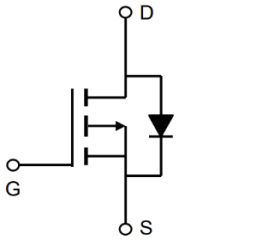
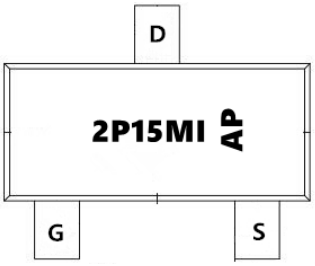
AP2P15MI

-150V P-Channel Enhancement Mode MOSFET

Description

The AP2P15MI uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.





Top View Bottom View

General Features

V_{DS} = -150V I_D =-2.7A

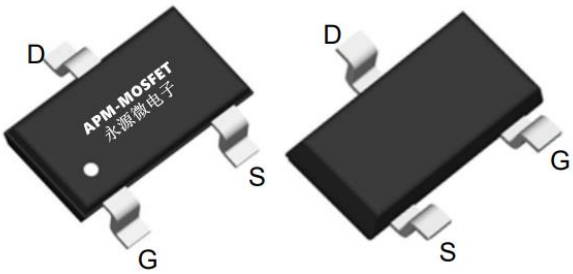
$R_{DS(ON)}$ < 780mΩ @ V_{GS}=10V **(Type：620mΩ)**

Application

Brushless motor

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP2P15MI	SOT-23-3L	AP2P15MI XXX YYYY	3000

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-150	V
VGS	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, -V_{GS} @ -10V[1]	-2.7	A
I_D@T_A=70℃	Continuous Drain Current, -V_{GS} @ -10V[1]	-1.8	A
IDM	Pulsed Drain Current[2]	-8.5	A
EAS	Single Pulse Avalanche Energy[3]	56.5	mJ
IAS	Avalanche Current	5	A
P_D@T_A=25℃	Total Power Dissipation[4]	2	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	125	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	40	℃/W

P-Channel Electrical Characteristics (TJ =25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	VGS=0V , ID=-250uA	-150	-168	---	V
RDS(ON)	Static Drain-Source On-Resistance	VGS=-10V , ID=-1A	---	620	780	mΩ
RDS(ON)	Static Drain-Source On-Resistance	VGS=-6V , ID=-0.5A	---	700	980	
VGS(th)	Gate Threshold Voltage	VGS=VDS , ID =-250uA	-2.0	-3.0	-4.0	V
IDSS	Drain-Source Leakage Current	VDS=120V ,VGS=0V ,TJ=25℃	---	---	1	uA
IDSS	Drain-Source Leakage Current	VDS=120V ,VGS=0V ,TJ=85℃	---	---	30	uA
IGSS	Gate-Source Leakage Current	VGS=±20V , VDS=0V	---	---	±100	nA
Rg	Gate Resistance	VDS=0V , VGS=0V , f=1MHz	---	12	---	Ω
Qg	Total Gate Charge	VDS=-75V , VGS=-10V , ID=-1A	---	10.8	---	nC
Qgs	Gate-Source Charge		---	3.1	---	nC
Qgd	Gate-Drain Charge		---	2.2	---	nC
Td(on)	Turn-On Delay Time	VDD=-30V , VGS=-10V , RG=6Ω, ID=-1A	---	21	---	ns
Tr	Rise Time		---	16	---	ns
Td(off)	Turn-Off Delay Time		---	40	---	ns
Tf	Fall Time		---	18	---	ns
Ciss	Input Capacitance	VDS=-75V , VGS=0V , f=1MHz	---	706	---	pF
Coss	Output Capacitance		---	23	---	pF
Crss	Reverse Transfer Capacitance		---	13	---	pF

Note :
1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3、The power dissipation is limited by 150℃ junction temperature
4、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

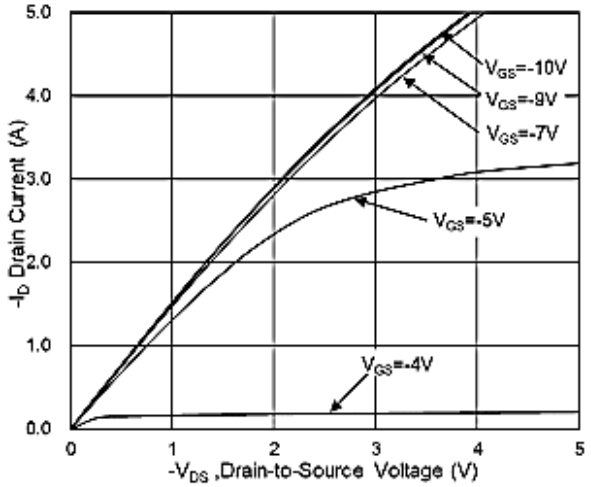


Fig.1 Typical Output Characteristics

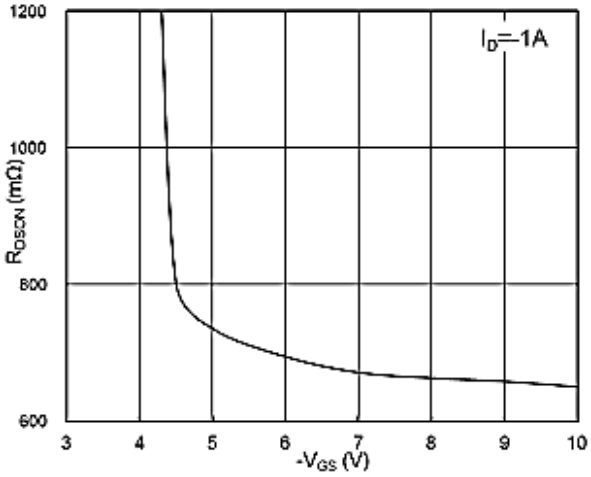


Fig.2 On-Resistance vs G-S Voltage

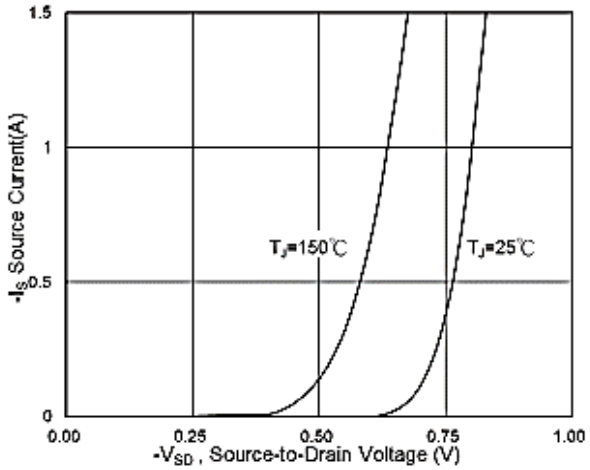


Fig.3 Source Drain Forward Characteristics

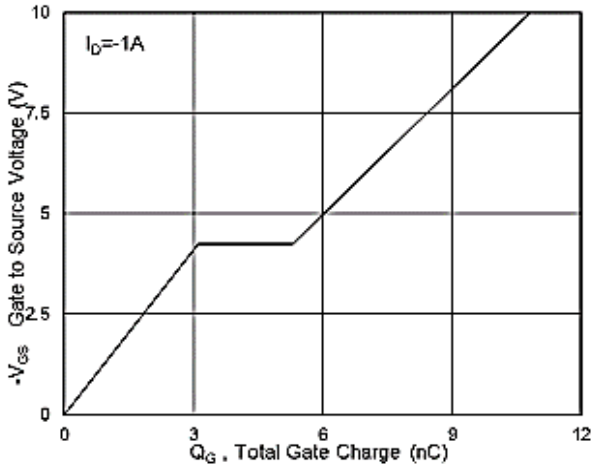


Fig.4 Gate-Charge Characteristics

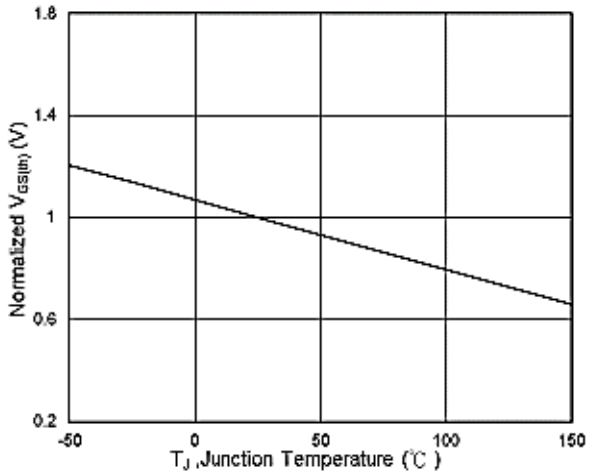


Fig.5 Normalized $V_{GS(th)}$ vs T_J

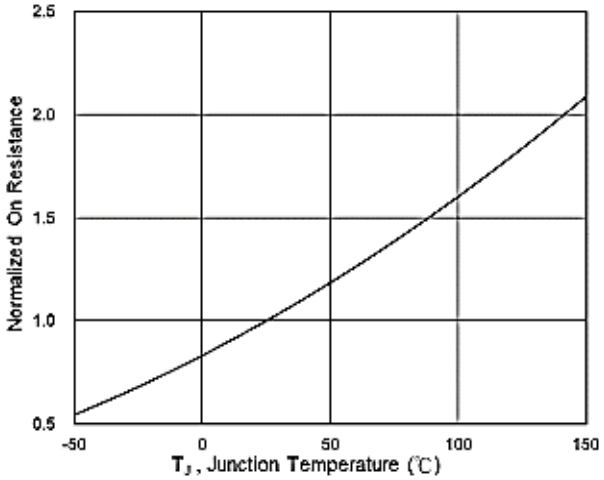


Fig.6 Normalized R_{DSON} vs T_J

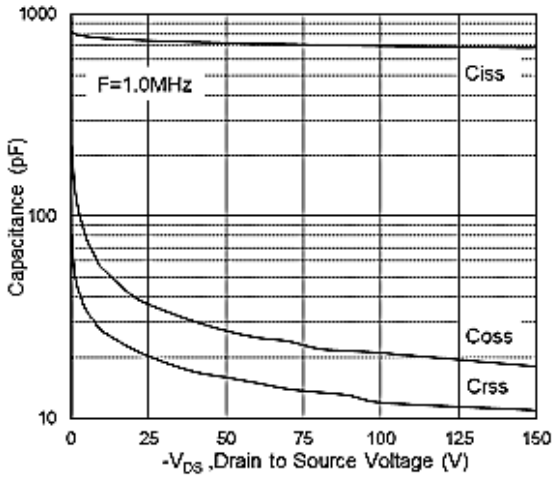


Fig.7 Capacitance

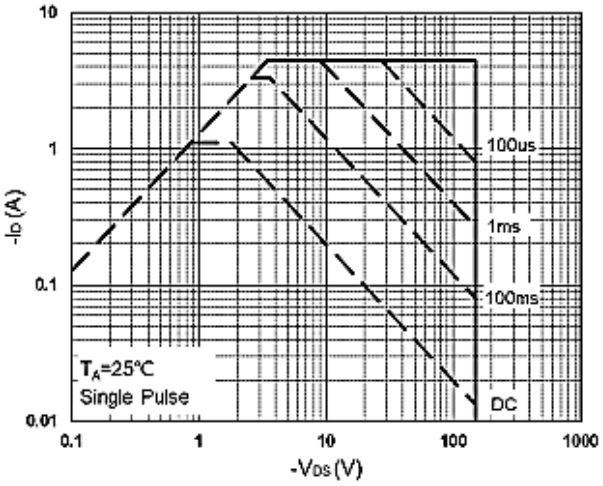


Fig.8 Safe Operating Area

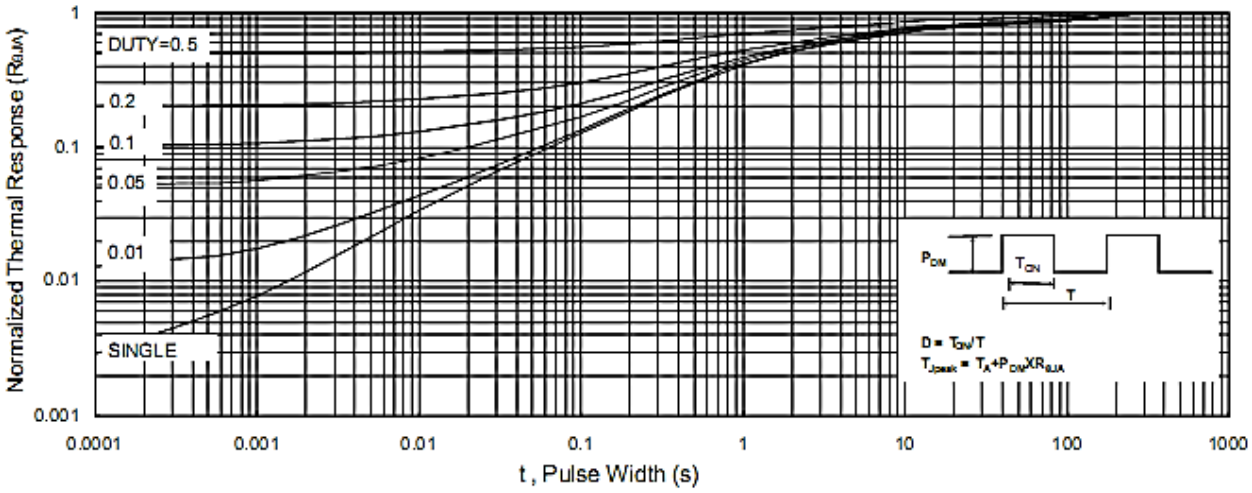


Fig.9 Normalized Maximum Transient Thermal Impedance

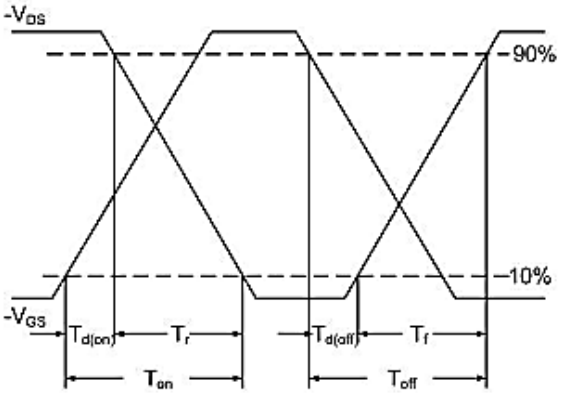


Fig.10 Switching Time Waveform

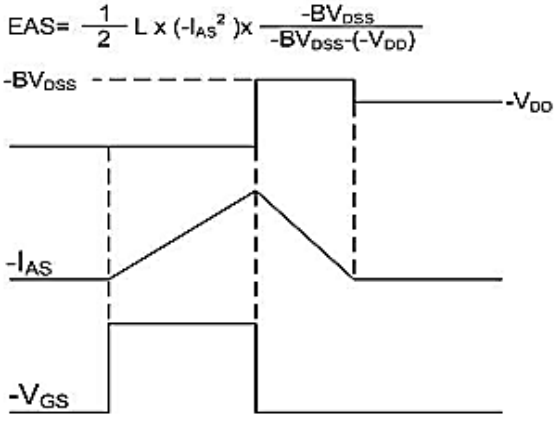
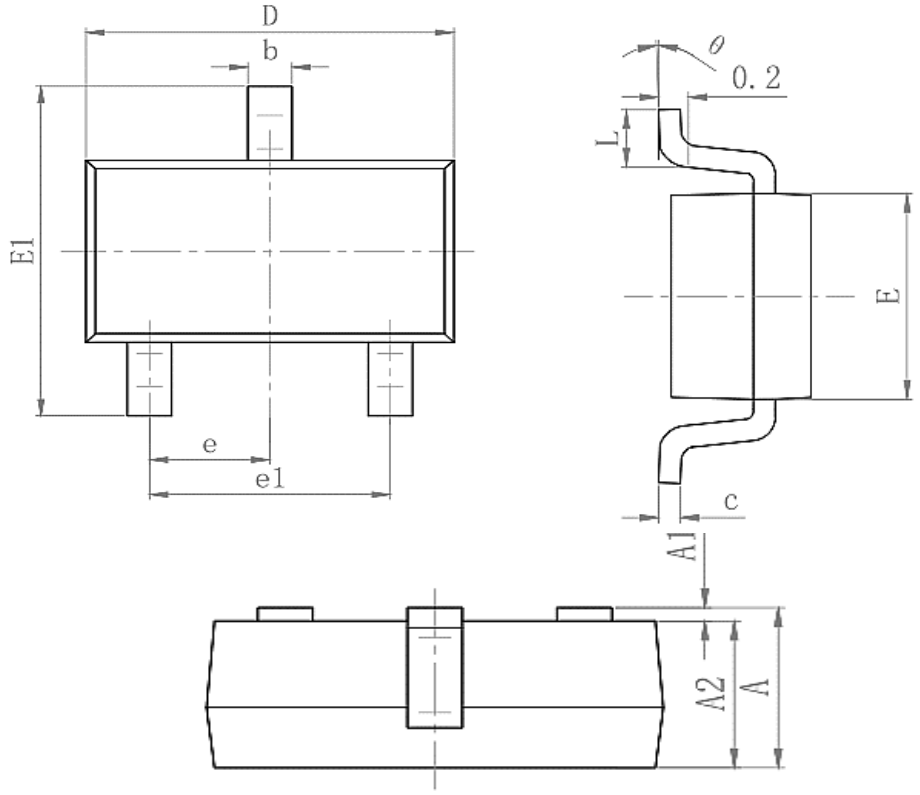


Fig.11 Unclamped Inductive Waveform

Package Mechanical Data-SOT23-3-XC-Single



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.25	0.45
c	0.100	0.200
D	2.820	3.020
E	1.5	1.7
E1	2.650	2.950
e	0.950(BSC)	
e1	1.800	2.000
L	0.300	0.500
θ	0°	8°

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-150V P-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2021/4/13	Initial release