

• General Description

The AGM7N65D 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

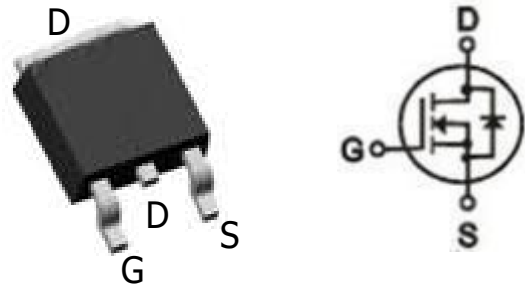
• Application

- Electronic Ballast
- Electronic Transformer
- Switch Mode Power Supply

Product Summary

BVDSS	RDSON	ID
650V	1.37 Ω	7A

TO-252 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM7N65D	AGM7N65D	TO-252	330mm	16mm	2500

Table 1. Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage ($V_{GS}=0V$)	650	V
VGS	Gate-Source Voltage ($V_{DS}=0V$)	± 30	V
ID	Drain Current-Continuous($T_c=25^\circ\text{C}$) (Note 1)	7	A
	Drain Current-Continuous($T_c=100^\circ\text{C}$)	2.8	A
IDM (pulse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	28	A
PD	Maximum Power Dissipation($T_c=25^\circ\text{C}$)	97	w
	Maximum Power Dissipation($T_c=100^\circ\text{C}$)	38.8	w
EAS	Avalanche energy (Note 3)	165	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
R θ JA	Thermal Resistance Junction-ambient (Steady State) ¹	---	60	$^\circ\text{C}/\text{W}$
R θ JC	Thermal Resistance Junction-Case ¹	---	1.29	$^\circ\text{C}/\text{W}$

Table 3. Electrical Characteristics (TC=25°C unless otherwise noted)

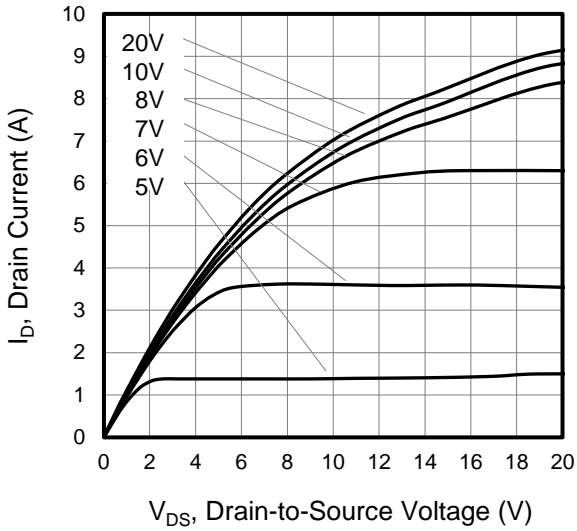
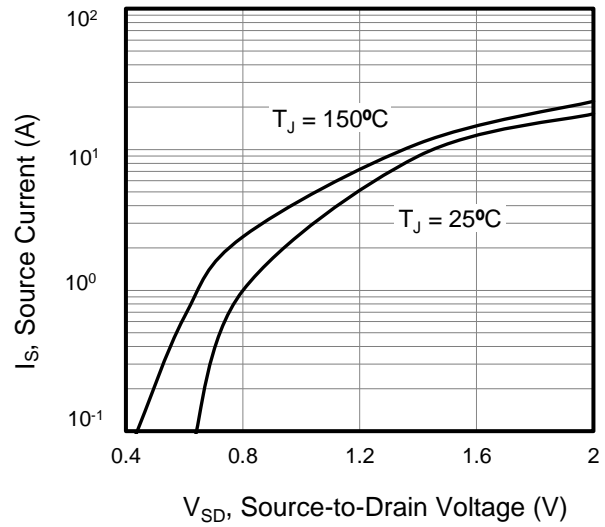
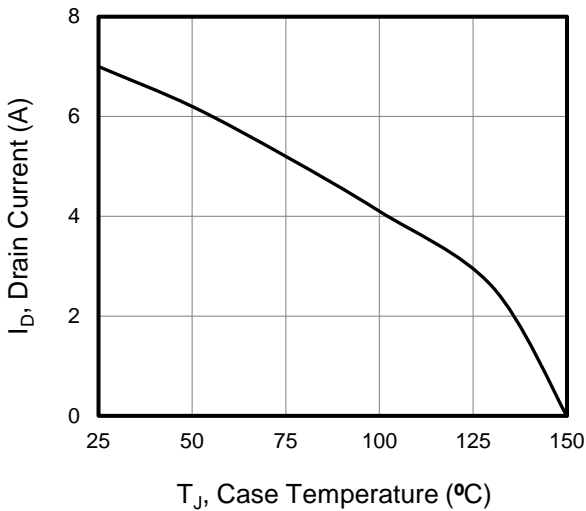
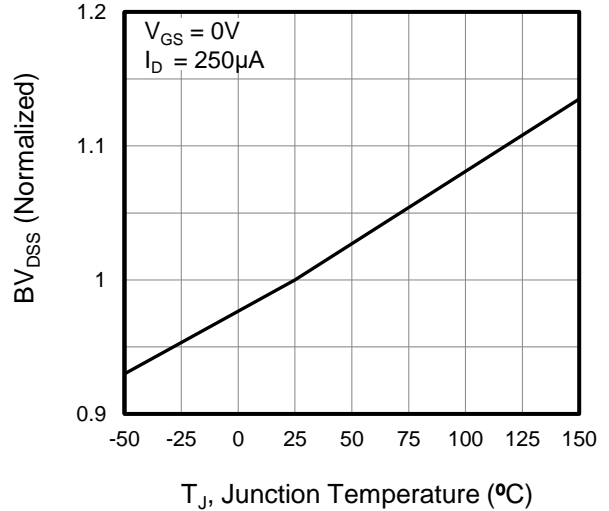
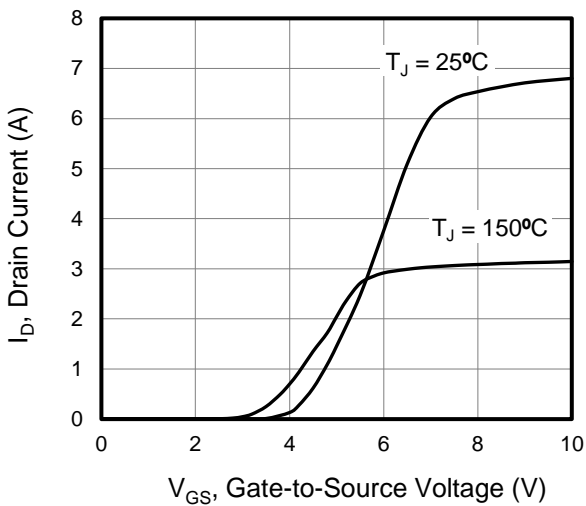
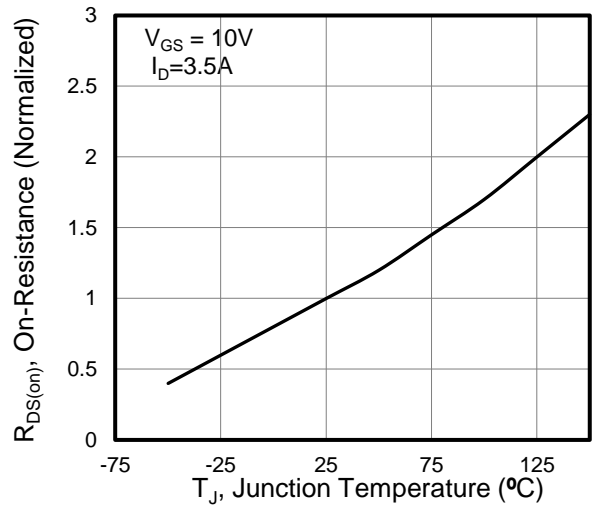
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	650	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=650V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±30V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	3.0	--	4.0	V
gFS	Forward Transconductance	VDS=15V,ID=3.5A	--	2.3	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=3.5A	--	1.37	1.52	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=25V,VGS=0V, F=1MHZ	--	891	--	pF
Coss	Output Capacitance		--	87	--	pF
Crss	Reverse Transfer Capacitance		--	10	--	pF
Switching Times						
td(on)	Turn-on Delay Time	VDD=325V, ID=7A,RGEN=25Ω	--	39	--	nS
tr	Turn-on Rise Time		--	23	--	nS
td(off)	Turn-Off Delay Time		--	137	--	nS
tf	Turn-Off Fall Time		--	60	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=520V, ID=7A	--	32	--	nC
Qgs	Gate-Source Charge		--	4.6	--	nC
Qgd	Gate-Drain Charge		--	14	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	7	A
VSD	Forward on Voltage	VGS=0V,ISD=3.5A	--	--	1.4	V
trr	Reverse Recovery Time	VDD=325V,IF=7A , dI/dt=100A/μs , TJ=25°C	--	575	--	ns
Qrr	Reverse Recovery Charge		--	1.9	--	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: TJ=25°C

Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

Figure 2. Body Diode Forward Voltage

Figure 3. Drain Current vs. Temperature

Figure 4. BV_{DSS} Variation vs. Temperature

Figure 5. Transfer Characteristics

Figure 6. On-Resistance vs. Temperature


Typical Characteristics $T_J = 25^\circ\text{C}$, unless otherwise noted

Figure 7. Capacitance

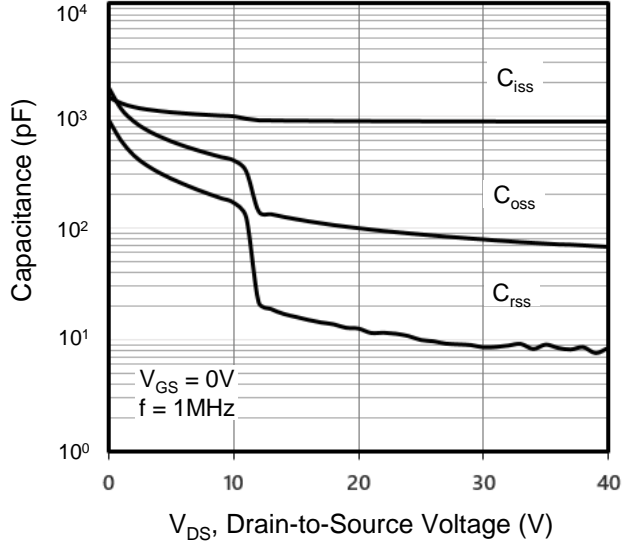


Figure 8. Gate Charge

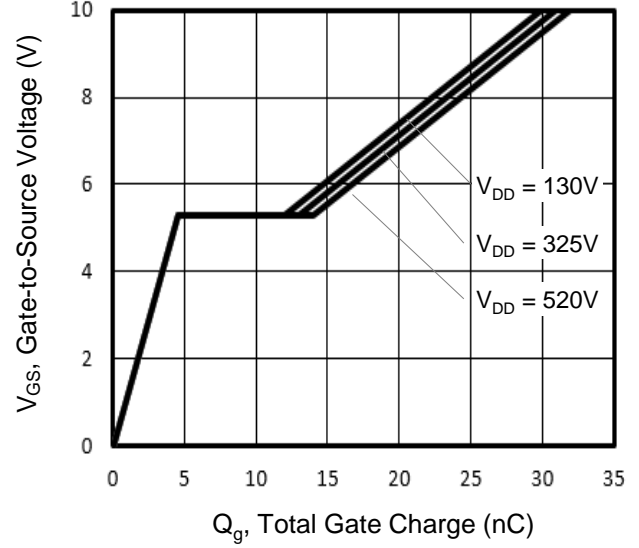


Figure 9. Transient Thermal Impedance

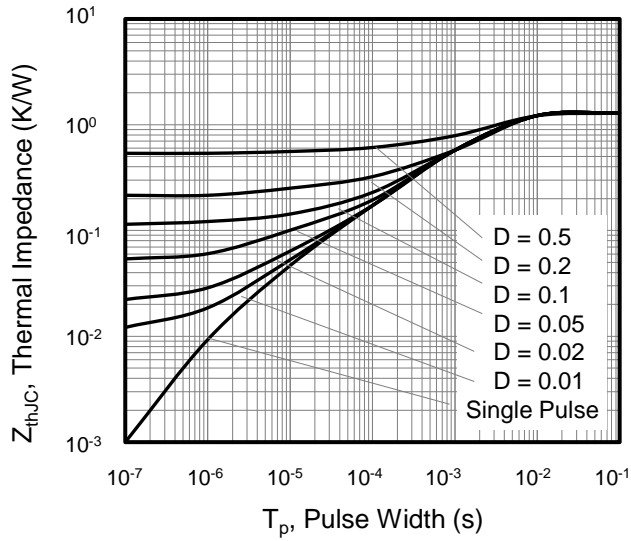
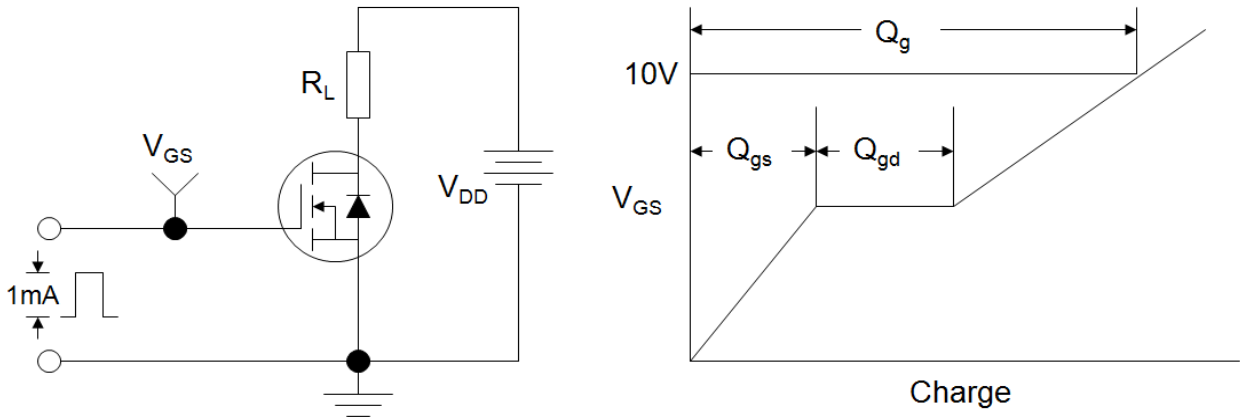
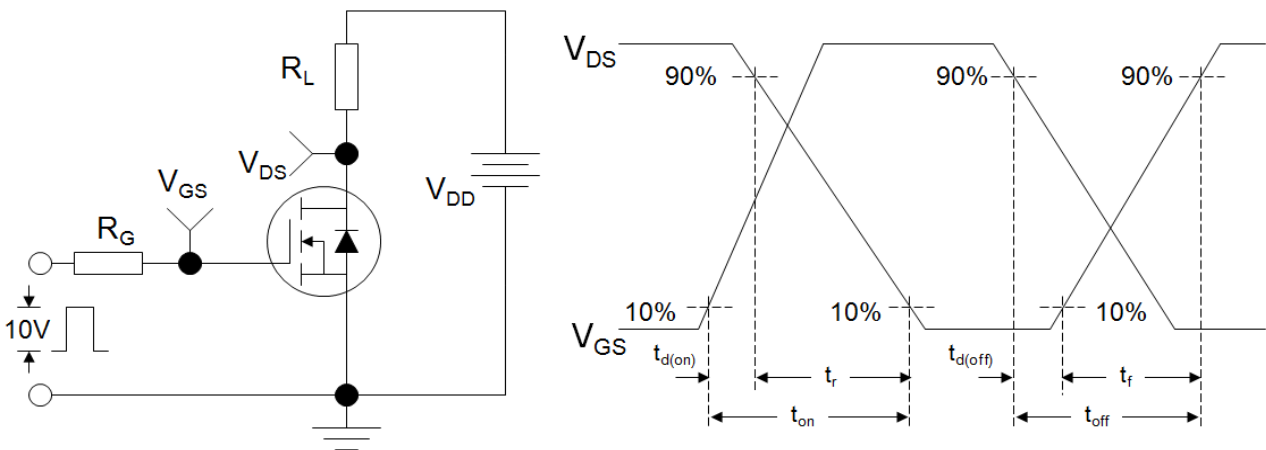
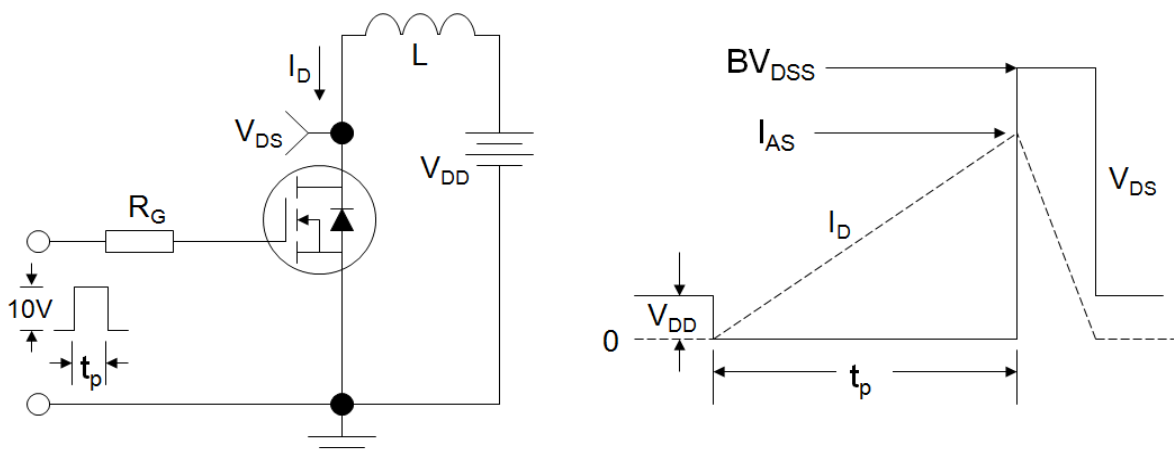
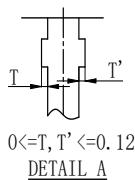
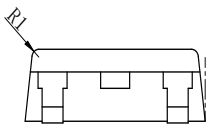
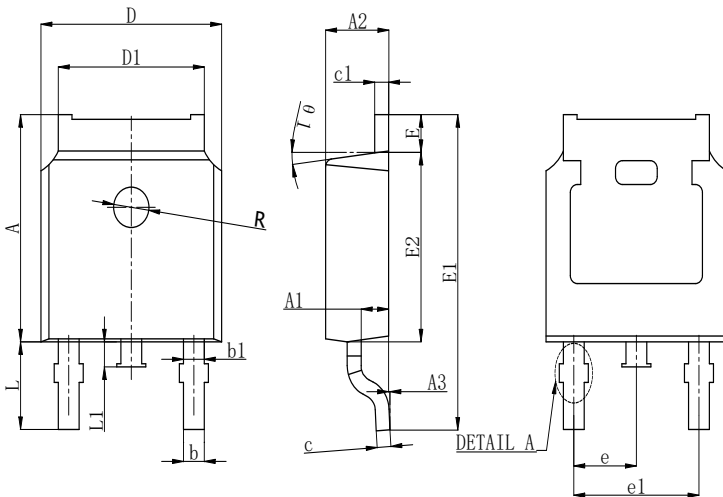
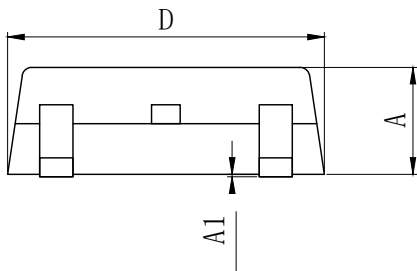
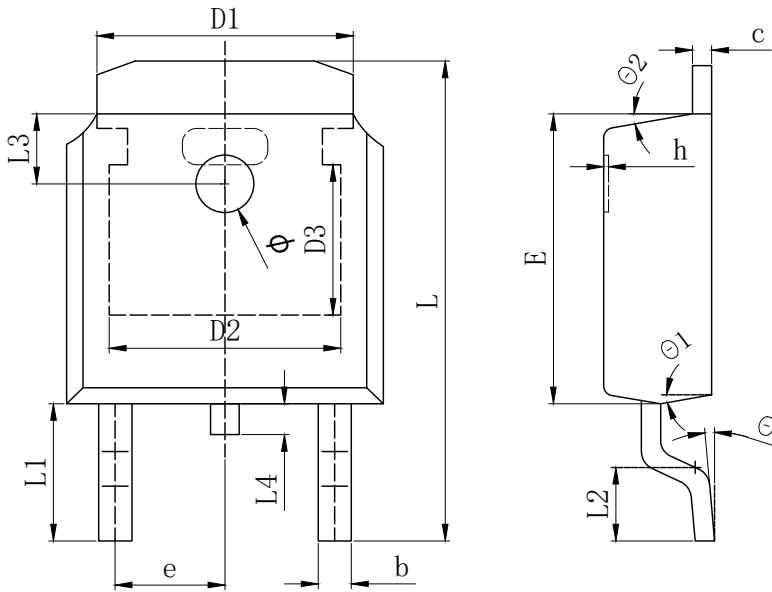


Figure A: Gate Charge Test Circuit and Waveform

Figure B: Resistive Switching Test Circuit and Waveform

Figure C: Unclamped Inductive Switching Test Circuit and Waveform


TO-252 Package Outline Data



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	7.050	7.100	7.150
A1	0.960	1.010	1.060
A2	2.250	2.300	2.350
A3	0.000	0.050	0.100
b	0.760REF.		
b1	1.000REF.		
c	0.508REF.		
c1	0.508REF.		
D	6.550	6.600	6.650
D1	5.220	5.320	5.420
E	0.950	1.000	1.050
E1	9.700	9.900	10.100
E2	6.050	6.100	6.150
e	2.286BSC		
e1	4.572REF.		
L	2.650	2.800	2.950
L1	0.700	0.800	0.900
θ 1	7° REF.		
R	1.300REF.		
R1	0.250REF.		


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