Description

Feature

- ◇ High Speed Power Switching, logic level
- ◇ Enhanced Body diode dv/dt capability
- ◇ Enhanced Avalanche Ruggedness
- ◇ Lead Free

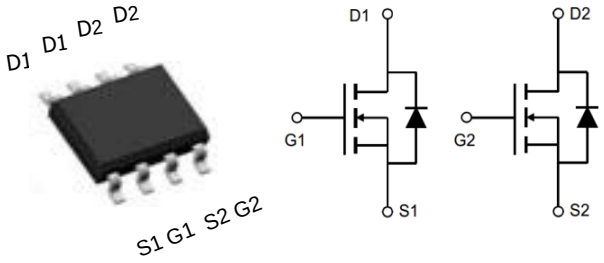
Application

- ◇ Synchronous Rectification in SMPS
- ◇ Hard Switching and High Speed Circuit
- ◇ Power Tools
- ◇ UPS
- ◇ Motor Control

Product Summary

BVDSS	RDSON	ID
40V	12mΩ	12A

SOP8 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM408M	AGM408M	SOP8	325mm	16mm	3000

Table 1. Absolute Maximum Ratings (T_A=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	40	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±20	V
I_D	Drain Current-Continuous(T_C=25℃) (Note 1)	12	A
	Drain Current-Continuous(T_C=100℃)	6.8	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 2)	32	A
P_D	Maximum Power Dissipation(T_C=25℃)	2	W
	Maximum Power Dissipation(T_C=100℃)	1.5	W
E_{AS}	Avalanche energy (Note 3)	25	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State)[1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	4.5	℃/W

Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	40			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V,V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.2	1.6	2.5	V
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=8A		33		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=8A		12	16	mΩ
		V_{GS}=4.5V, I_D=5A		18.9	26	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=20V,VGS=0V, F=1MHZ		961		pF
Coss	Output Capacitance			108		pF
Crss	Reverse Transfer Capacitance			96		pF
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V,f=1.0MHz		1.7		Ω
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DD}=20V, R_L=2.5Ω,R_{GEN}=3.3Ω		5.5		nS
t_r	Turn-on Rise Time			14		nS
$t_{d(off)}$	Turn-Off Delay Time			24		nS
t_f	Turn-Off Fall Time			12		nS
Q_g	Total Gate Charge	V_{DS}=20V,I_D=8A, V_{GS}=10V		22		nC
Q_{gs}	Gate-Source Charge			3.5		nC
Q_{gd}	Gate-Drain Charge			5.3		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)				11	A
V_{SD}	Forward on Voltage	V_{GS}=0V,I_S=9A			1.2	V
trr	Reverse Recovery Time	IF=-15A , dI/dt=100A/μs , ·TJ=25℃			19	ns
Q_{rr}	Reverse Recovery Charge				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: T_J=25℃,VDD=15V,V_G=10V, RG=25Ω

N- Channel Typical Electrical and Thermal Characteristics (Curves)

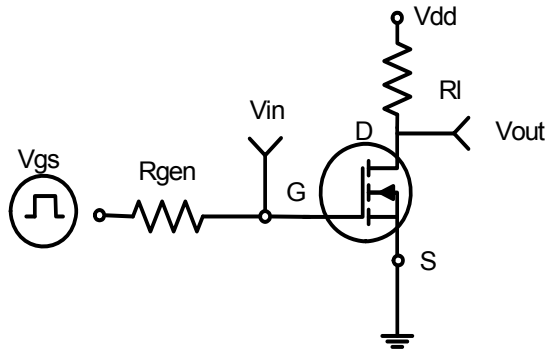


Figure 1:Switching Test Circuit

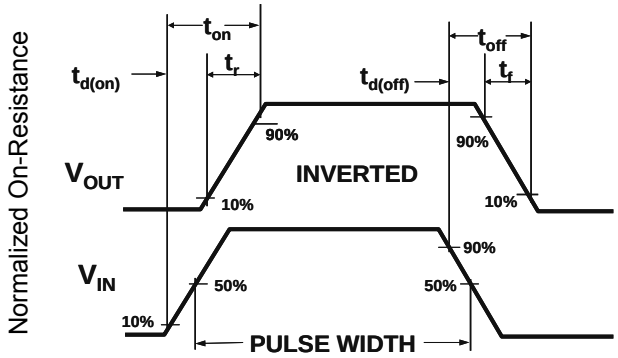


Figure 2:Switching Waveforms

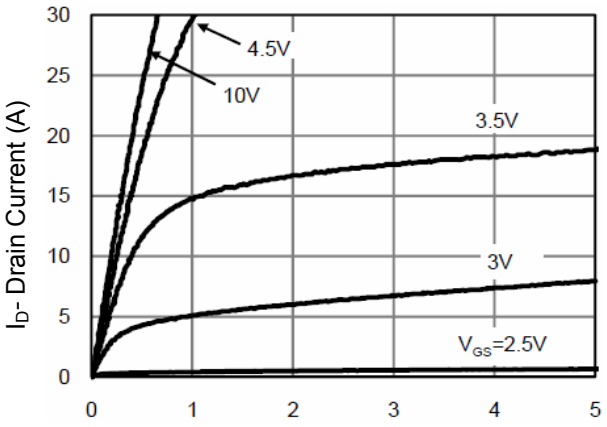


Figure 3 Output Characteristics

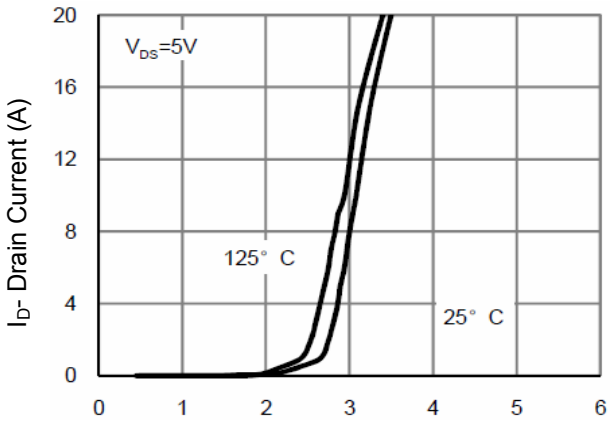


Figure 4 Transfer Characteristics

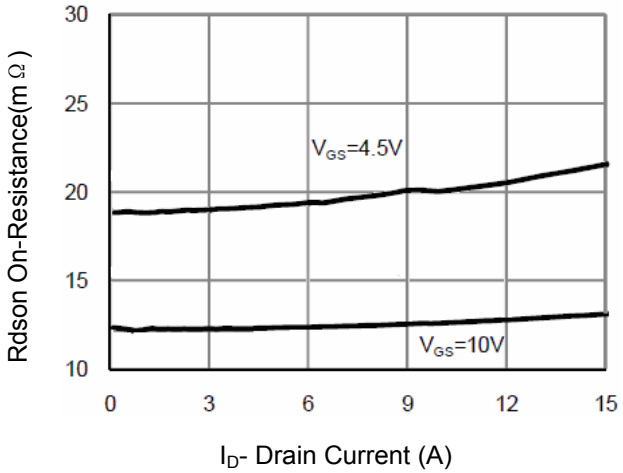


Figure 5 Drain-Source On-Resistance

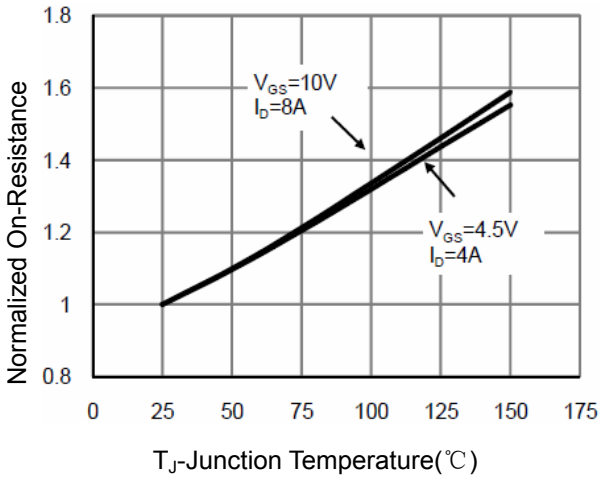


Figure 6 Drain-Source On-Resistance

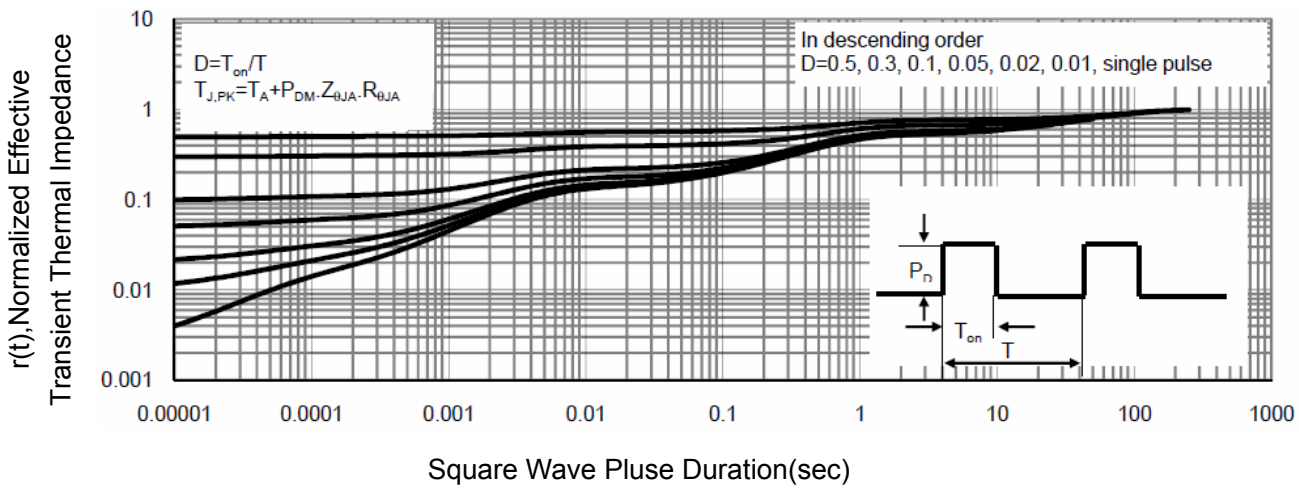
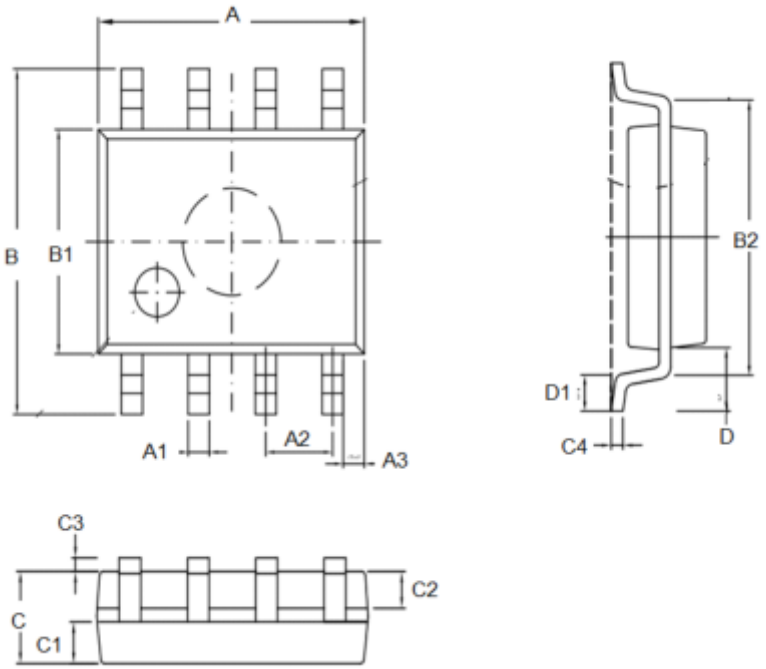


Figure 13 Normalized Maximum Transient Thermal Impedance

●Dimensions(SOP8)

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62



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