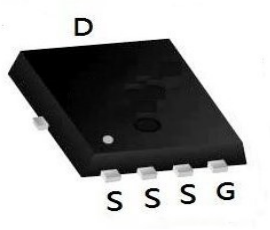
● General Description

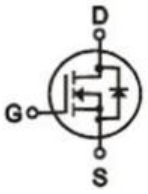
★ 100% EAS Guaranteed
★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ Level: MSL1
★ IEC 61249 standard

Product Summary

BVDSS	RDSON	ID
120V	5.5mΩ	100A

PRPAK5X6 Pin Configuration





● Features

AGM12T05A designed by the trench processing techniques to achieve extremely low on-resistance. Additional features of this design are a 175°C junction operating temperature, fast switching speed and improved repetitive avalanche rating . These features combine to make this design an extremely efficient and reliable device for use in Motor applications and a wide variety of other applications.

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM12T05A	AGM12T05A	DFN5*6	---mm	---mm	3000

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	120	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	+20 / -20	V
I_D	Drain Current-Continuous(Tc=25℃) (Note 1)	100	A
	Drain Current-Continuous(Tc=100℃)	63	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	400	A
P_D	Maximum Power Dissipation(Tc=25℃)	150	W
	Maximum Power Dissipation(Tc=100℃)	1.7	W
E_{AS}	Avalanche energy (Note 3)	240	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State)1	---	63	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	1	℃/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	120			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,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}=10V,I_D=10A		10		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A		5.5	7.0	mΩ
		V_{GS}=4.5V, I_D=15A		7.5	10	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=60V,VGS=0V, F=1MHZ		3200		pF
Coss	Output Capacitance			840		pF
Crss	Reverse Transfer Capacitance			31		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[3,4]	V_{GS}=10V, V_{DD}=50V, ID=1A,R_G=3.3Ω		20		nS
t_r	Turn-on Rise Time[3,4]			13		nS
$t_{d(off)}$	Turn-Off Delay Time			36		nS
t_f	Turn-Off Fall Time			18		nS
Q_g	Total Gate Charge	V_{GS}=60V, V_{DS}=10V, I_D=20A		88		nC
Q_{gs}	Gate-Source Charge			10		nC
Q_{gd}	Gate-Drain Charge			24		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)				100	A
V_{SD}	Forward on Voltage	V_{GS}=0V,I_S=20A			1	V
trr	Reverse Recovery Time	IF=-15A , dI/dt=100A/μs , ·TJ=25°C			43	ns
Q_{rr}	Reverse Recovery Charge				88	nc

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V,V_{GS}=10V,L=0.1mH,I_{AS}=55A.,R_G=25Ω,Starting T_J=25°C.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

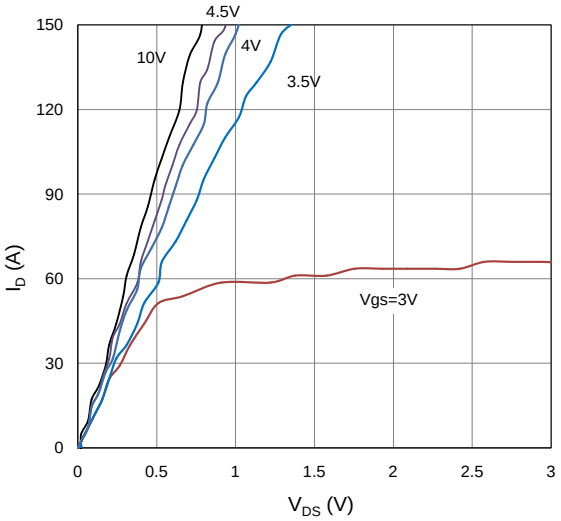


Fig.1 Typical Output Characteristics

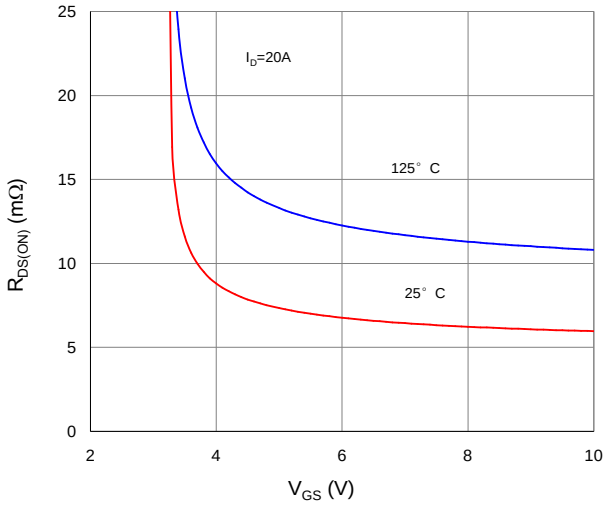


Fig.2 On-Resistance vs. Gate-Source Voltage

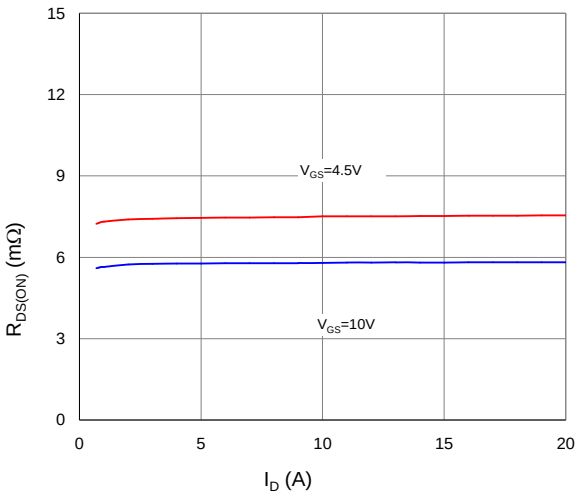


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

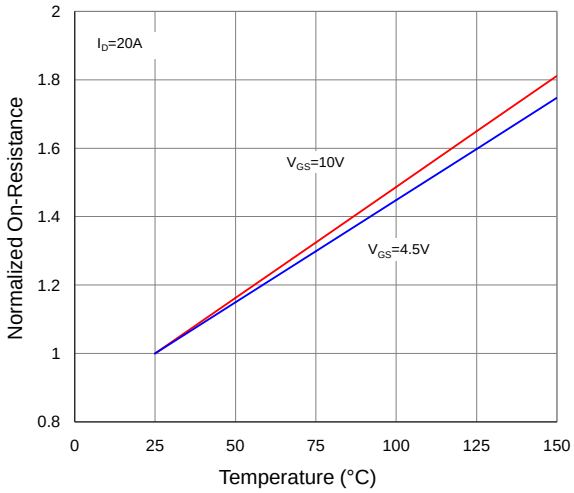


Fig.4 Normalized On-Resistance vs. Junction Temperature

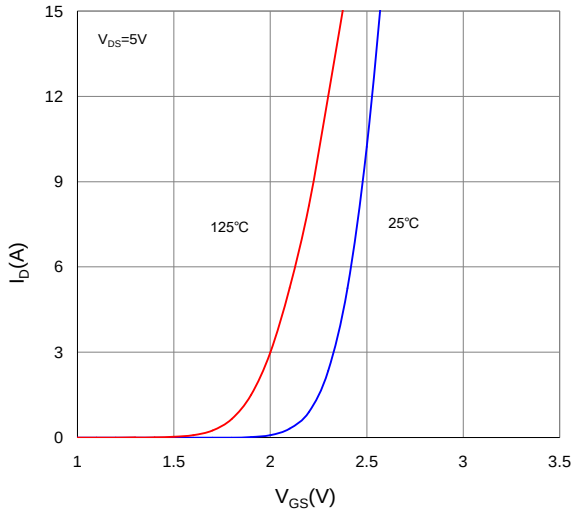


Fig.5 Typical Transfer Characteristics

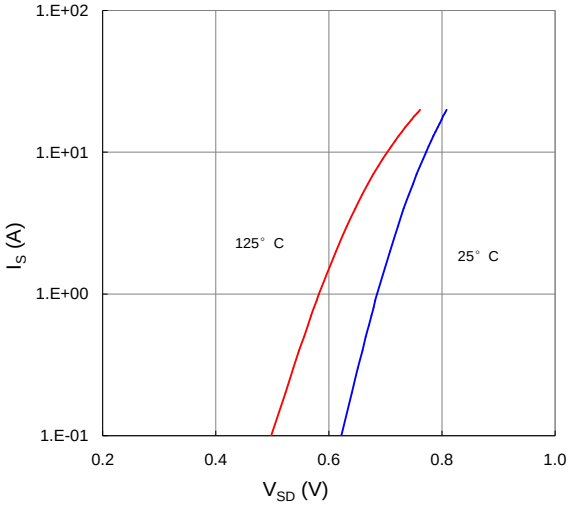


Fig.6 Typical Source-Drain Diode Forward Voltage

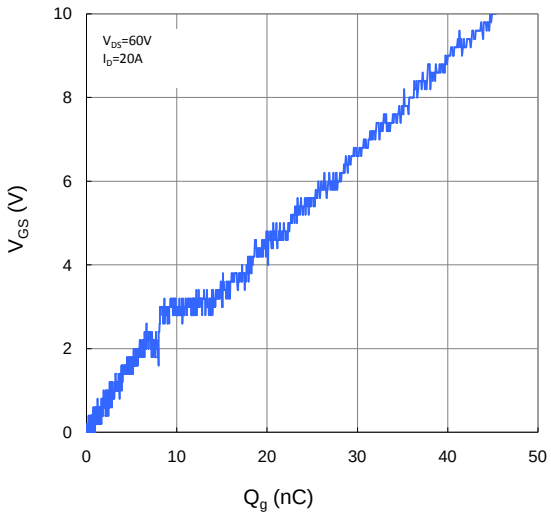


Fig.7 Typical Gate-Charge vs. Gate-to-Source Voltage

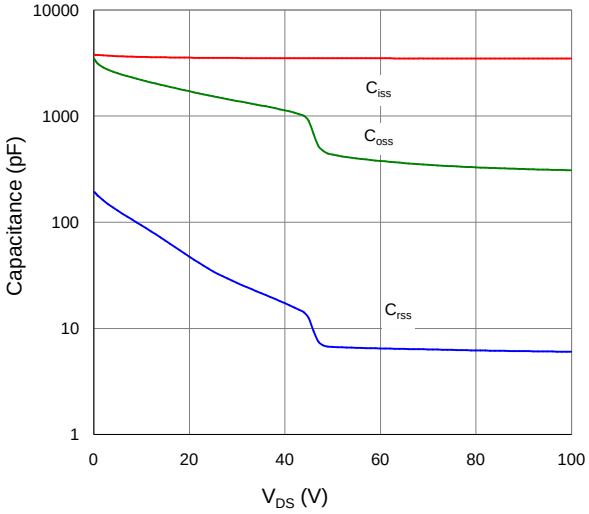


Fig.8 Typical Capacitance vs. Drain-to-Source Voltage

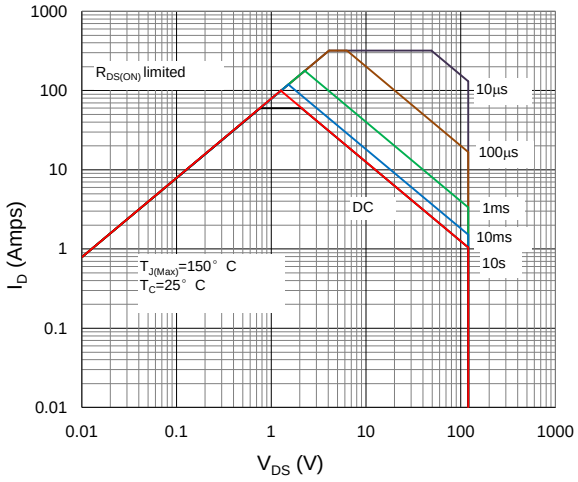


Fig.9 Maximum Safe Operating Area

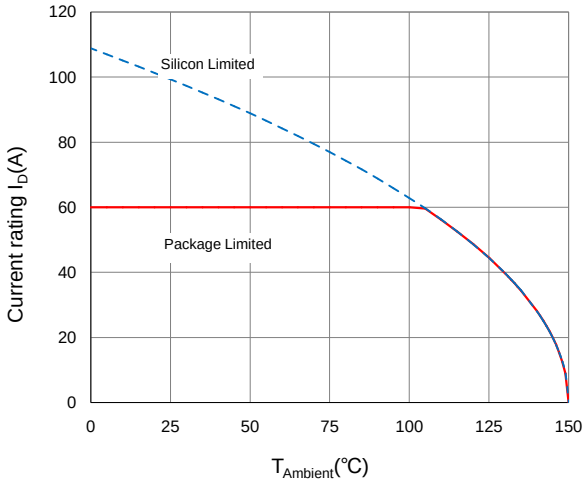


Fig.10 Maximun Drain Current vs. Case Temperature

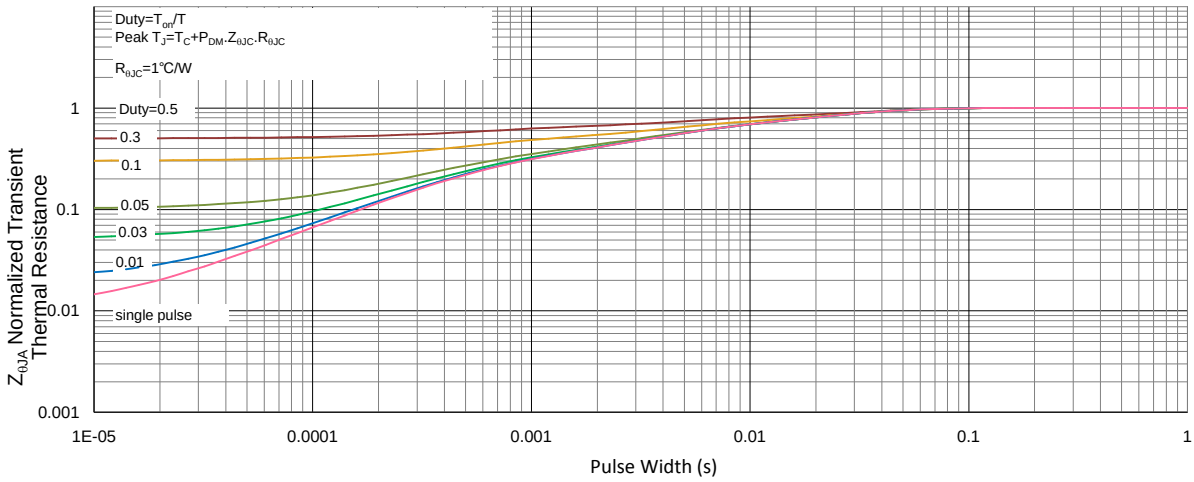
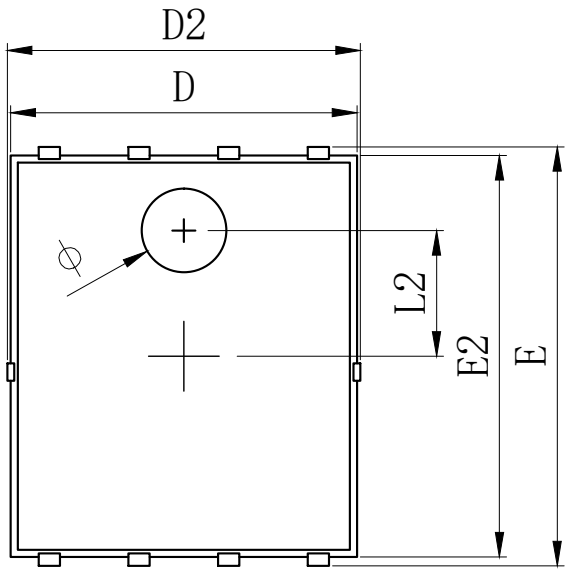
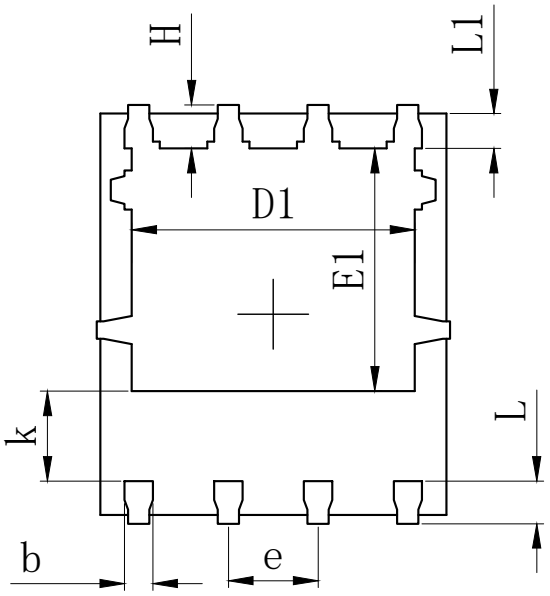
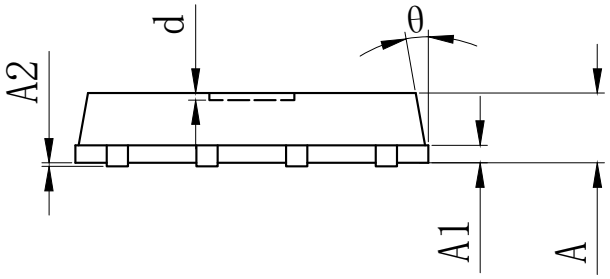


Fig.11 Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient







SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100

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