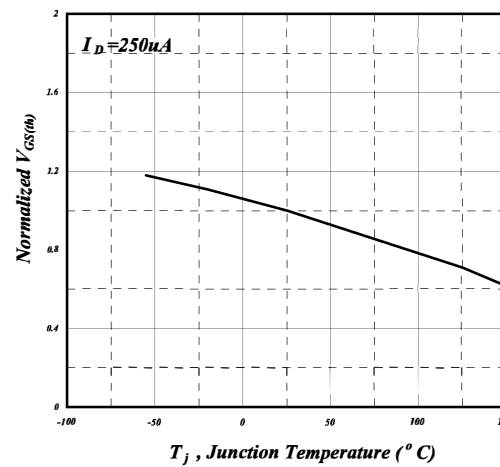


Fig 6. Gate Threshold Voltage vs. Junction Temperature

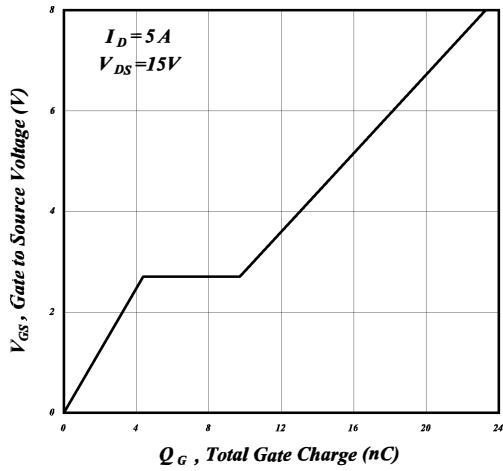


Fig 7. Gate Charge Characteristics

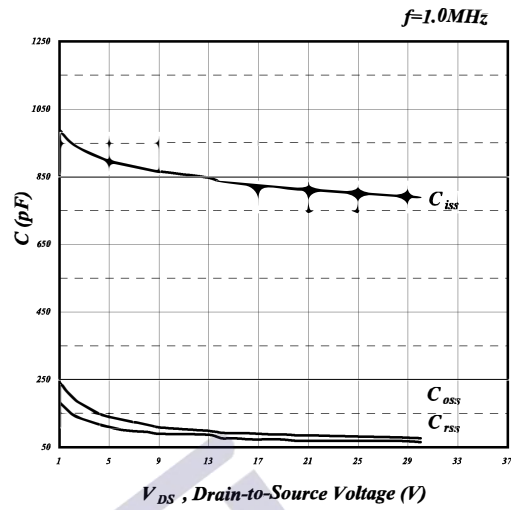


Fig 8. Typical Capacitance Characteristics

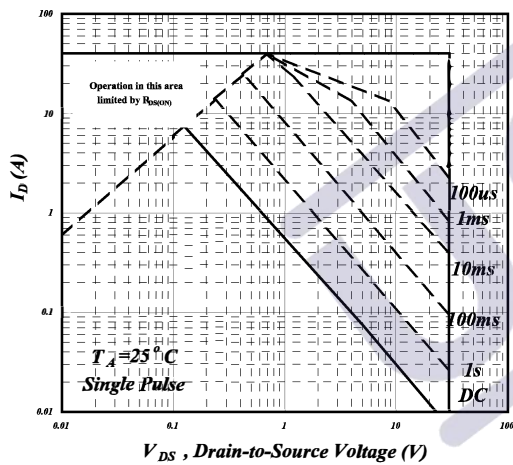


Fig 9. Maximum Safe Operating Area

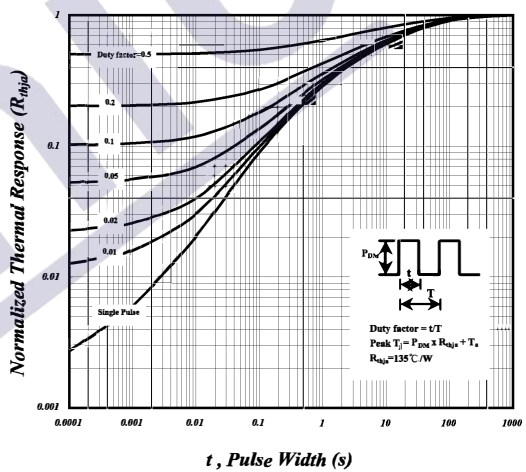


Fig 10. Effective Transient Thermal Impedance

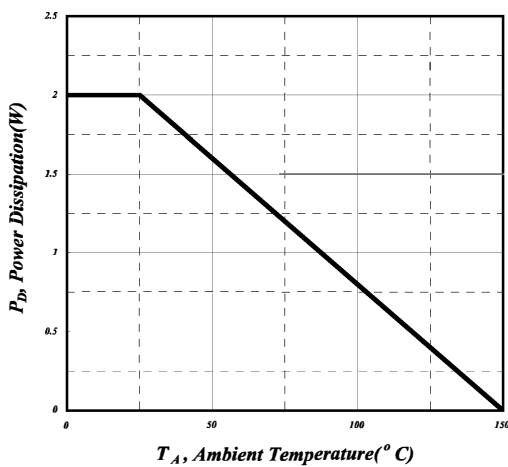


Fig 11. Total Power Dissipation

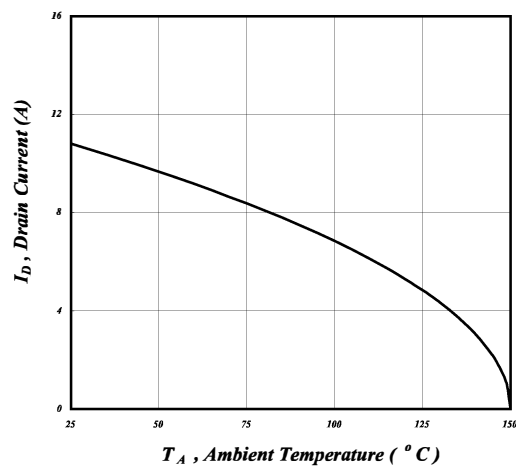
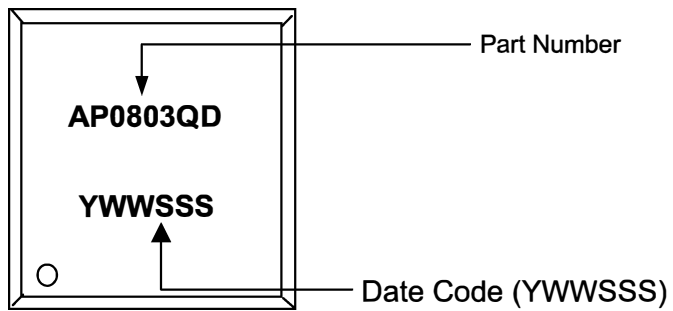


Fig 12. Drain Current v.s. Ambient Temperature

MARKING INFORMATION

Y : Last Digit Of The Year
WW : Week
SSS : Sequence

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1.版本记录

DATE	REV.	DESCRIPTION
2018/04/19	1.0	First Release
2021/04/12	1.1	Layout adjustment

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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