



ZHEJIANG UNIÜ-NE Technology CO., LTD

浙江宇力微新能源科技有限公司



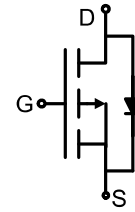
AP40P05 Data Sheet

V 1.1

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Feature

- -40V,5A
 $R_{DS(ON)} < 85m\Omega @ V_{GS} = -10V$ TYP: 65 mΩ
 $R_{DS(ON)} < 120m\Omega @ V_{GS} = -4.5V$ TYP: 90 mΩ
- Advanced Trench Technology
- Lead free product is acquired



Schematic diagram

Application

- Interfacing Switching
- Load Switching
- Power management



SOT-23 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
40P05	AP40P05	Sot-23	7 inch	-	3000

ABSOLUTE MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _a =25°C)	I _D	-5	A
Continuous Drain Current (T _a =70°C)	I _D	-3.5	A
Pulsed Drain Current	I _{DM}	-20	A
Power Dissipation	P _D	2	W
Thermal Resistance from Junction to Ambient ⁽⁴⁾	R _{θJA}	62.5	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55~ +150	°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	-40	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -40V, 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	-1	-1.6	-2.5	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -3A	-	65	85	mΩ
		V _{GS} = -4.5V, I _D = -2A	-	90	120	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz	-	596	-	pF
Output Capacitance	C _{oss}		-	90	-	
Reverse Transfer Capacitance	C _{rss}		-	70	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} = -20V, I _D = -3A, V _{GS} = -10V, R _G = 3Ω	-	9	-	ns
Turn-on rise time	t _r		-	8	-	
Turn-off delay time	t _{d(off)}		-	28	-	
Turn-off fall time	t _f		-	10	-	
Total Gate Charge	Q _g	V _{DS} = -20V, I _D = -3A, V _{GS} = -10V	-	14	-	nC
Gate-Source Charge	Q _{gs}		-	2.9	-	
Gate-Drain Charge	Q _{gd}		-	3.8	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} = 0V, I _S = -3A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	-4.0	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%
3. Surface Mounted on FR4 Board, t ≤ 10 sec

Test Circuit

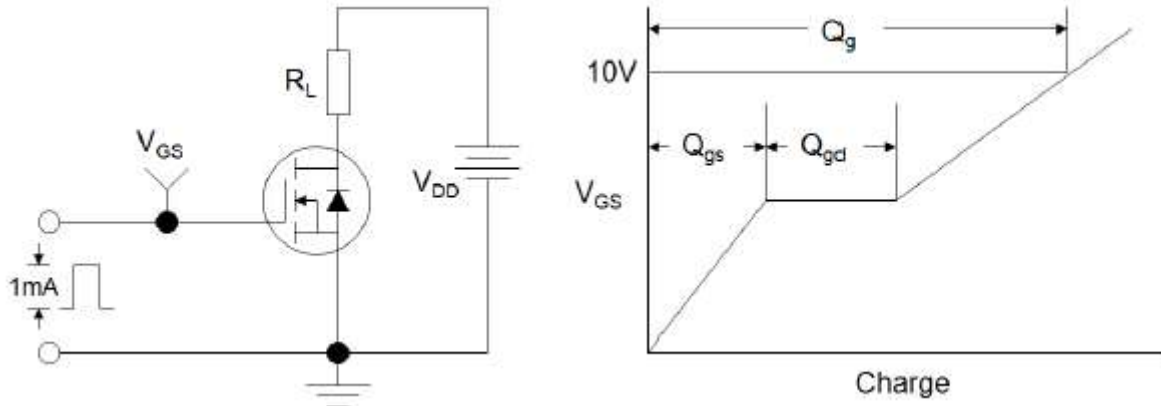


Figure1:Gate Charge Test Circuit & Waveform

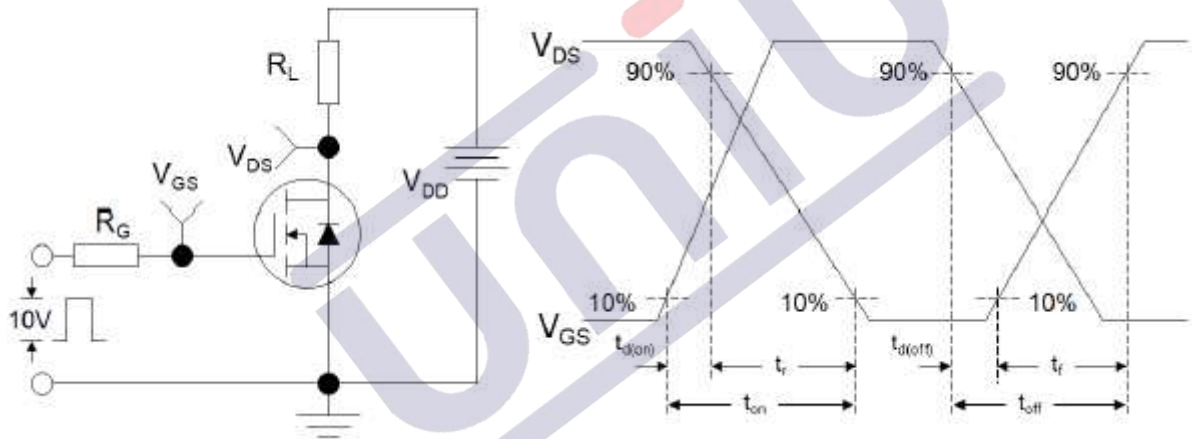


Figure 2: Resistive Switching Test Circuit & Waveforms

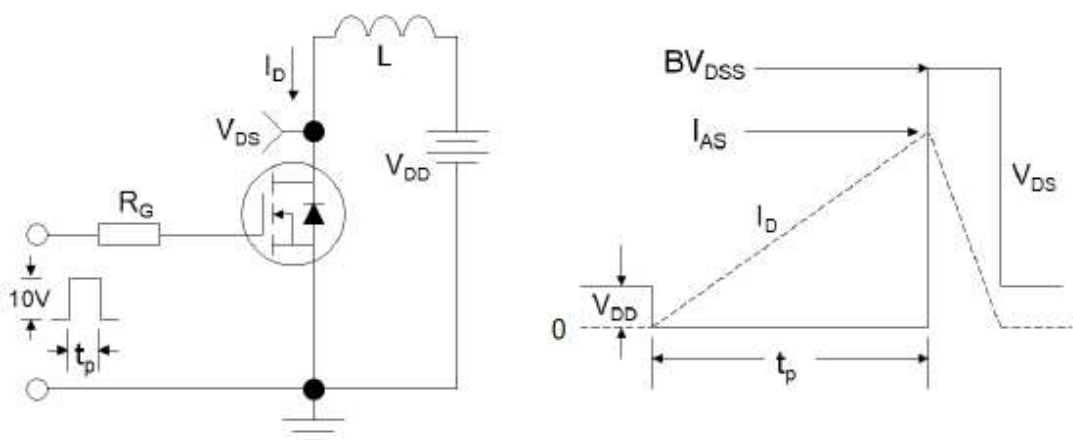


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Electrical and Thermal Characteristics

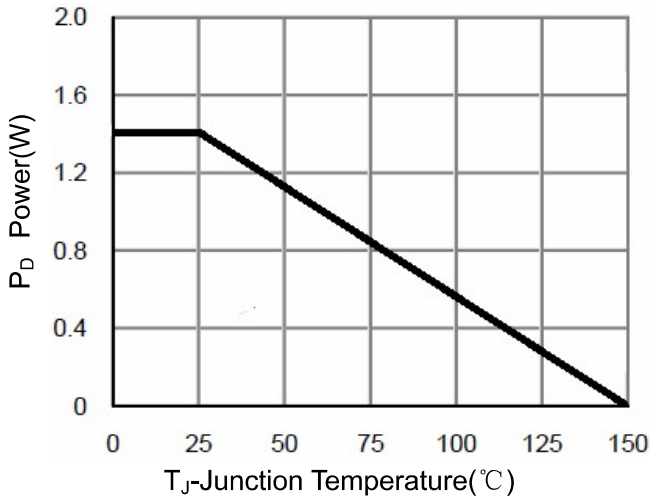


Figure 1 Power Dissipation

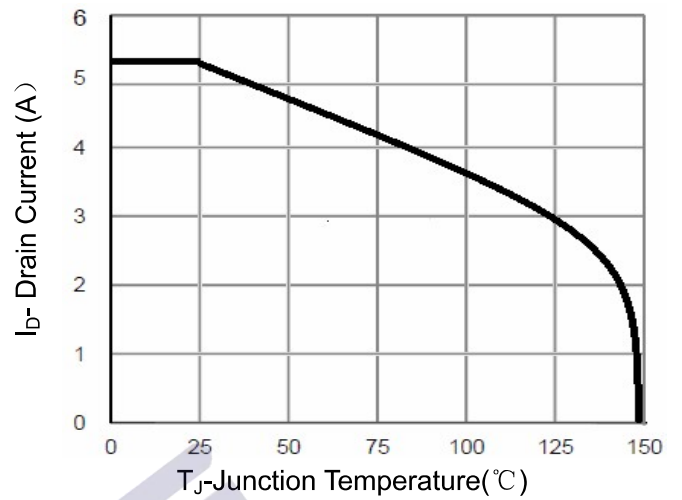


Figure 2 Drain Current

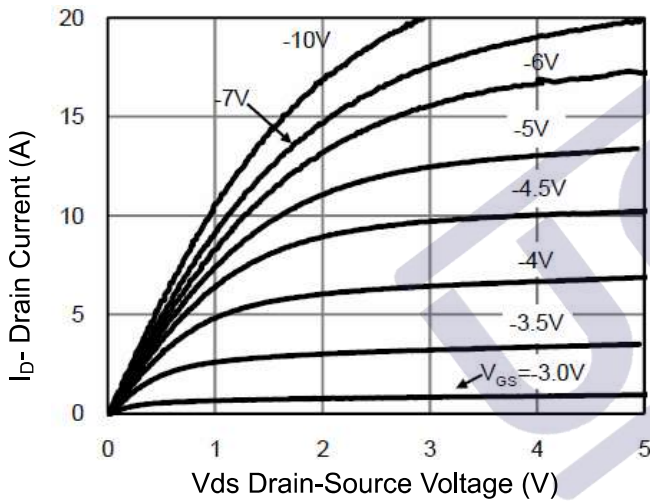


Figure 3 Output Characteristics

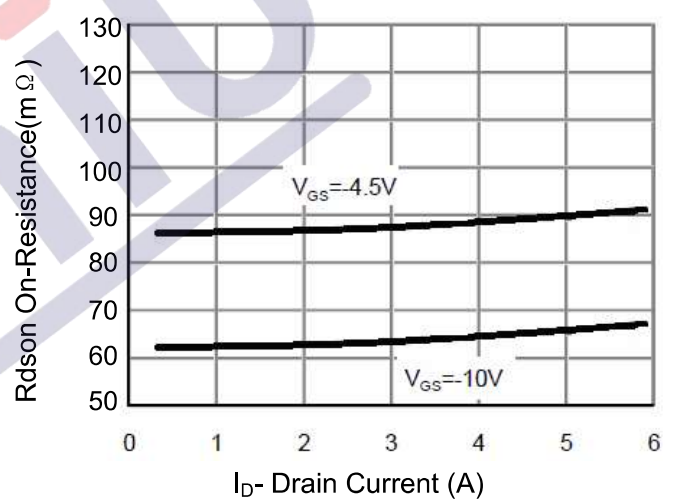


Figure 4 Drain-Source On-Resistance

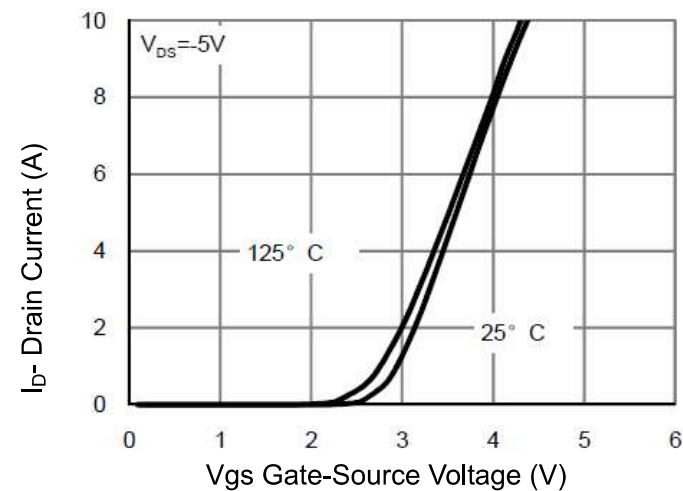


Figure 5 Transfer Characteristics

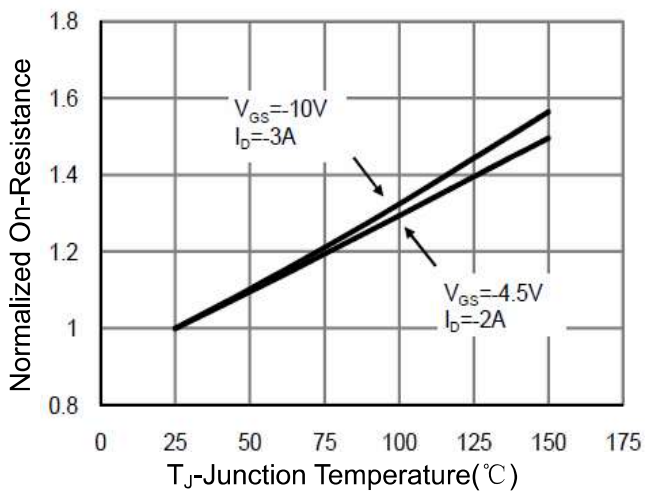


Figure 6 Drain-Source On-Resistance

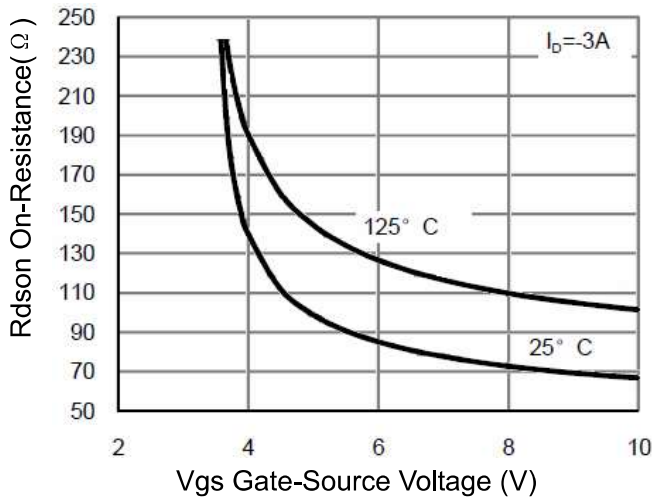


Figure 7 Rdson vs Vgs

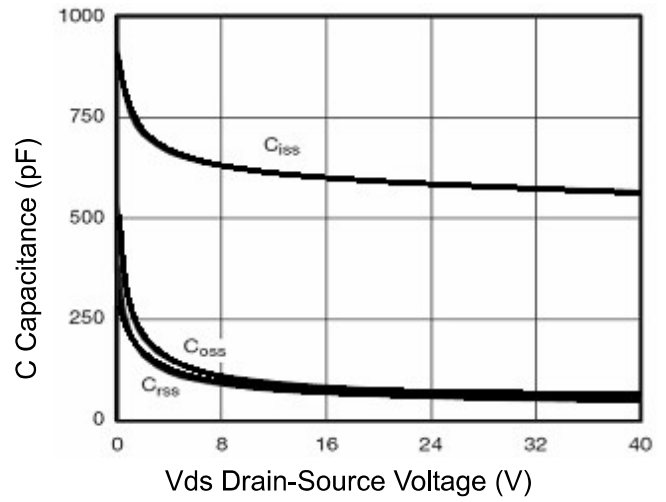


Figure 8 Capacitance vs Vds

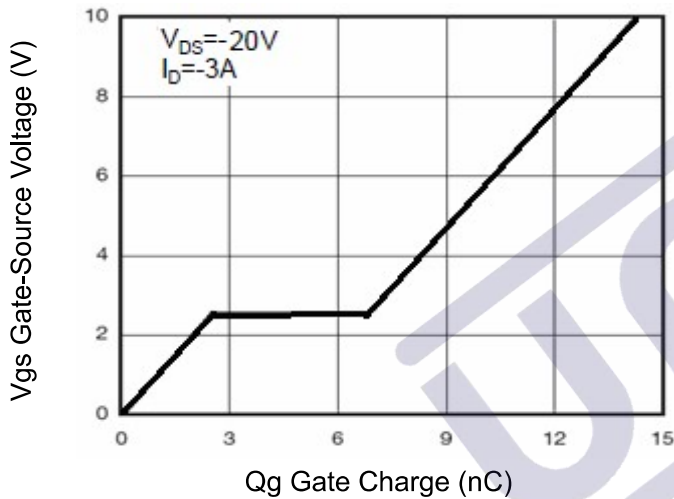


Figure 9 Gate Charge

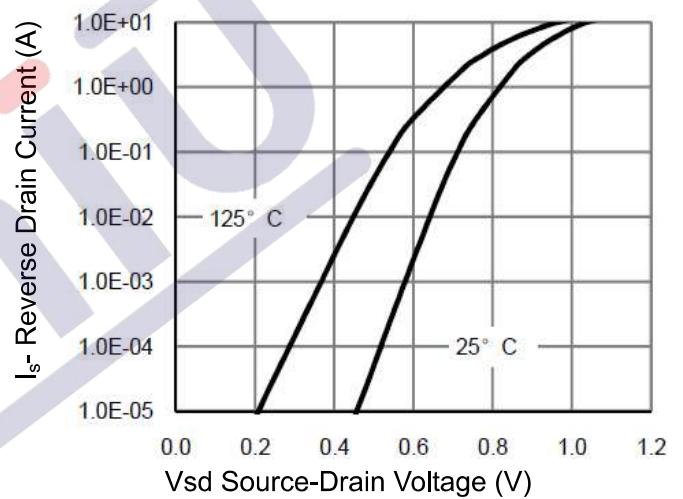


Figure 10 Source- Drain Diode Forward

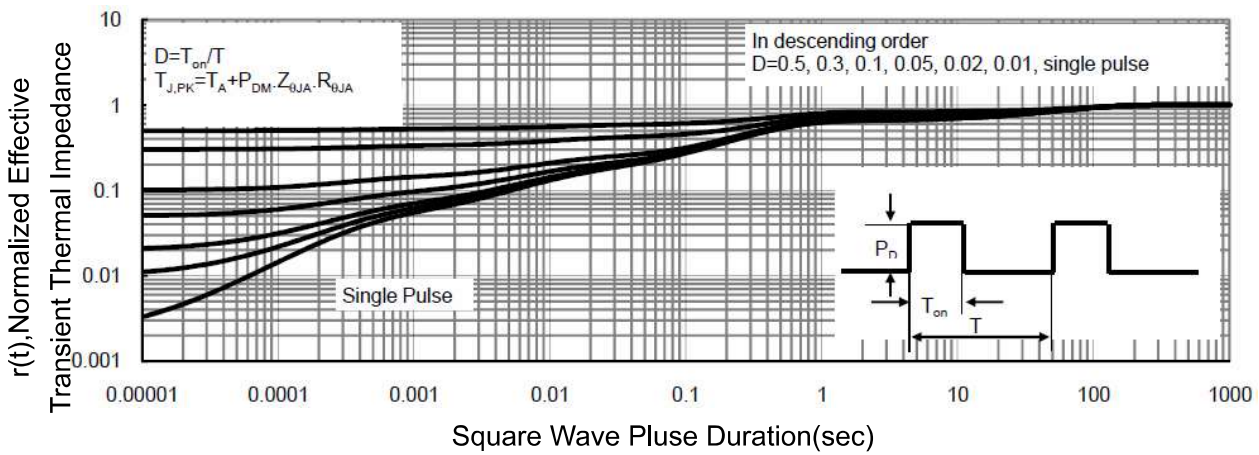


Figure 11 Normalized Maximum Transient Thermal Impedance

1.版本记录

DATE	REV.	DESCRIPTION
2018/04/19	1.0	First Release
2021/11/15	1.1	Layout adjustment

2.免责声明

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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渚路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