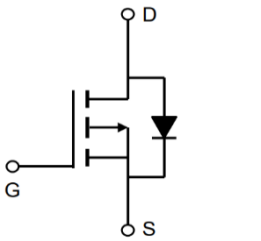
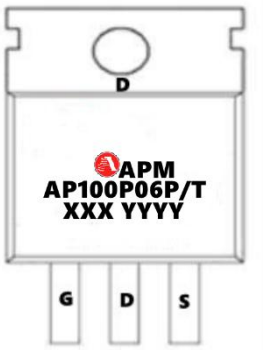
AP100P06P/T

-60V P-Channel Enhancement Mode MOSFET

Description

The AP100P06P/T uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 6V. This device is suitable for use as a Battery protection or in other Switching application.





General Features

V_{DS} = -60V I_D =-100A

$R_{DS(ON)}$ < -8.5mΩ @ V_{GS}=-10V **(Type：6.5mΩ)**

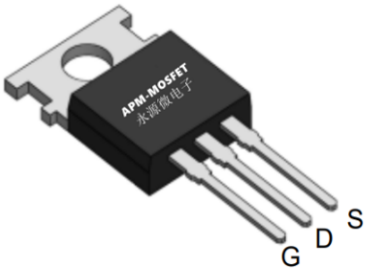
Application

Lithium battery protection

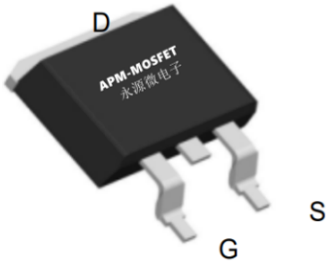
Wireless impact

Mobile phone fast charging

TO220-3L



TO263-3L



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP100P06P	TO220-3L	AP100P06P XXX YYYY	1000
AP100P06T	TO263-3L	AP100P06T XXX YYYY	800

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

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, -V_{GS} @ -10V[1]	-100	A
I_D@T_C=100℃	Continuous Drain Current, -V_{GS} @ -10V[1]	-65	A
I_{DM}	Pulsed Drain Current[2]	-300	A
EAS	Single Pulse Avalanche Energy[3]	650	mJ
I_{AS}	Avalanche Current	80	A
P_D@T_C=25℃	Total Power Dissipation[4]	142	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]	0.88	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	60	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-60	-72	---	V
△BVDSS/△TJ	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.035	---	V/℃
RDS(ON)	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-20A	---	6.8	8.5	mΩ
		V_{GS}=-4.5V , I_D=-15A	---	7.8	10	
VGS(th)	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.2	-1.6	-2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.28	---	mV/℃
IDSS	Drain-Source Leakage Current	V_{DS}=-60V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=-60V , V_{GS}=0V , T_J=55℃	---	---	5	
IGSS	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-20A	---	18	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	4.0	---	Ω
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-48, V_{GS}=-10V , I_D=-5	---	141	---	nC
Q_{gs}	Gate-Source Charge		---	17	---	
Q_{gd}	Gate-Drain Charge		---	28.6	---	
Td(on)	Turn-On Delay Time	V_{DD}=-48,V_{GS}=-10V , R_G=6,I_D=-1A	---	70	---	ns
T_r	Rise Time		---	205	---	
Td(off)	Turn-Off Delay Time		---	402	---	
T_f	Fall Time		---	402	---	
C_{iss}	Input Capacitance	V_{DS}=-25V , V_{GS}=0V , f=1MHz	---	8620	---	pF
Coss	Output Capacitance		---	486	---	
Crss	Reverse Transfer Capacitance		---	288	---	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	-10	A
ISM	Pulsed Source Current[2,5]		---	---	-144	A
VSD	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

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 EAS data shows Max. rating . The test condition is VDD =-48V,VGS =-10V,L=0.1mH,IAS =-80A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

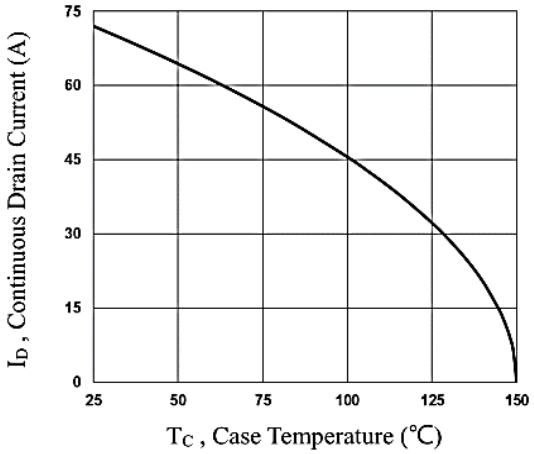


Fig.1Typical Output Characteristics

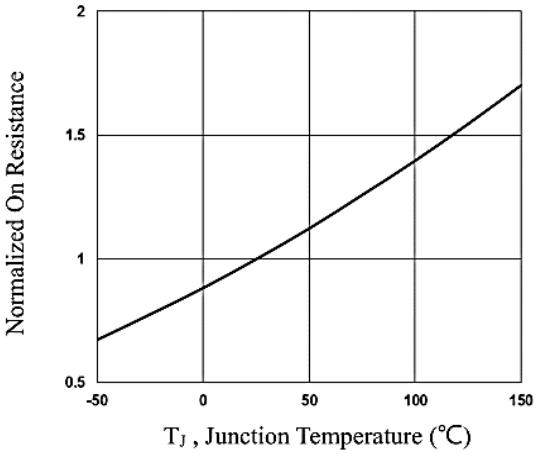


Fig.2 Normalized RDSON vs. TJ

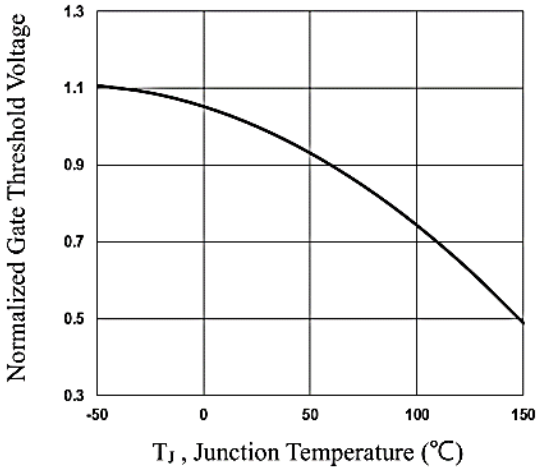


Fig.3 Normalized RDSON vs. TJ

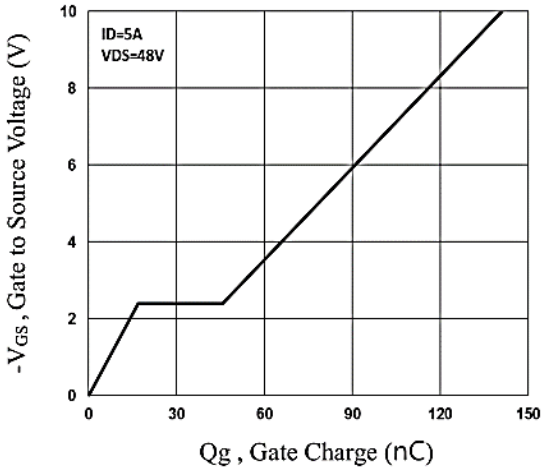


Fig.4 Normalized Vth vs. TJ

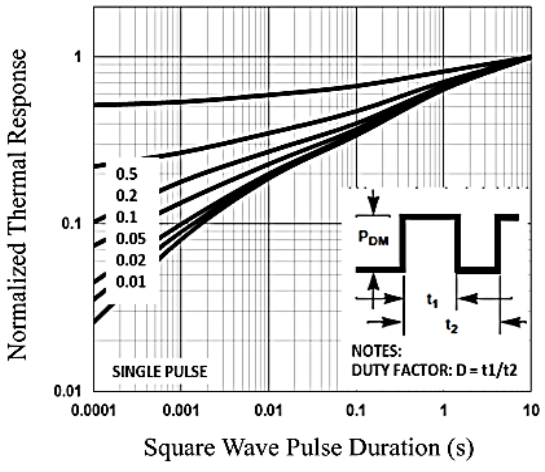


Fig.5 Normalized Transient Impedance

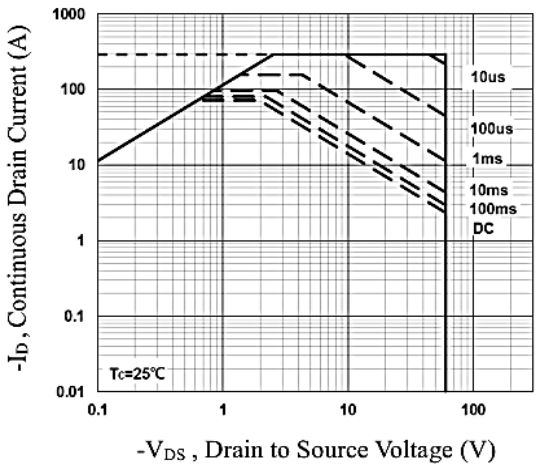
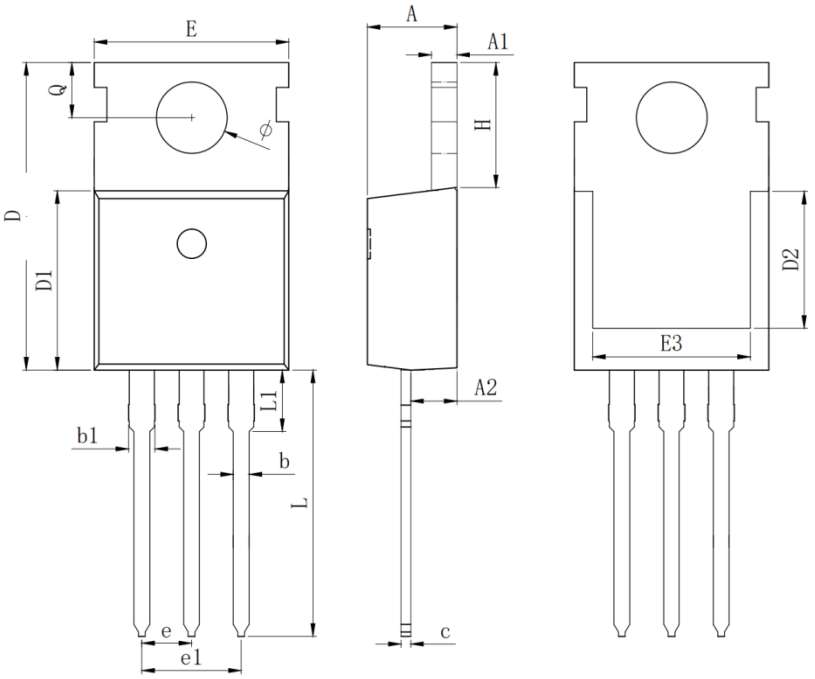


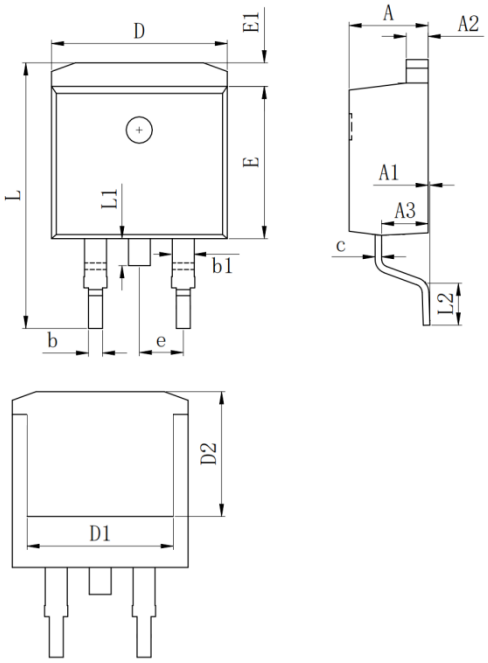
Fig.6 Maximum Safe Operation Area

Package Mechanical Data-TO220-3L



Symbol	Dimensions In Millimeters		
	min.	typ.	max.
A	4.25	4.50	4.70
A1	1.15	1.30	1.45
A2	2.15	2.35	2.55
b	0.65	0.80	0.95
b1	1.15	1.35	1.55
c	0.35	0.50	0.65
D	14.30	15.30	16.30
D1	8.80	9.10	9.40
D2		6.3REF	
E	9.70	10.00	10.30
E3	7.00	8.00	9.0
e		2.54BSC	
e1		5.08BSC	
L	12.70	13.50	13.90
L1	2.60	3.10	3.40
H	6.00	6.50	6.85
Q	2.60	2.80	3.00
ϕ	3.40	3.60	3.80

Package Mechanical Data-TO263-3L



Symbol	Dimensions In Millimeters		
	min.	typ.	max.
A	4.37	4.57	4.77
A1	0.00		0.25
A2	1.22	1.27	1.42
A3	2.49	2.69	2.89
b	0.70	0.81	0.96
b1	1.17	1.27	1.47
c	0.30	0.38	0.53
D	9.86	10.16	10.40
D1	8.4REF		
D2	7.073REF		
E	8.50	8.70	9.30
E1	0.87	1.17	1.47
e	2.54BSC		
L	14.70	15.10	15.50
L1	1.40	1.55	1.70
L2	2.00	2.30	2.60

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Edition	Date	Change
Rve1.0	2020/2/31	Initial release
Rve1.1	2026/6/15	Update LOGO And Corrected Manual POD

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