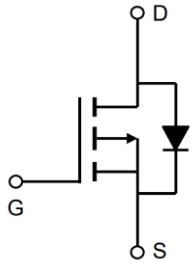
AP16P01BF

-18V P-Channel Enhancement Mode MOSFET

Description

The AP16P01BF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

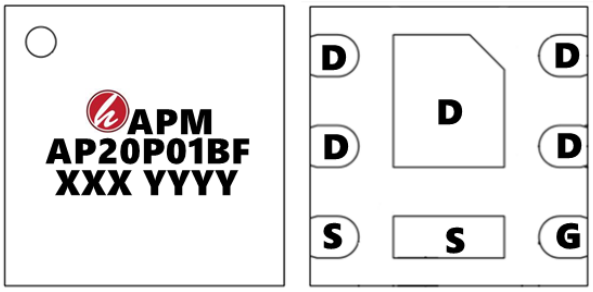
V_{DS} = -18V I_D =-16A

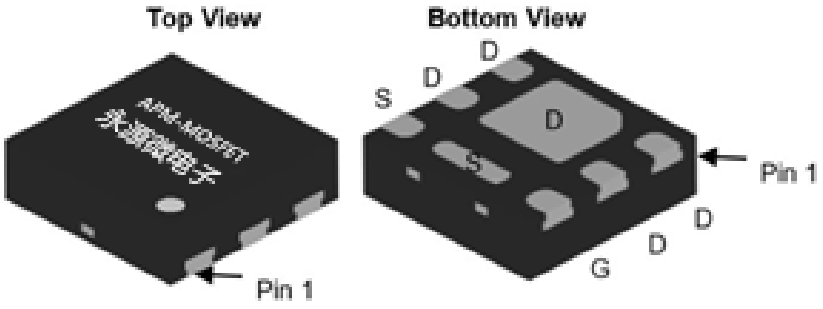
$R_{DS(ON)}$ < 24mΩ @ V_{GS}=10V （**Type：18mΩ**）

$R_{DS(ON)}$ < 32mΩ @ V_{GS}=4.5V（**Type：24mΩ**）

Application

Electronic cigarette
Load switch





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP16P01BF	DFN2*2-6L	AP16P01BF XXX YYYY	3000

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

Symbol	Parameter	Rating	Units
VDSS	Drain-Source Voltage	-18	V
VGSS	Gate-Source Voltage	±12	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	-16	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	-8.6	A
IDM	Pulsed Drain Current note1	-30	A
P_D@T_C=25℃	Power Dissipation	1.6	W
RθJA	Thermal Resistance, Junction to Ambient	125	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +150	℃

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Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= -250μA	-12	-18	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}= -20V, V_{GS}=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±12V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	-0.4	-0.7	-1.0	V
RDS(on)	Static Drain-Source on-Resistance note2	V_{GS}= -10V, I_D= -4.1A		18	24	mΩ
RDS(on)	Static Drain-Source on-Resistance note2	V_{GS}= -4.5V, I_D= -4.1A	-	24	32	mΩ
RDS(on)	Static Drain-Source on-Resistance note2	V_{GS}= -2.5V, I_D= -3A	-	33	42	mΩ
Ciss	Input Capacitance	V_{DS}= -10V, V_{GS}=0V, f=1.0MHz	-	830	-	pF
Coss	Output Capacitance		-	132	-	pF
Crss	Reverse Transfer Capacitance		-	85	-	pF
Q_g	Total Gate Charge	V_{DS}= -10V, I_D= -2A, V_{GS}= -4.5V	-	8.8	-	nC
Qgs	Gate-Source Charge		-	1.4	-	nC
Qgd	Gate-Drain(“Miller”) Charge		-	1.9	-	nC
td(on)	Turn-on Delay Time	V_{DD}= -10V, I_D= -3.3A, R_G= 1Ω, V_{GEN}= -4.5V	-	10	-	ns
tr	Turn-on Rise Time		-	32	-	ns
td(off)	Turn-off Delay Time		-	50	-	ns
t_f	Turn-off Fall Time		-	51	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.1	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-16	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -4.1A	-	-	-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 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

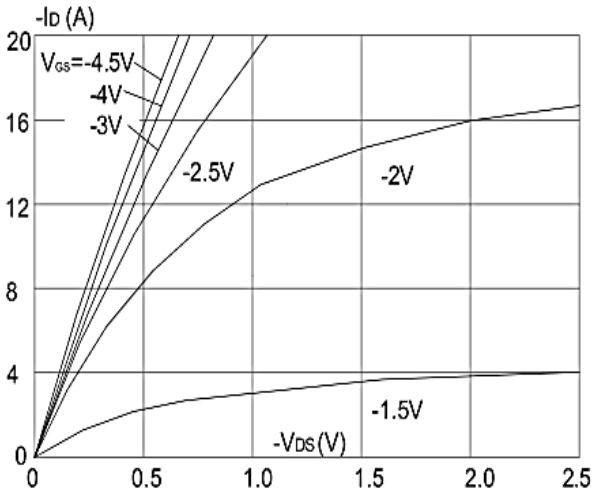

Figure1: Output Characteristics

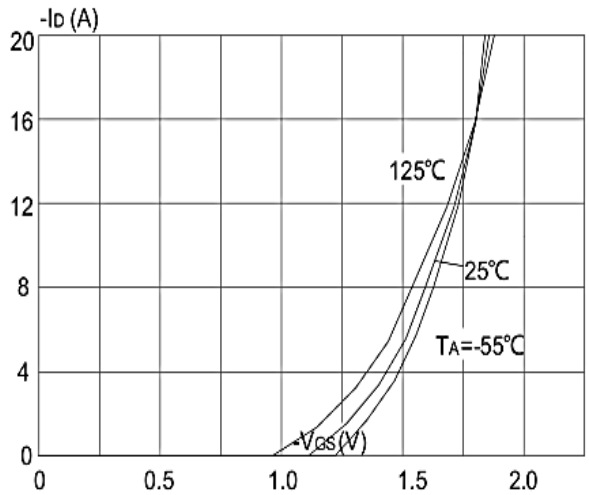

Figure 2: Typical Transfer Characteristics

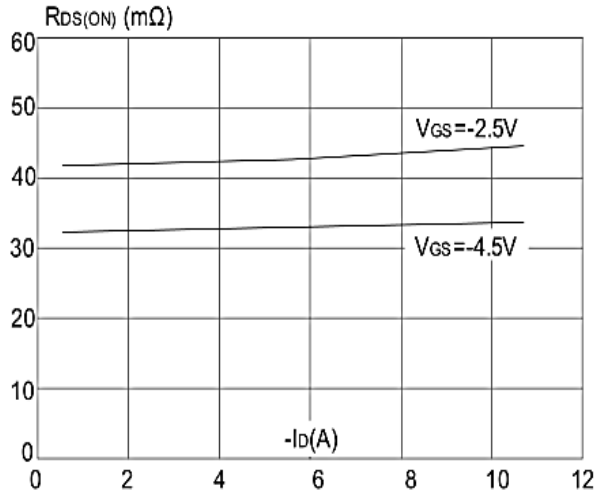

Figure 3:On-resistance vs. Drain Current

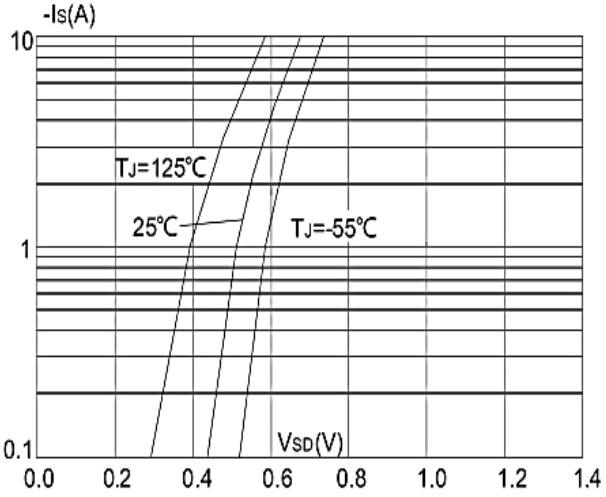

Figure 4: Body Diode Characteristics

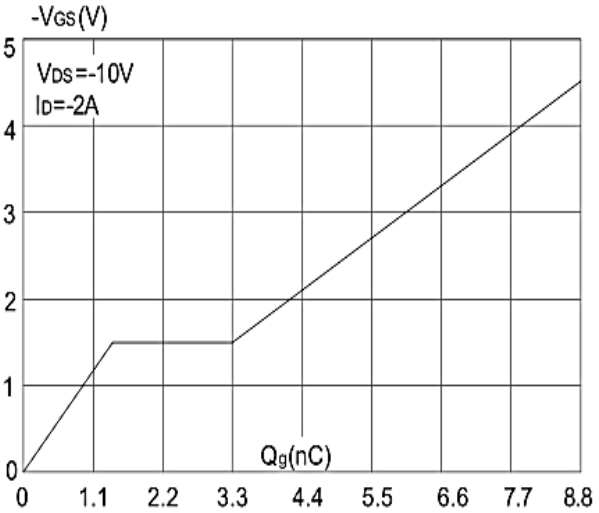

Figure 5: Gate Charge Characteristics

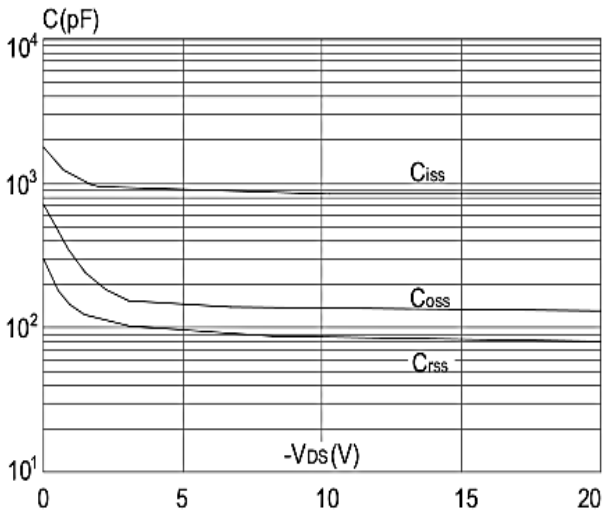

Figure 6: Capacitance Characteristics

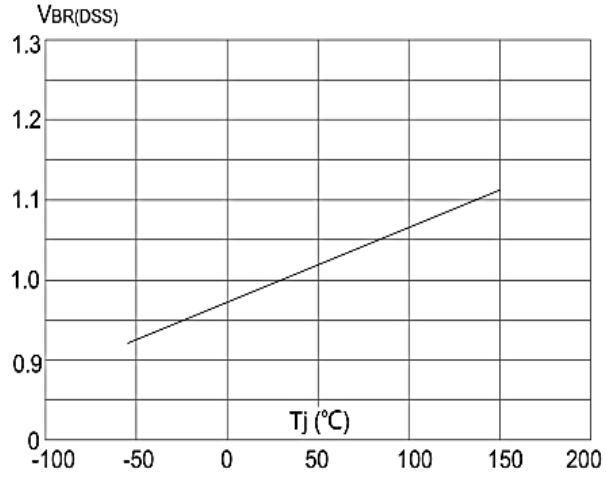

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

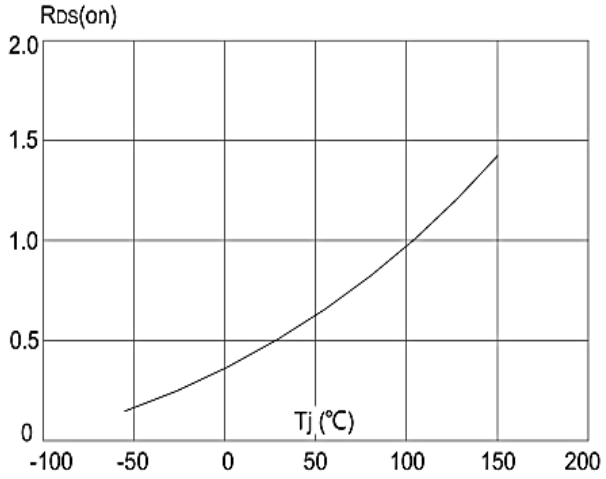

Figure 8: Normalized on Resistance vs. Junction Temperature

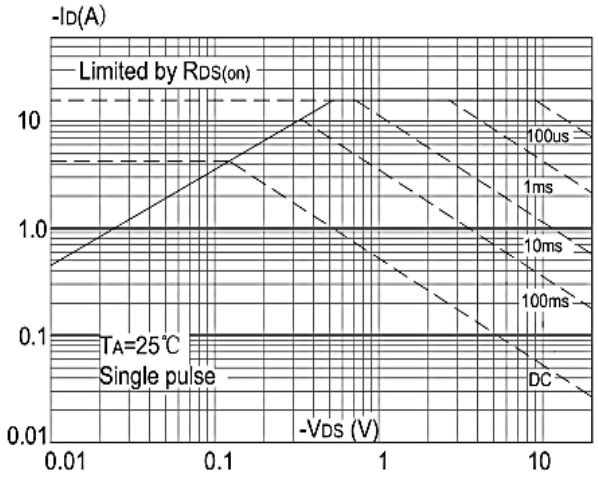

Figure 9: Maximum Safe Operating Area

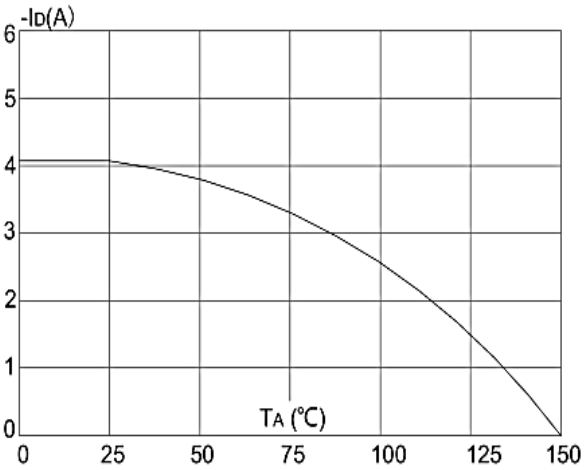

Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

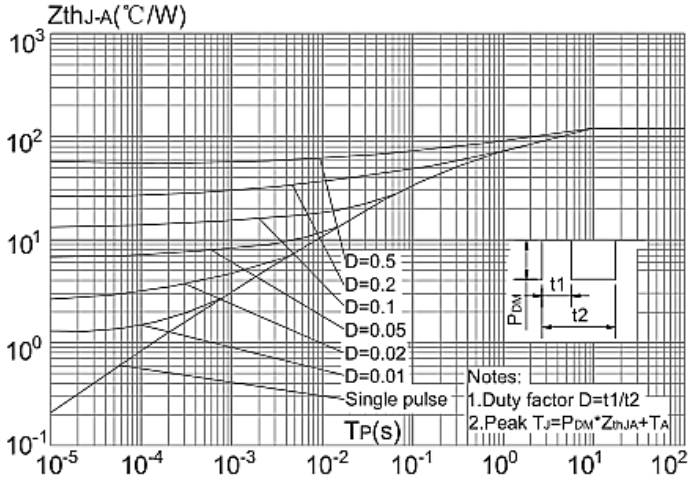

Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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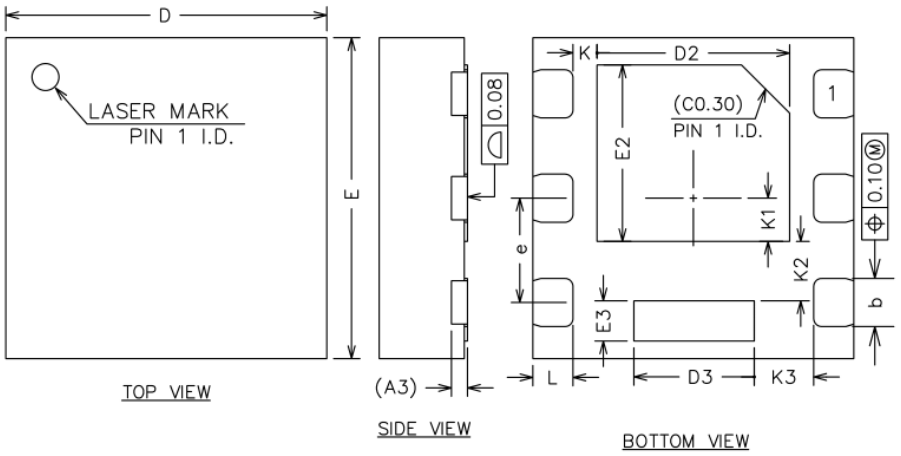
Package Mechanical Data：QFN2*2-6L



Symbol			
	Min	Nom	Max
A	0.50	--	0.54
A1	0.00	0.02	0.05
A3		0.10REF	
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	1.10	1.20	1.30
E2	1.00	1.10	1.20
D3	0.65	0.75	0.85
E3	0.15	0.25	0.35
e	0.55	0.65	0.75
K	0.05	--	--
K1	0.17	--	--
K2	0.27	--	--
K3	0.28	--	--
L	0.20	0.25	0.30

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Edition	Date	Change
Rve1.0	2020/9/8	Initial release