

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

**Product Summary**

BVDSS	RDSON	ID
-30V	11mΩ	-23A

**PRPAK3.3X3.3 Pin Configuration**

**Description**

AGM30P10AP is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

**Package Marking and Ordering Information**

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM30P10AP	AGM30P10AP	DFN3.3*3.3	--mm	--mm	5000

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

Symbol	Parameter	Value	Unit
V <sub>DS</sub>	Drain-Source Voltage (V <sub>GS</sub> =0V)	-30	V
V <sub>GS</sub>	Gate-Source Voltage (V <sub>DS</sub> =0V)	±20	V
I <sub>D</sub>	Drain Current-Continuous(T <sub>c</sub> =25°C) (Note 1)	-23	A
	Drain Current-Continuous(T <sub>c</sub> =100°C)	-19	A
I <sub>DM (pulse)</sub>	Drain Current-Continuous@ Current-Pulsed (Note 2)	-62	A
P <sub>D</sub>	Maximum Power Dissipation(T <sub>c</sub> =25°C)	37	W
	Maximum Power Dissipation(T <sub>c</sub> =100°C)	27	W
E <sub>AS</sub>	Avalanche energy (Note 3)	75	mJ
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 To 150	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	70	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-Case <sup>1</sup>	---	3.4	°C/W

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

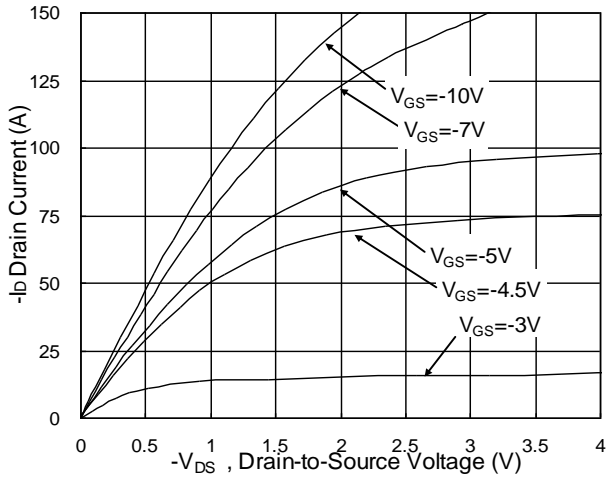
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	-30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V			-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.3	2.1	V
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-20A		30		S
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-20A		11	13.9	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-15A				mΩ
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, F=1MHZ		1380		pF
C <sub>oss</sub>	Output Capacitance			310		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			237		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1.0MHz		9		Ω
<b>Switching Times</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =-10V, V <sub>DD</sub> =-15V, I <sub>D</sub> =-15A, R <sub>GEN</sub> =3.3Ω		8		nS
t <sub>r</sub>	Turn-on Rise Time			73		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			61.8		nS
t <sub>f</sub>	Turn-Off Fall Time			24.4		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-25V, I <sub>D</sub> =-12A		22		nC
Q <sub>gs</sub>	Gate-Source Charge			8.7		nC
Q <sub>gd</sub>	Gate-Drain Charge			7.2		nC
<b>Source-Drain Diode Characteristics</b>						
I <sub>s</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current			-23	A
V <sub>SD</sub>	Forward on Voltage	V <sub>GS</sub> =0V, I <sub>s</sub> =-1A			1.0	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> =-15A, dI/dt=100A/μs, ·T <sub>J</sub> =25°C			19	ns
Q <sub>rr</sub>	Reverse Recovery Charge					9

Notes 1.The maximum current rating is package limited.

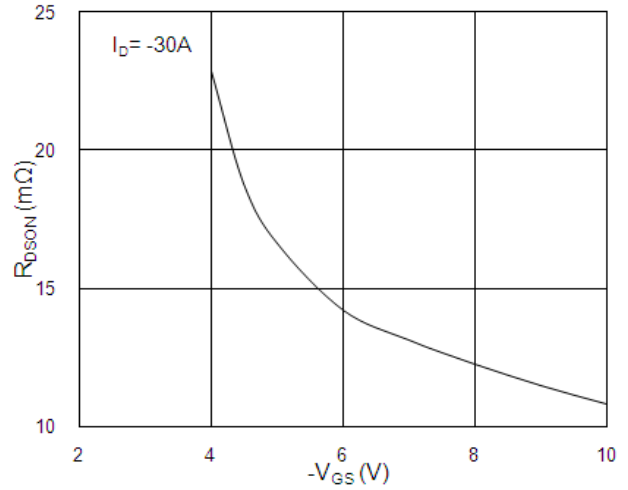
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=15V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω

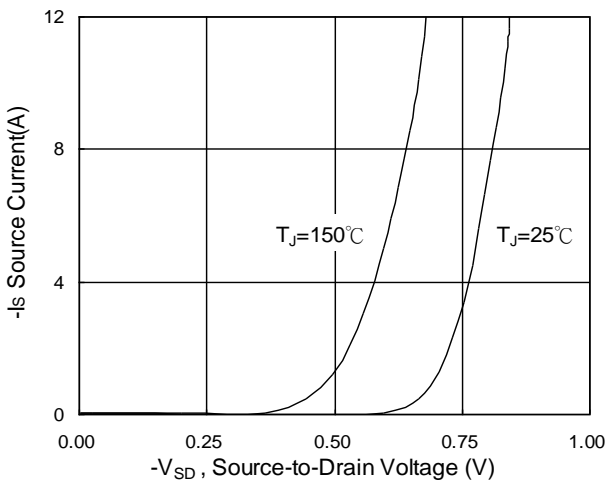
**Typical Characteristics**



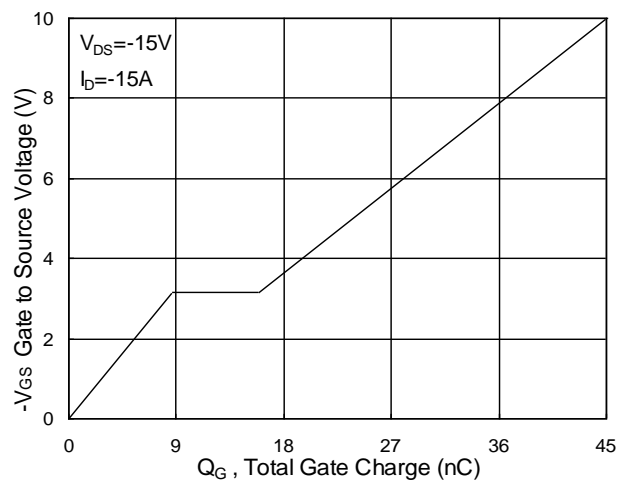
**Fig.1 Typical Output Characteristics**



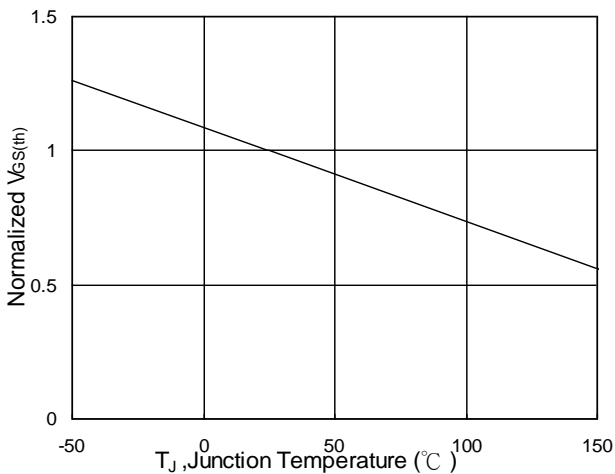
**Fig.2 On-Resistance vs. G-S Voltage**



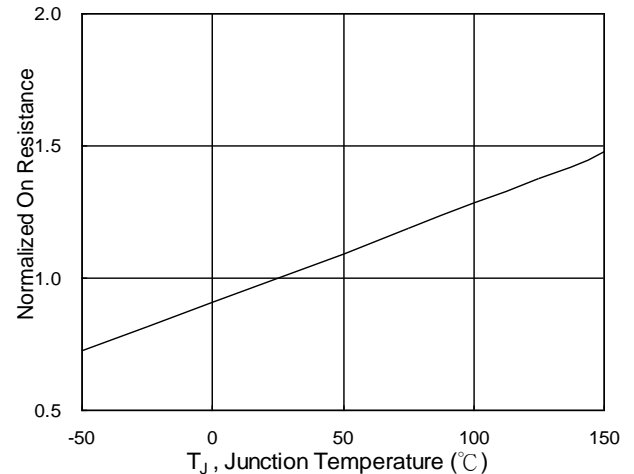
**Fig.3 Forward Characteristics of Reverse**



**Fig.4 Gate-Charge Characteristics**



**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$**



**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

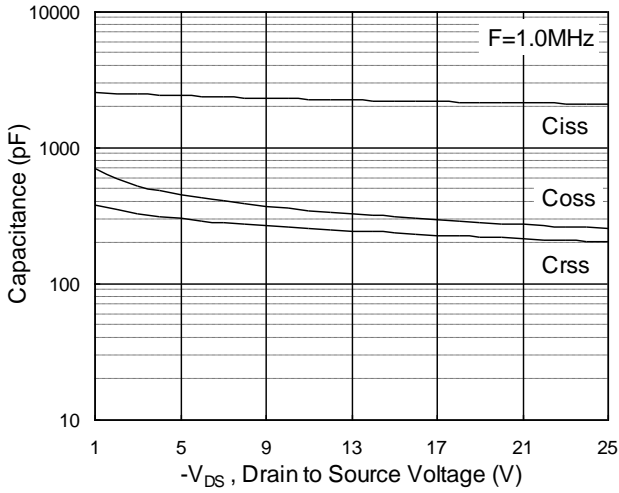


Fig.7 Capacitance

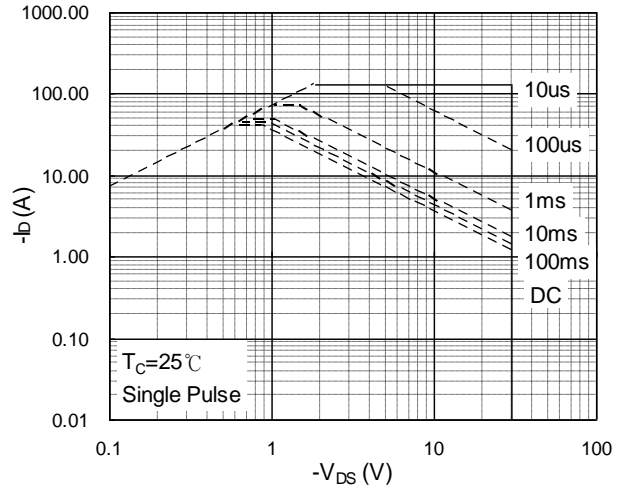


Fig.8 Safe Operating Area

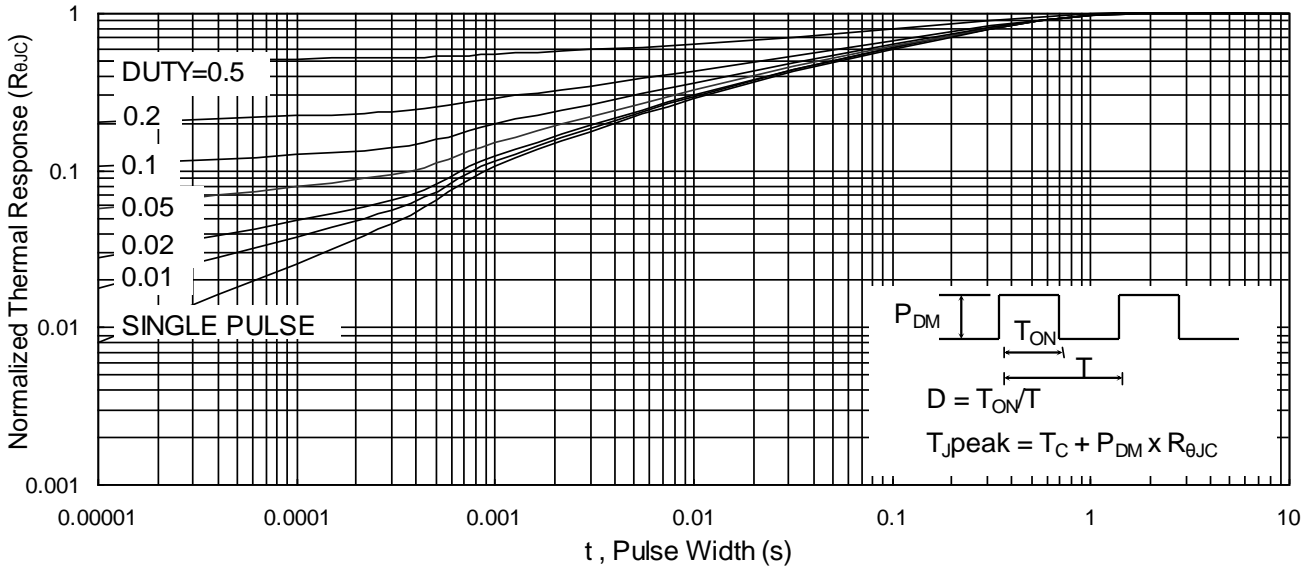


Fig.9 Normalized Maximum Transient Thermal Impedance

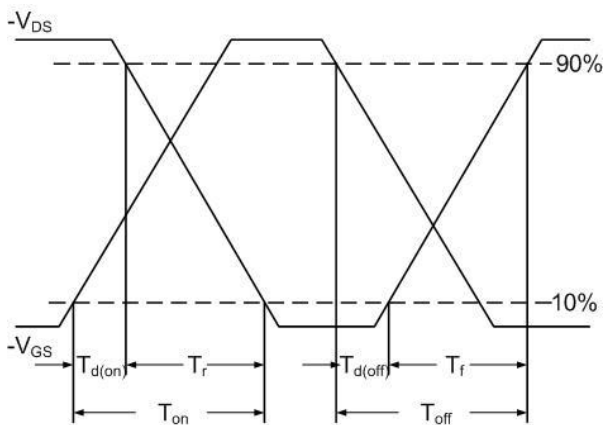


Fig.10 Switching Time Waveform

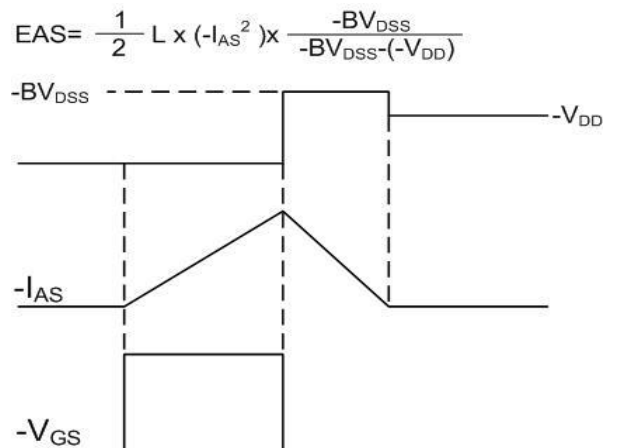
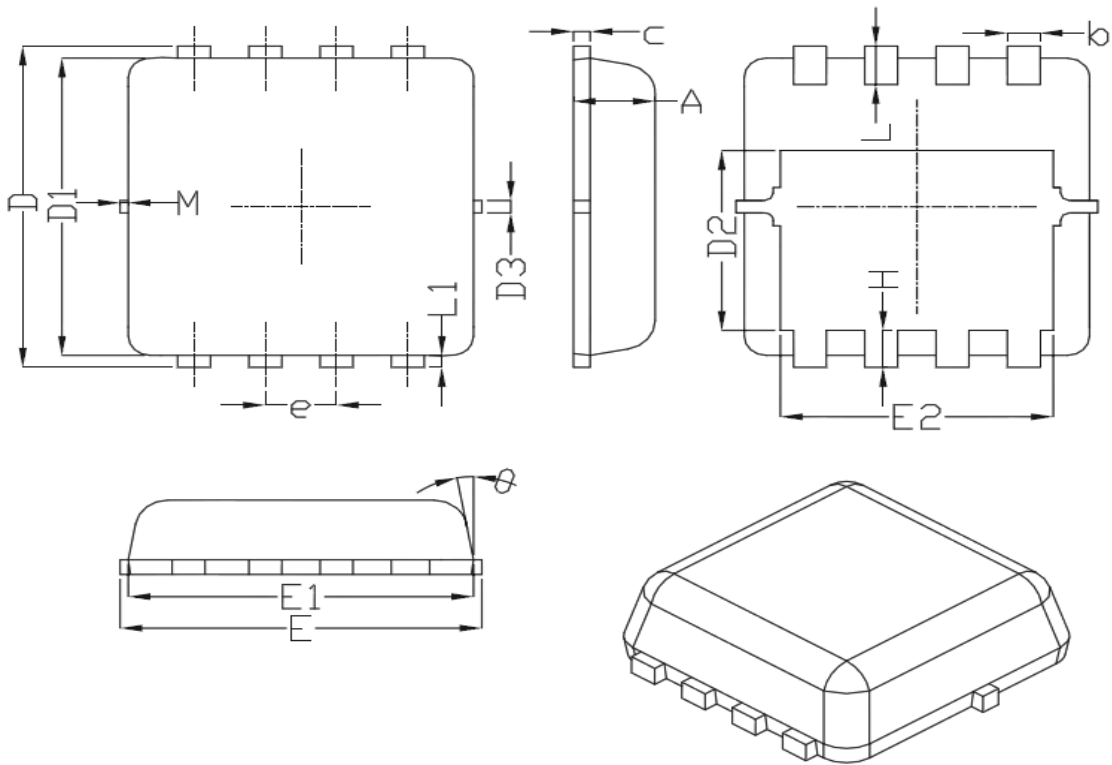


Fig.11 Unclamped Inductive Switching Waveform

**PDFN3333 Package Outline Data**

**DIMENSIONS ( unit : mm )**

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
<b>A</b>	0.70	0.75	0.80	<b>b</b>	0.25	0.30	0.35
<b>C</b>	0.10	0.15	0.25	<b>D</b>	3.25	3.35	3.45
<b>D1</b>	3.00	3.10	3.20	<b>D2</b>	1.78	1.88	1.98
<b>D3</b>	--	0.13	--	<b>E</b>	3.20	3.30	3.40
<b>E1</b>	3.00	3.15	3.20	<b>E2</b>	2.39	2.49	2.59
<b>e</b>	0.65BSC			<b>H</b>	0.30	0.39	0.50
<b>L</b>	0.30	0.40	0.50	<b>L1</b>	--	0.13	--
<b>θ</b>	--	10°	12°	<b>M</b>	*	*	0.15

\*Not specified

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