AP5N10MI-L

100V N-Channel Enhancement Mode MOSFET

Description

The AP5N10MI-L 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 =5A

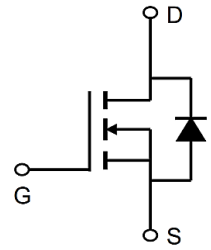
$R_{DS(ON)}$ < 140mΩ @ V_{GS}=10V **(Type：115mΩ)**

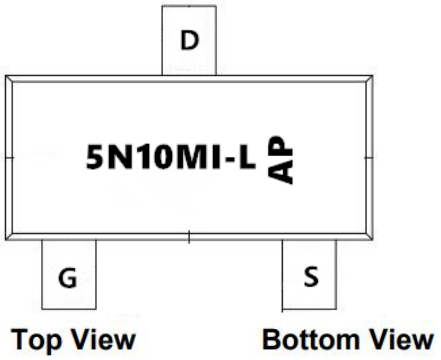
Application

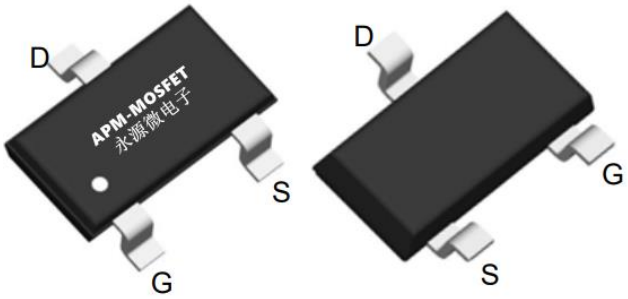
Automative lighting

Load switch

Uninterruptible power supply







Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP5N10MI-L	SOT23-3L	5N10M-L AP	3000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	100	V
VGS	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	5	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ 10V[1]	3.0	A
IDM	Pulsed Drain Current[2]	18	A
P_D@T_A=25℃	Total Power Dissipation[3]	3.1	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction-ambient(steady state)[1]	135	℃/W
$R_{\theta}JA$	Thermal Resistance Junction-ambient(t<10s)[1]	40	℃/W

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Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	100	110	-	V
IGSS	Gate-body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current	V_{DS} = 100V, V_{GS} = 0V	-	-	1	μA
VGS(th)	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.7	2.5	V
RDS(on)	Drain-Source On-state Resistance[3]	V_{GS} = 10V, I_D = 3A	-	115	140	mΩ
		V_{GS} = 4.5V, I_D = 1A	-	125	180	
Ciss	Input Capacitance	V_{GS} = 0V, V_{DS} = 50V, f = 1MHz	-	200	-	pF
Coss	Output Capacitance		-	35	-	
Crss	Reverse Transfer Capacitance		-	2.5	-	
Q_g	Total Gate Charge	V_{DS} = 50V, V_{GS} =10V, I_D =3A	-	4	-	nC
Qgs	Gate-Source Charge		-	0.9	-	
Qgd	Gate-Drain Charge		-	1.1	-	
td(on)	Turn-on Delay Time	V_{DD} = 50V, V_{GS} =10V, I_D =3A, R_G=3Ω	-	3.6	-	ns
t_r	Turn-on Rise Time		-	1.6	-	
td(off)	Turn-off Delay Time		-	8.5	-	
t_f	Turn- off Fall Time		-	2.6	-	
VSD	Body Diode Voltage[3]	I_S = 3A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current	-	-	-	3.3	A

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

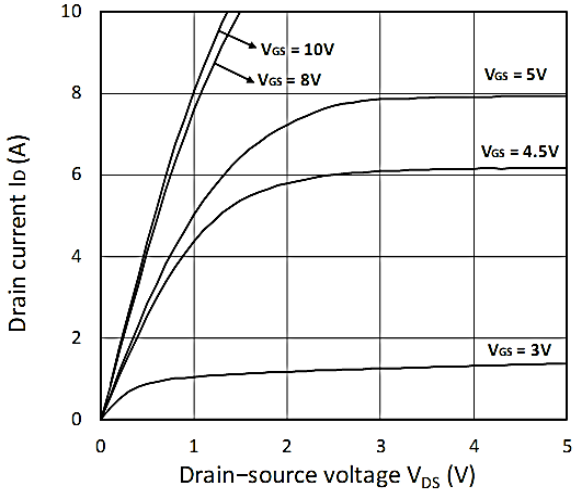

Figure 1. Output Characteristics

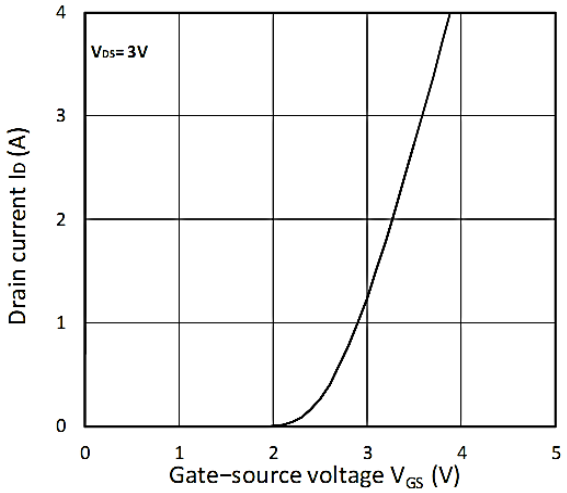

Figure 2. Transfer Characteristics

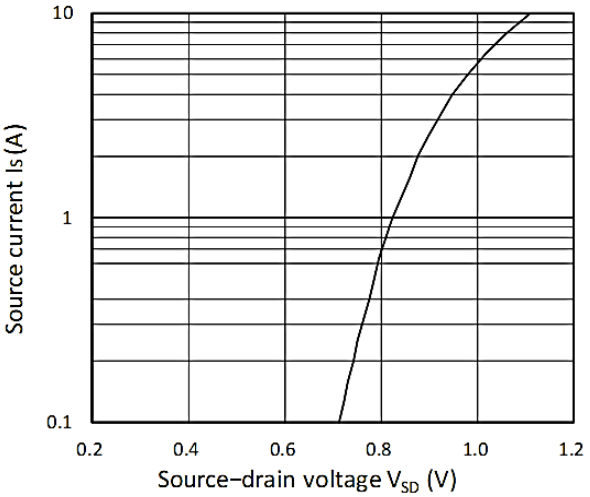

Figure 3. Forward Characteristics of Reverse

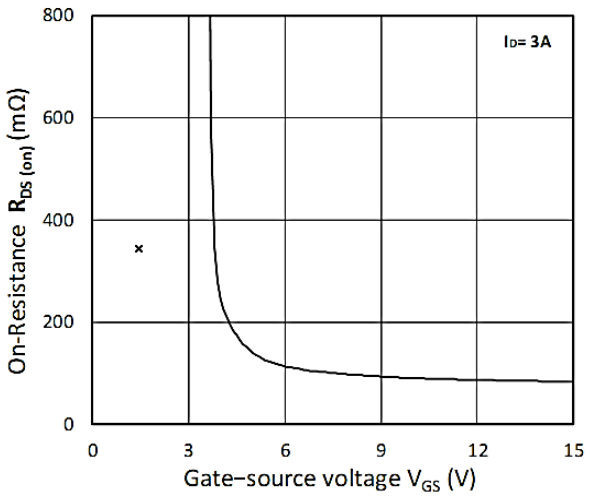

Figure 4. RDS(ON) vs. VGS

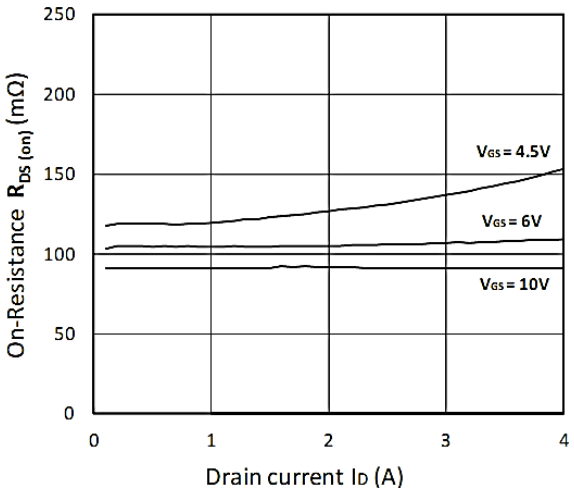

Figure 5. RDS(ON) vs. ID

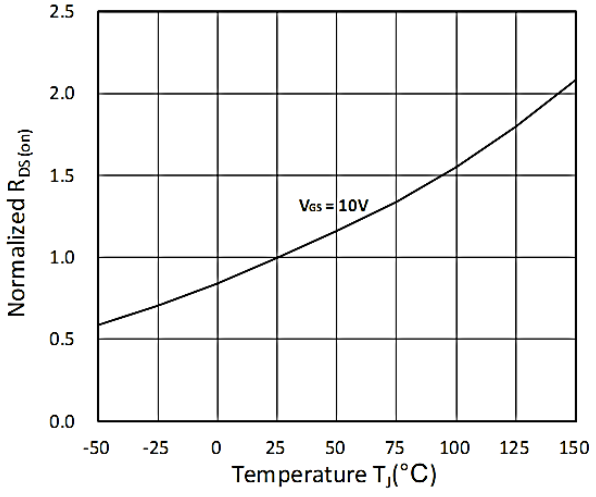

Figure 6. Normalized RDS(on)vs.Temperature

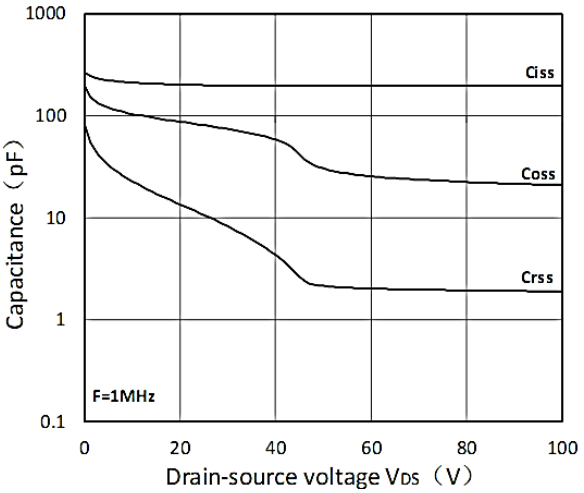

Figure7. Capacitance Characteristics

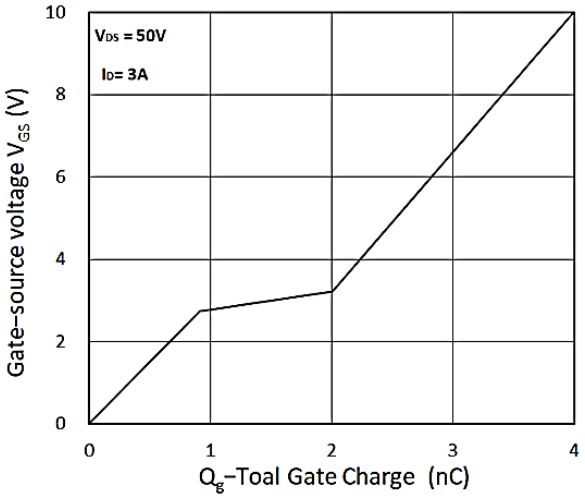

Figure8. Gate Charge Characteristics

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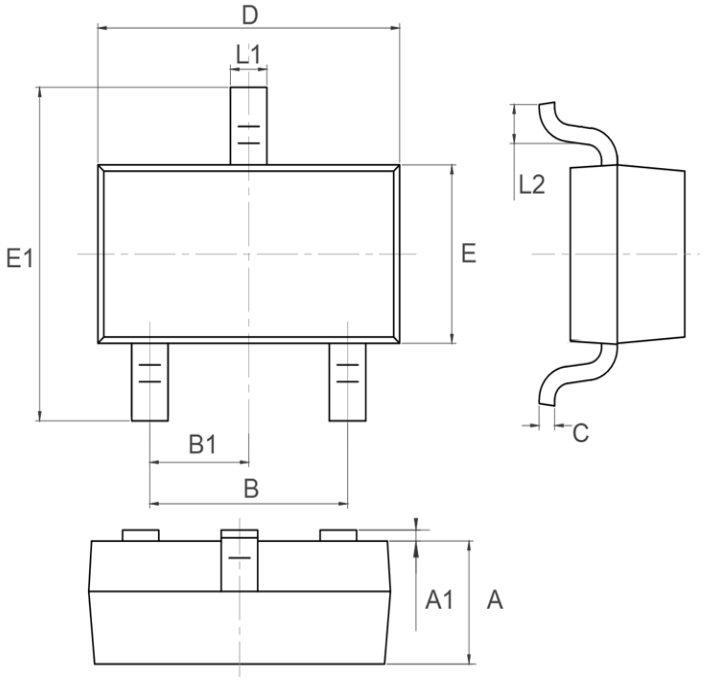
Package Mechanical Data-SOT23-3L-Single



Symbol	Dim in mm		
	Min	Typ	Max
A	1	1.1	1.2
A1	0	0.05	0.1
B	1.8	1.9	2
B1	0.95TYP		
C	0.1	0.15	0.2
D	2.82	2.92	3.02
E	1.5	1.6	1.7
E1	2.65	2.8	2.95
L1	0.3	0.4	0.5
L2	0.3	0.45	0.6

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Edition	Date	Change
REV1.0	2023/8/9	Initial release