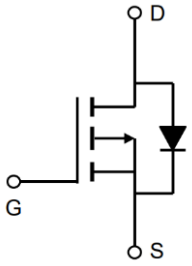
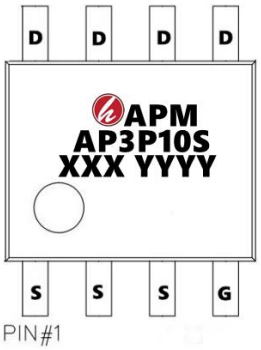
AP3P10S

-100V P-Channel Enhancement Mode MOSFET

Description

The AP3P10S uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.





General Features

V_{DS} = -100V I_D =-3A

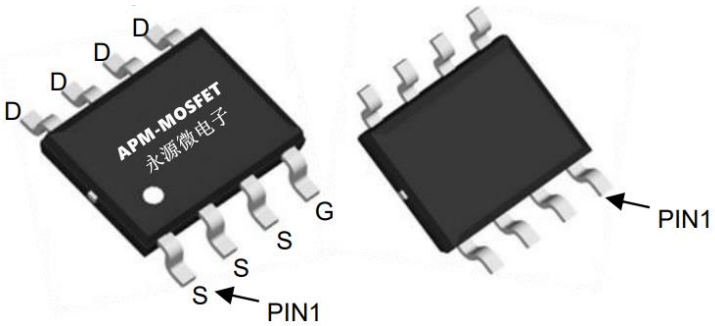
$R_{DS(ON)}$ < 600mΩ @ V_{GS}=10V **(Type：450mΩ)**

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP3P10S	SOP-8	AP3P10S XXX YYYY	3000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ -10V[1]	-3	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ -10V[1]	-1.7	A
I_{DM}	Pulsed Drain Current[2]	-9.8	A
P_D@T_A=25℃	Total Power Dissipation[3]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	85	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	80	℃/W

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Electrical Characteristics (T_A=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	VGS=0V , ID=-250uA	-100	-111	---	V
△BVDSS/△TJ	BVDSS Temperature Coefficient	Reference to 25℃ , ID=-1mA	---	-0.0624	---	V/℃
RDS(ON)	Static Drain-Source On-Resistance2	VGS=-10V , ID=-0.8A	---	450	600	mΩ
		VGS=-4.5V , ID=-0.4A	---	560	700	mΩ
VGS(th)	Gate Threshold Voltage	VGS=VDS , ID =-250uA	-1.0	-1.5	-2.5	V
△VGS(th)	VGS(th) Temperature Coefficient		---	4.5	---	mV/℃
IDSS	Drain-Source Leakage Current	VDS=-80V , VGS=0V ,TJ=25℃	---	---	10	uA
		VDS=-80V , VGS=0V ,TJ=55℃	---	---	100	uA
IGSS	Gate-Source Leakage Current	VGS=±20V , VDS=0V	---	---	±100	nA
gfs	Forward Transconductance	VDS=-5V , ID=-0.8A	---	3	---	S
Rg	Gate Resistance	VDS=0V , VGS=0V , f=1MHz	---	16	32	Ω
Qg	Total Gate Charge (-4.5V)	VDS=-15V , VGS=-4.5V , ID=-0.5A	---	4.5	---	nC
Qgs	Gate-Source Charge		---	1.14	---	nC
Qgd	Gate-Drain Charge		---	1.5	---	nC
Td(on)	Turn-On Delay Time	VDD=-50V , VGS=-10V , RG=3.3Ω ID=-0.5A	---	13.6	---	ns
Tr	Rise Time		---	6.8	---	ns
Td(off)	Turn-Off Delay Time		---	34	---	ns
Tf	Fall Time		---	3	---	ns
Ciss	Input Capacitance	VDS=-15V , VGS=0V , f=1MHz	---	553	---	pF
Coss	Output Capacitance		---	29	---	pF
Crss	Reverse Transfer Capacitance		---	20	---	pF
IS	Continuous Source Current1,4	VG=VD=0V , Force Current	---	---	-0.9	A
ISM	Pulsed Source Current2,4		---	---	-1.8	A
VSD	Diode Forward Voltage2	VGS=0V , IS=-1A , TJ=25℃	---	---	-1.2	V

Note :

1、The data tested by surface mounted on a 1 inch2 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 ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

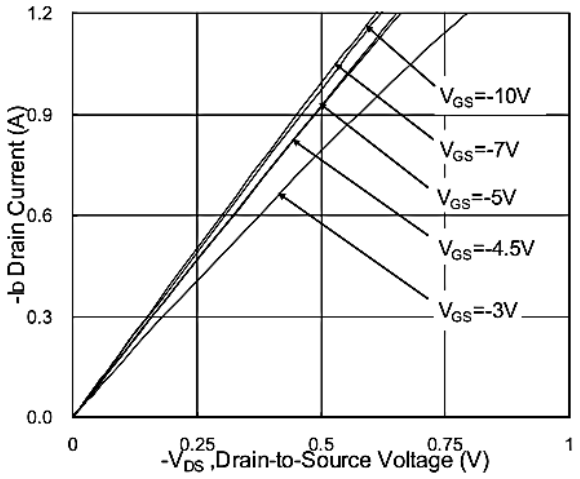

Fig.1 Typical Output Characteristics

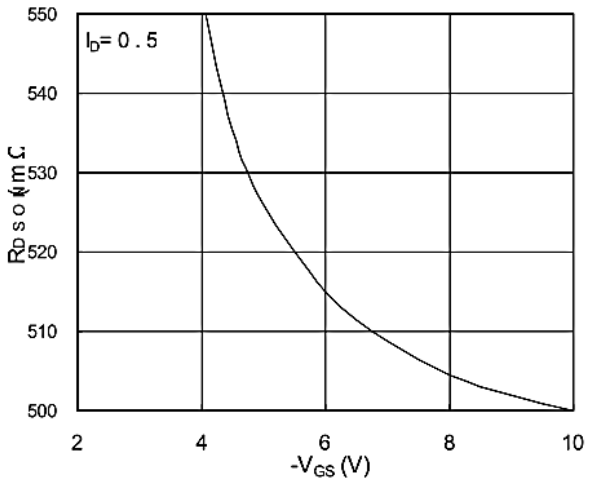

Fig.2 On-Resistance vs. Gate-Source

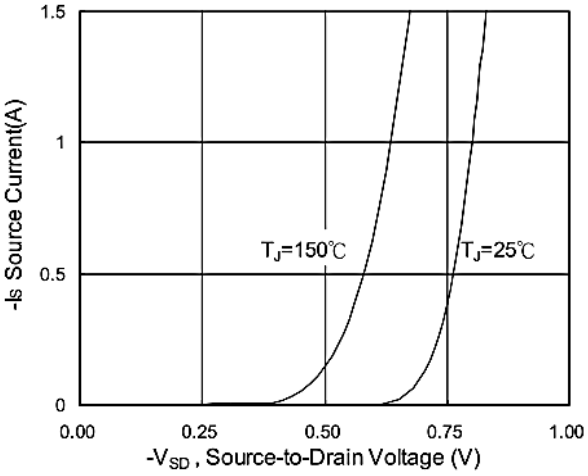

Fig.3 Forward Characteristics Of Reverse

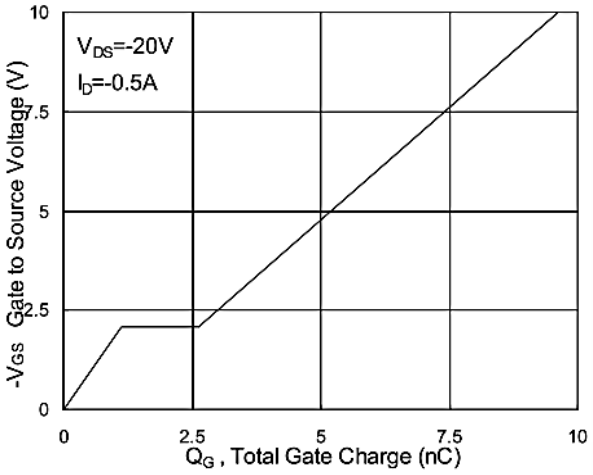

Fig.4 Gate-Charge Characteristics

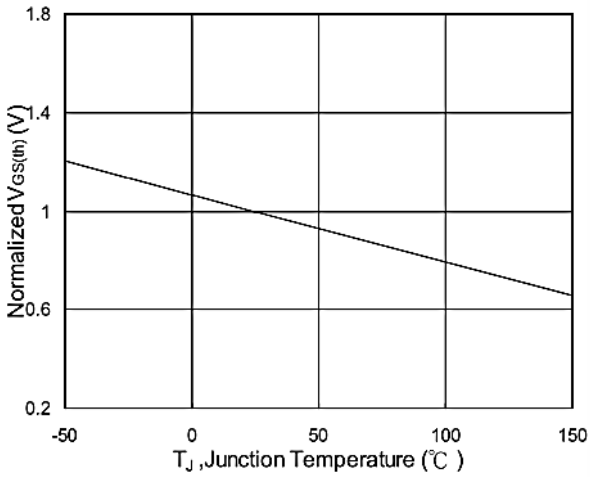

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

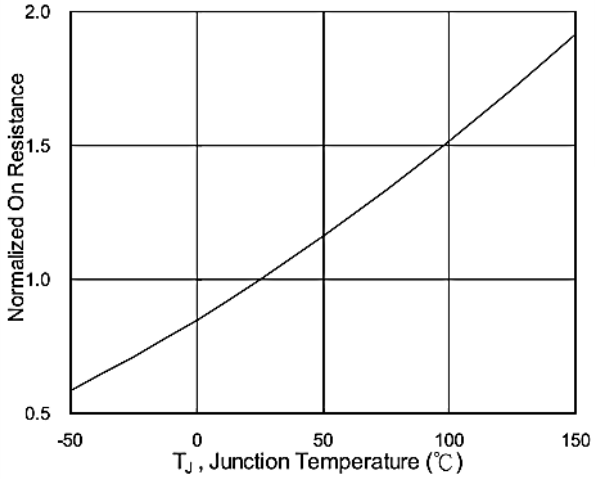

Fig.6 Normalized R_{DSON} vs. T_J

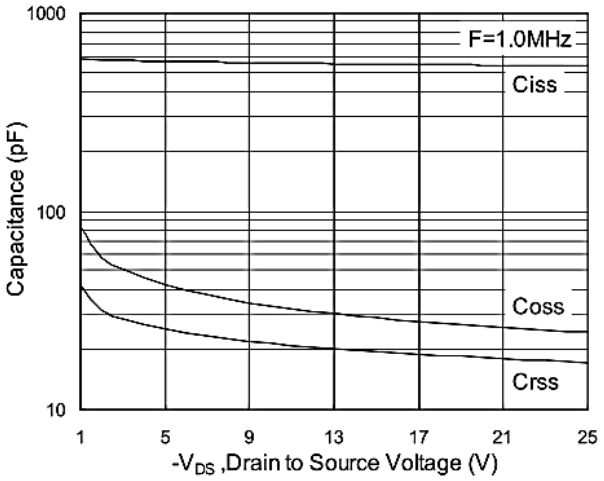

Fig.7 Capacitance

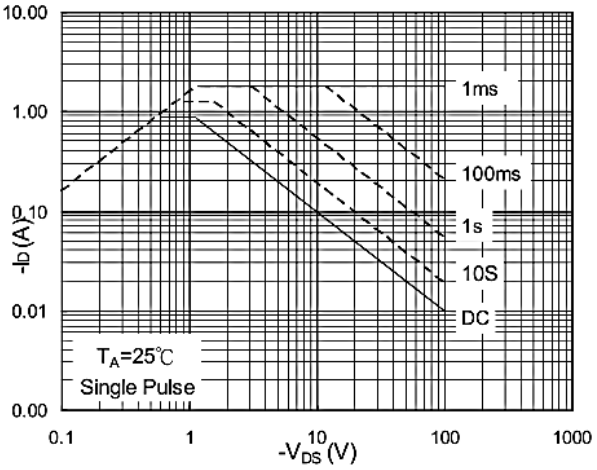

Fig.8 Safe Operating Area

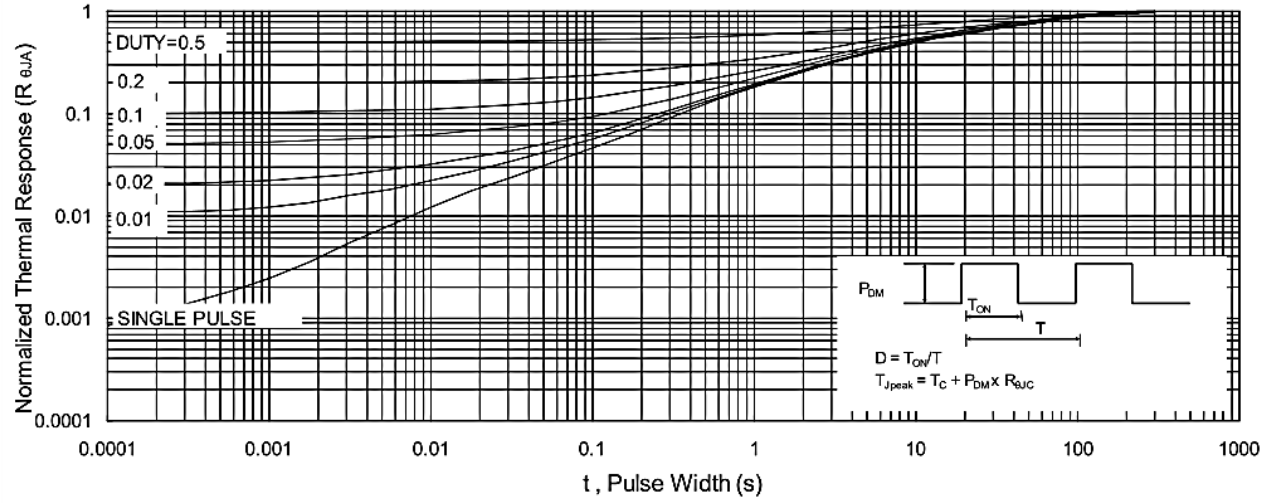

Fig.9 Normalized Maximum Transient Thermal Impedance

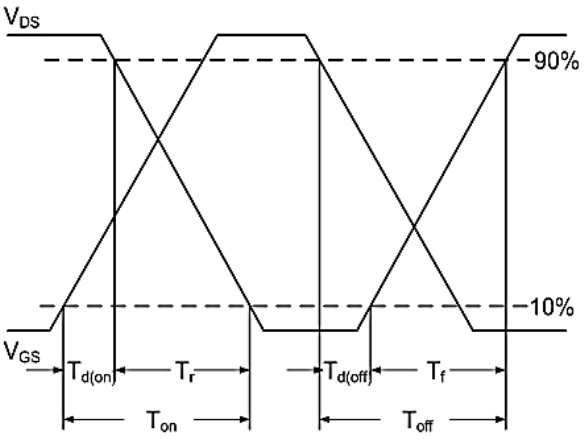

Fig.10 Switching Time Waveform

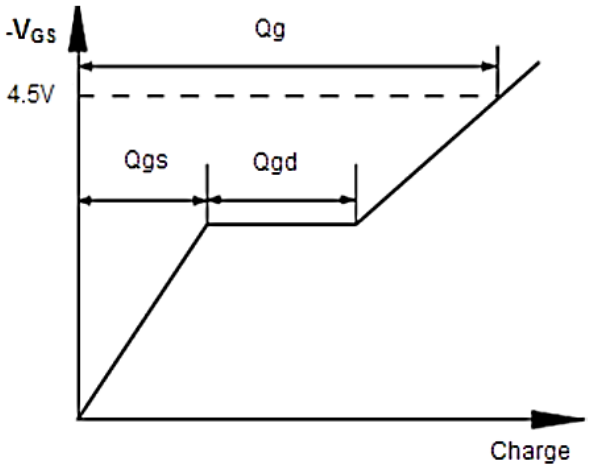

Fig.11 Gate Charge Waveform

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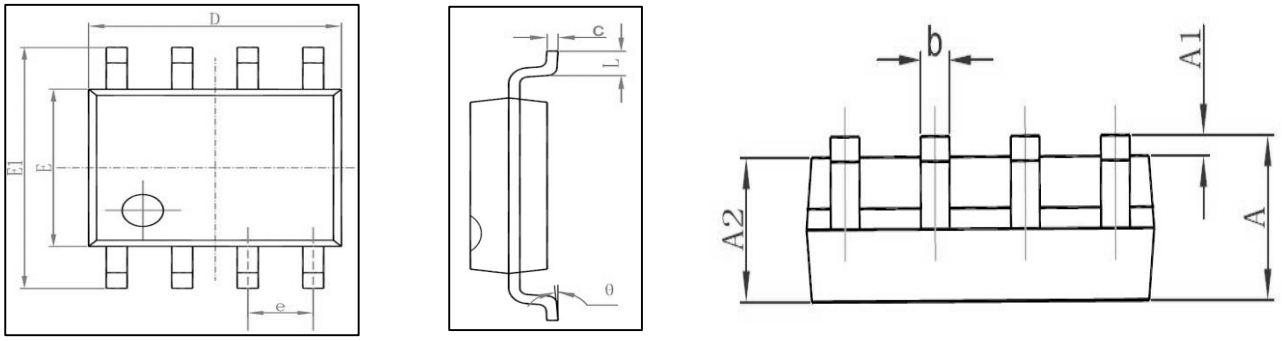
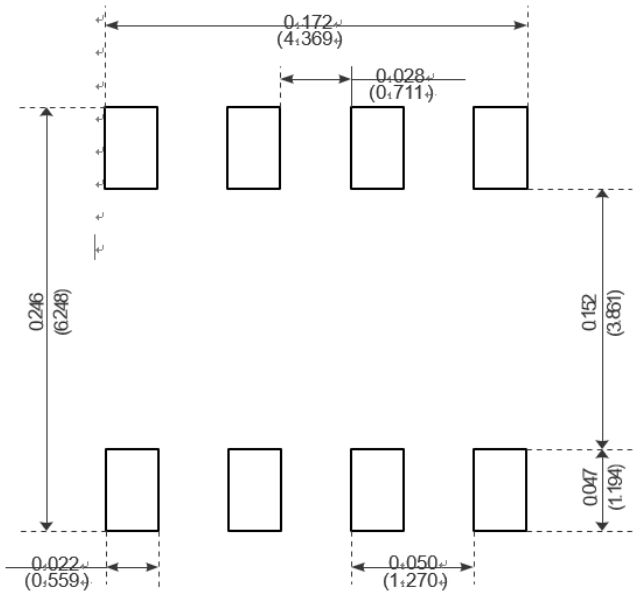
Package Mechanical Data-SOP-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads

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Edition	Date	Change
Rve1.0	2020/12/1	Initial release