

### • General Description

The AGM2N7002K3 combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

This device is ideal for load switch and battery protection applications.

### • Features

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested
- With ESD

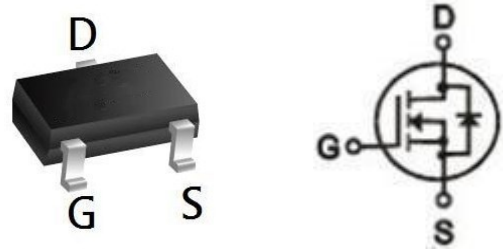
### • Application

- Electronic Ballast
- Electronic Transformer
- Switch Mode Power Supply

### Product Summary

BVDSS	RDSON	ID
60V	1.9Ω	0.3A

### SOT-23 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
7002K	AGM2N7002K3	SOT-23	178mm	8mm	3000

Table 1. Absolute Maximum Ratings (TA=25°C)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(TA=25°C) (Note 1)	0.3	A
	Drain Current-Continuous(TA=100°C)	0.18	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	1.2	A
PD	Maximum Power Dissipation(TA=25°C)	0.35	w
	Maximum Power Dissipation(TA=100°C)	0.14	w
EAS	Avalanche energy (Note 3)	--	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	357	°C/W

**Table 3. Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=10μA	60	67	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=60V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±10	μA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	1.5	2.5	V
gFS	Forward Transconductance	VDS=2V, ID=0.2A	--	130	--	mS
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=0.3A	--	1.9	2.5	Ω
		VGS=4.5V, ID=0.2A	--	2.0	3.0	Ω
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=30V, VGS=0V, F=1MHZ	--	21	--	pF
Coss	Output Capacitance		--	9	--	pF
Crss	Reverse Transfer Capacitance		--	4	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V, f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VDD=50V, VGS=10V ID=0.2A, RGEN=50Ω	--	2	--	nS
tr	Turn-on Rise Time		--	15	--	nS
td(off)	Turn-Off Delay Time		--	7	--	nS
tf	Turn-Off Fall Time		--	20	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=10V, ID=0.3A	--	1.7	--	nC
Qgs	Gate-Source Charge		--	0.3	--	nC
Qgd	Gate-Drain Charge		--	0.6	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	0.3	A
VSD	Forward on Voltage	VGS=0V, ISD=0.3A	--	--	1.2	V
trr	Reverse Recovery Time	VDD=10V, IF=0.3A , dI/dt=100A/μs , TJ=25°C	--		--	ns
Qrr	Reverse Recovery Charge		--		--	nc

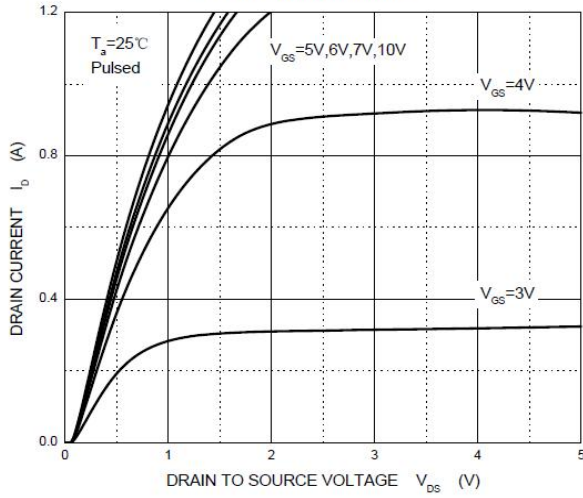
Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

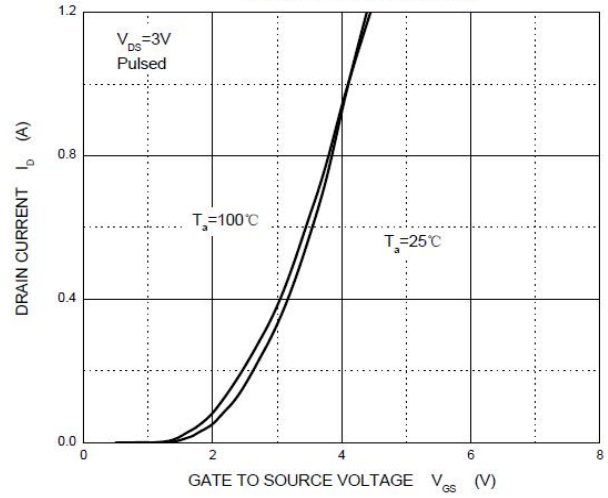
Notes 3.EAS condition: T<sub>J</sub>=25°C

## Typical Performance Characteristics

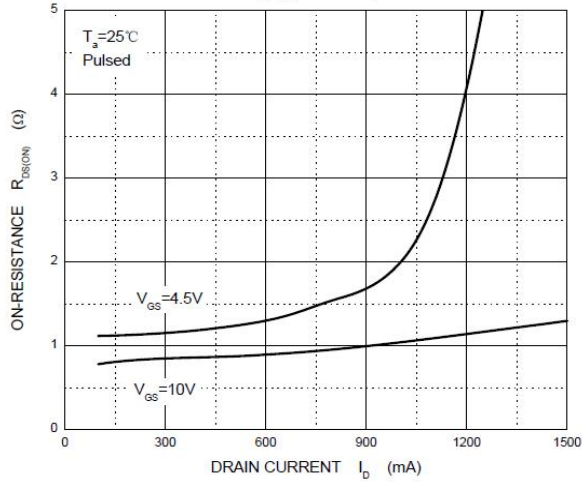
### Output Characteristics



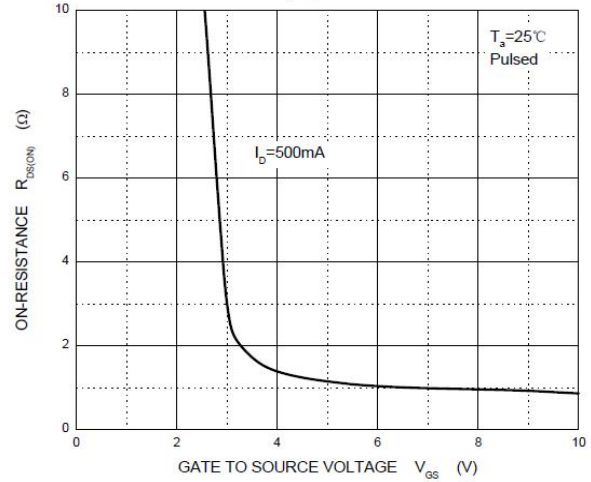
### Transfer Characteristics



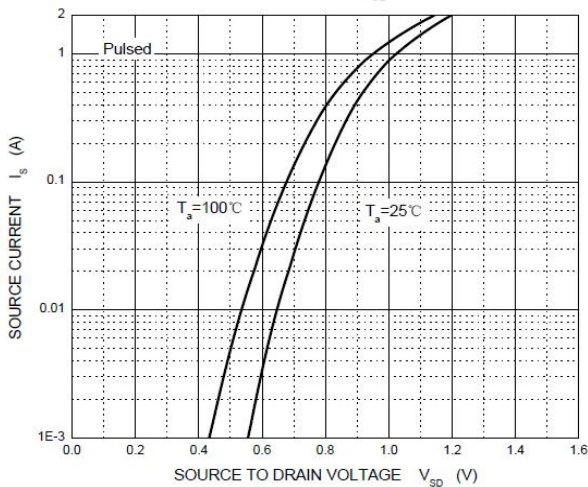
### $R_{DS(ON)}$ — $I_D$



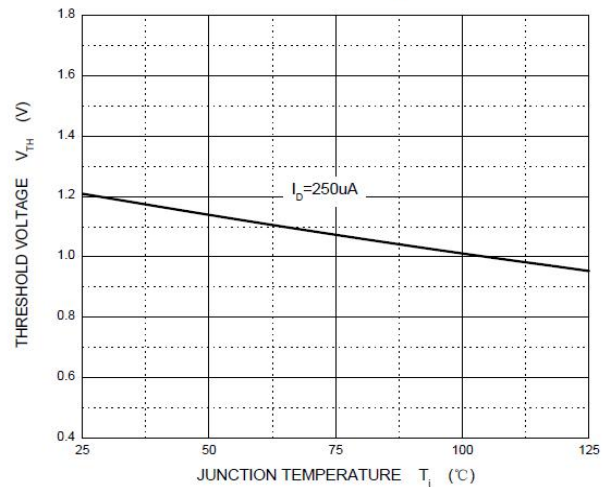
### $R_{DS(ON)}$ — $V_{GS}$



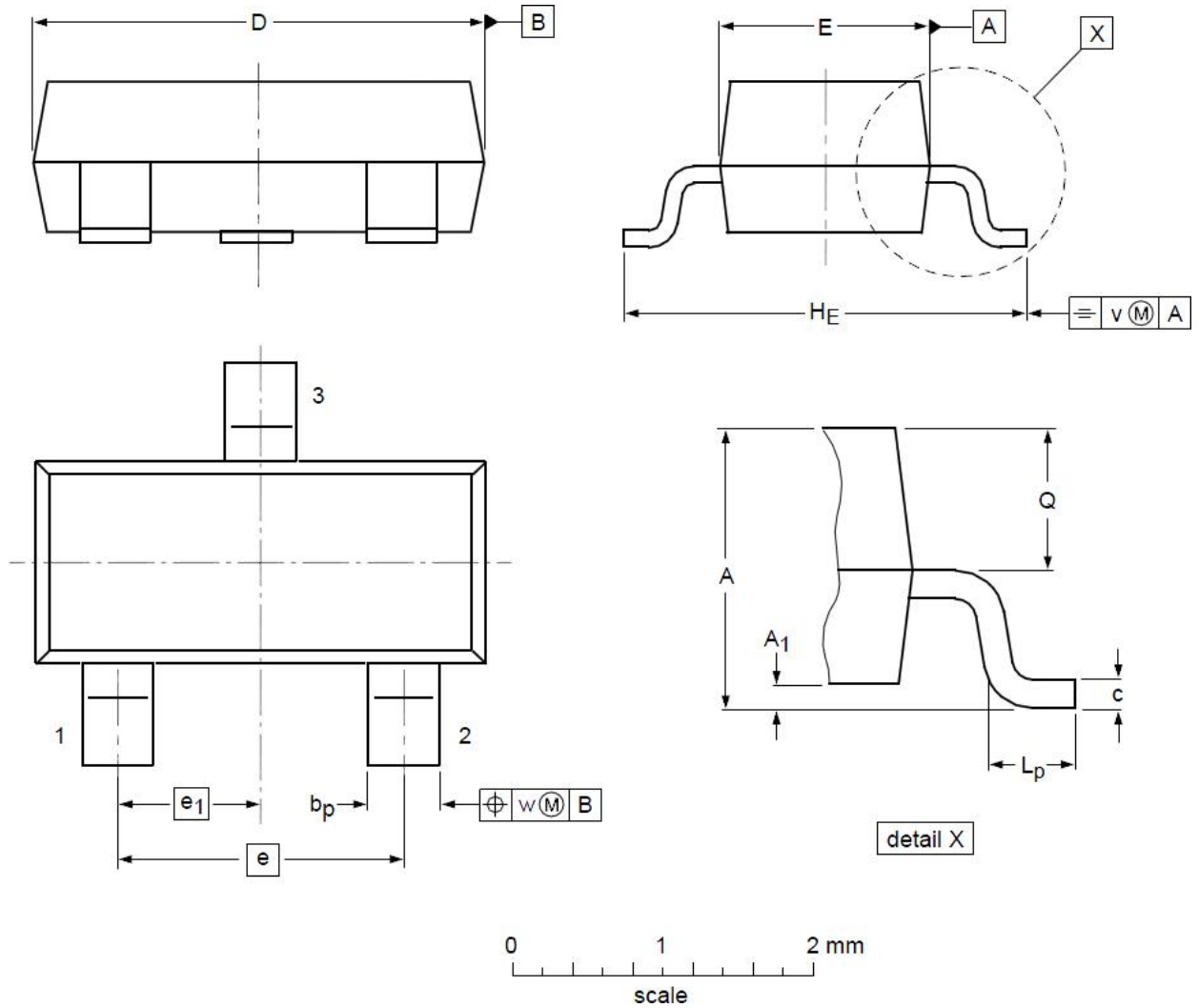
### $I_S$ — $V_{SD}$



### Threshold Voltage



## Package Mechanical Data-SOT-23



### DIMENSIONS ( unit : mm )

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
<b>A</b>	0.90	1.01	1.15	<b>A<sub>1</sub></b>	0.01	0.05	0.10
<b>b<sub>p</sub></b>	0.30	0.42	0.50	<b>c</b>	0.08	0.13	0.15
<b>D</b>	2.80	2.92	3.00	<b>E</b>	1.20	1.33	1.40
<b>e</b>	--	1.90	--	<b>e<sub>1</sub></b>	--	0.95	--
<b>H<sub>E</sub></b>	2.25	2.40	2.55	<b>L<sub>p</sub></b>	0.30	0.42	0.50
<b>Q</b>	0.45	0.49	0.55	<b>v</b>	--	0.20	--
<b>w</b>	--	0.10	--				


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