ZHEJIANG UNIU-NE Technology CO.,LTD

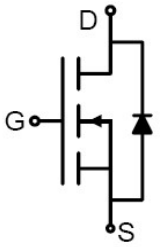
浙 江 宇 力 微 新 能 源 科 技 有 限 公 司

AP1002 Data Sheet

V 1.1

Feature

- 100V,2A
  $R_{DS(ON)}$ <273mΩ @V_{GS}=10V TYP:210 mΩ
  $R_{DS(ON)}$ <338mΩ @V_{GS}=4.5V TYP:260 mΩ
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Schematic Diagram

Application

- PWM applications
- Load Switch
- Power management

SOT-23 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
1002	AP1002	SOT-23	7 inch	-	3000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_a =25℃)	I_D	2	A
Continuous Drain Current (T_a =100℃)	I_D	1.3	A
Pulsed Drain Currenr (1)	I_{DM}	8	A
Power Dissipation	P_D	2.3	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	54	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ 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	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(2)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.8	1.3	2.0	V
Drain-source on-resistance(2)	$R_{DS(on)}$	V_{GS} =10V, I_D =2A	-	210	273	mΩ
		V_{GS} =4.5V, I_D =1A	-	260	338	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1MHz	-	113	-	pF
Output Capacitance	C_{oss}		-	49.6	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, I_D=2A,V_{GS}=10V, R_G=2Ω	-	4.6	-	ns
Turn-on rise time	t_r		-	5.5	-	
Turn-off delay time	$t_{d(off)}$		-	24.9	-	
Turn-off fall time	t_f		-	10.5	-	
Total Gate Charge	Qg	VDS=50V, ID=2A, VGS=10V	-	3.0	-	nC
Gate-Source Charge	Qgs		-	0.6	-	
Gate-Drain Charge	Qgd		-	0.82	-	
Source-Drain Diode characteristics						
Diode Forward voltage(2)	V_{DS}	V_{GS} =0V, I_S=1A	-	-	1.2	V
Diode Forward current(3)	I_S		-	-	1	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

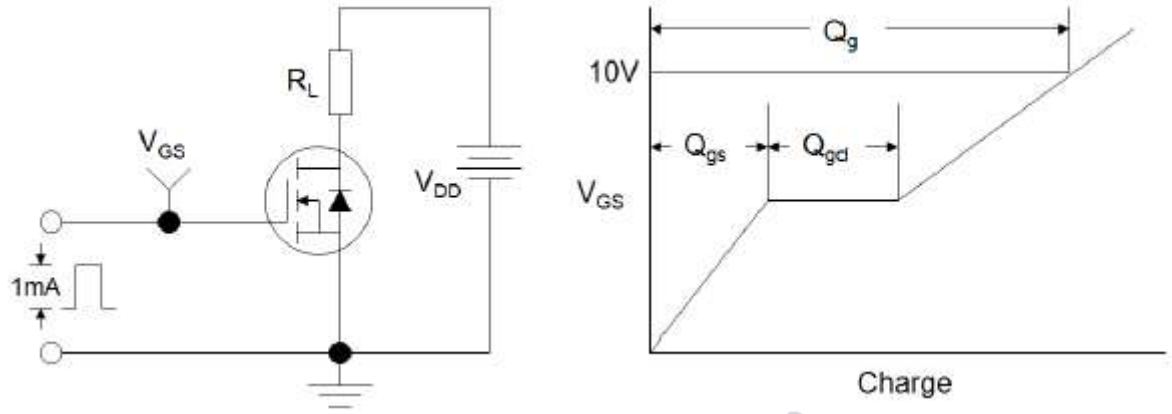


Figure1:Gate Charge Test Circuit & Waveform

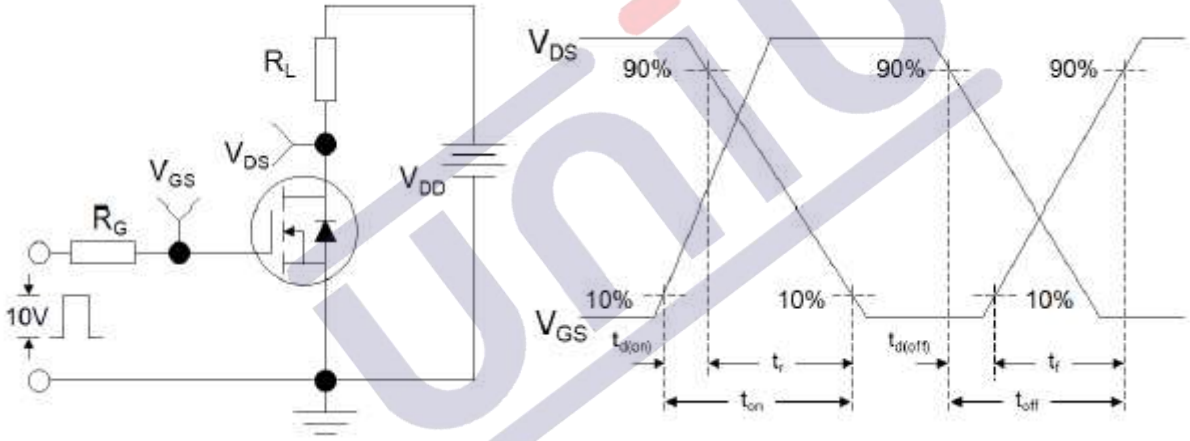


Figure 2: Resistive Switching Test Circuit & Waveforms

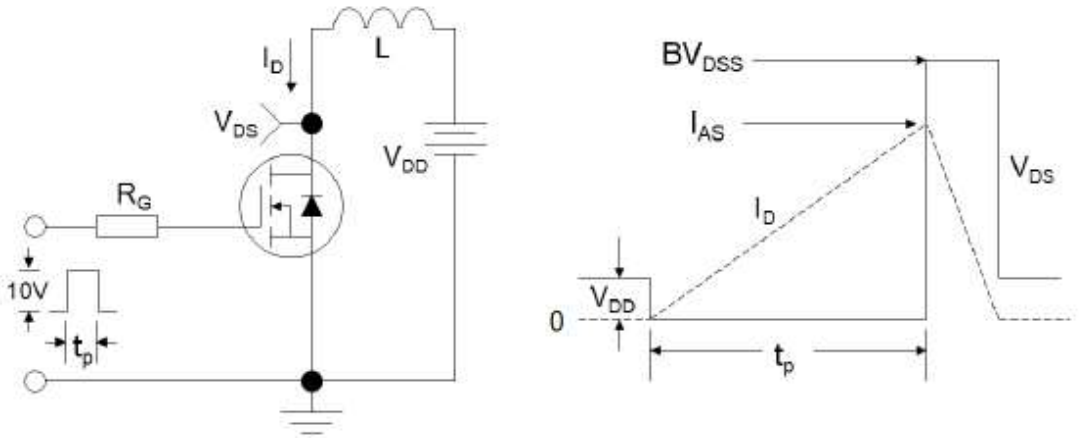


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure1: Output Characteristics

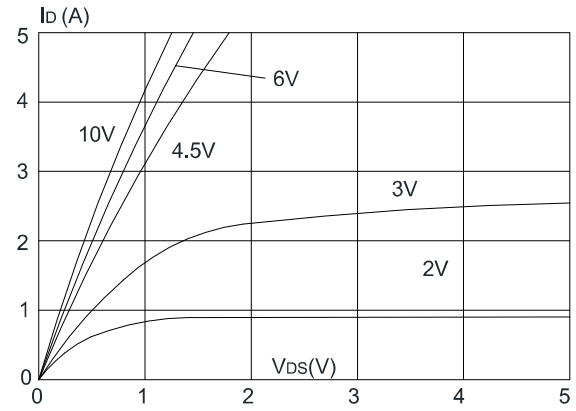


Figure 2: Typical Transfer Characteristics

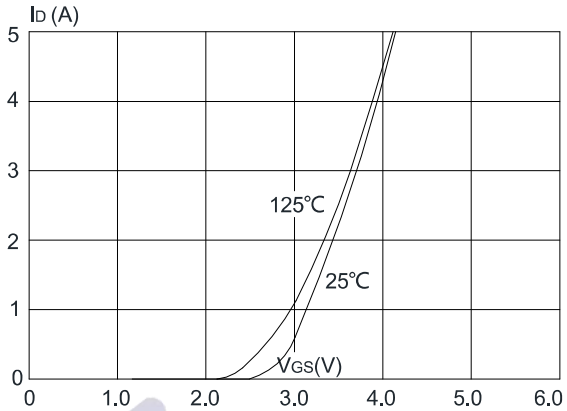


Figure 3: On-resistance vs. Drain Current

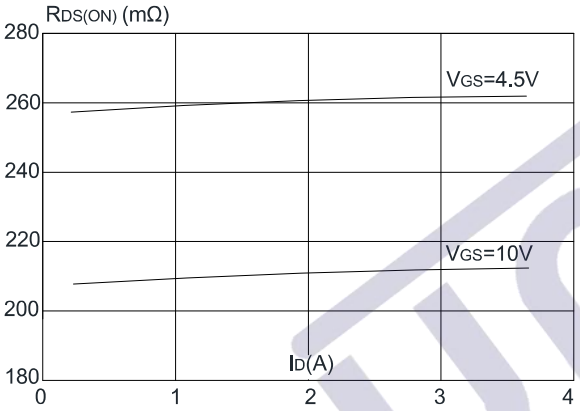


Figure 4: Body Diode Characteristics

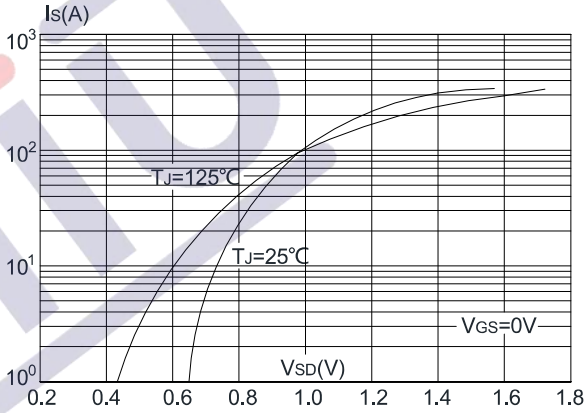


Figure 5: Gate Charge Characteristics

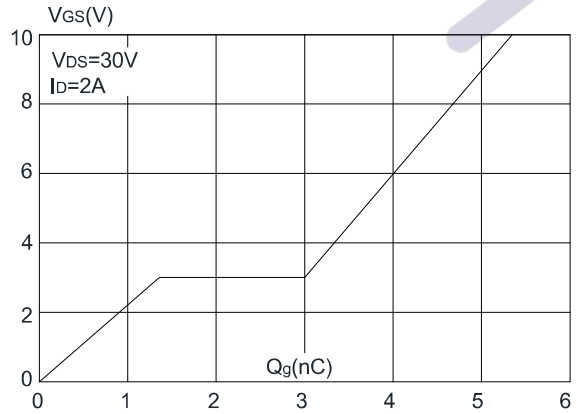
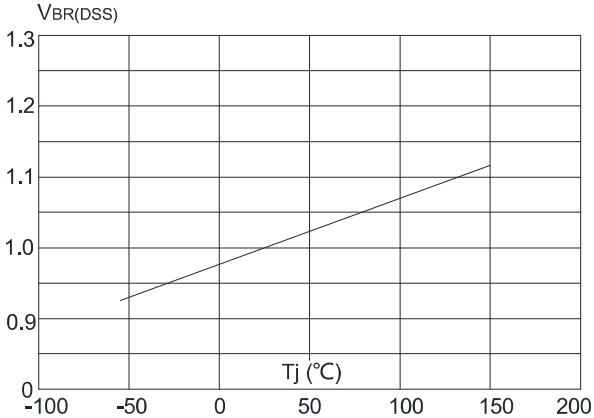


Figure 6: Normalized Breakdown Voltage vs. Junction Temperature



1.版本记录

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

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