AP4435C

-30V P-Channel Enhancement Mode MOSFET

Description

The AP4435C 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} = -30V I_D =12A

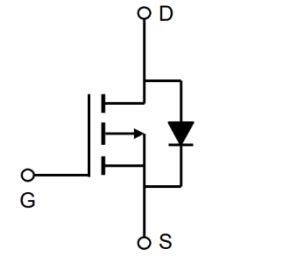
$R_{DS(ON)}$ < 18mΩ @ V_{GS}=10V （**Type：13mΩ**）

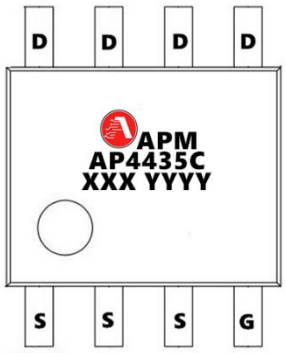
Application

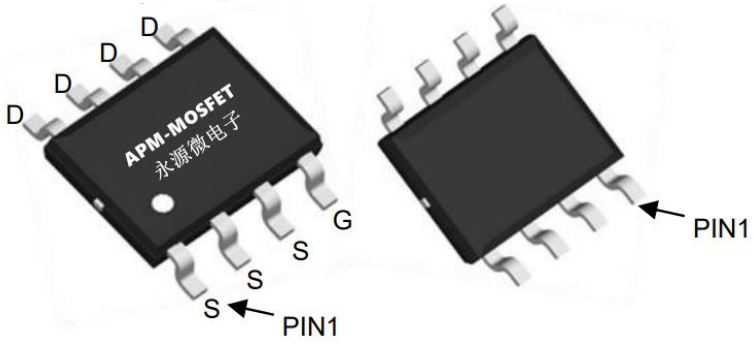
Lithium battery protection

Wireless impact

Mobile phone fast charging







Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP4435C	SOP-8L	AP4435C XXX YYYY	3000

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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ -10V1	-12	A
ID@TC=100℃	Continuous Drain Current, VGS @ -10V1	-7.1	A
IDM	Pulsed Drain Current2	-40	A
EAS	Single Pulse Avalanche Energy3	7.8	mJ
PD@TC=25℃	Total Power Dissipation4	1.9	W
TSTG	Storage Temperature Range	-55 to 150	℃
TJ	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Thermal Resistance Junction-Ambient 1	85	℃/W
RθJC	Thermal Resistance Junction-Case1	3.6	℃/W

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	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}= -30V, V_{GS}=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= -250μA	-1.2	-1.5	-2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V_{GS}= -10V, I_D= -10A	-	13	18	mΩ
		V_{GS}= -4.5V, I_D= -5A	-	19	24	
C_{iss}	Input Capacitance	V_{DS}= -15V, V_{GS}=0V, f=1.0MHz	-	1250	-	pF
Coss	Output Capacitance		-	166	-	pF
Crss	Reverse Transfer Capacitance		-	125	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D= -5A, V_{GS}= -10V	-	23	-	nC
Q_{gs}	Gate-Source Charge		-	4	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	5	-	nC
td(on)	Turn-on Delay Time	V_{DD}= -15V, I_D= -5A, V_{GS}= -10V, R_{GEN}=2.5Ω	-	4	-	ns
t_r	Turn-on Rise Time		-	3	-	ns
td(off)	Turn-off Delay Time		-	60	-	ns
t_f	Turn-off Fall Time		-	50	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	-12	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-40	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S= -11A	-	-0.8	-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=-25V,VGS=-10V,L=0.1mH,IAS=-18A

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

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

P-Channel Typical Characteristics

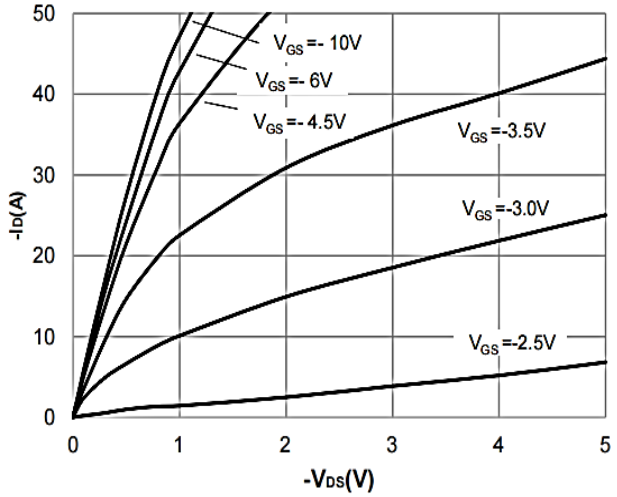


Figure1: Output Characteristics

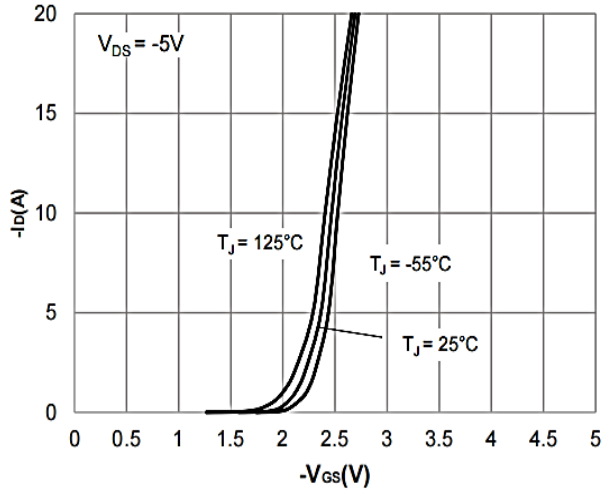


Figure 2: Typical Transfer Characteristics

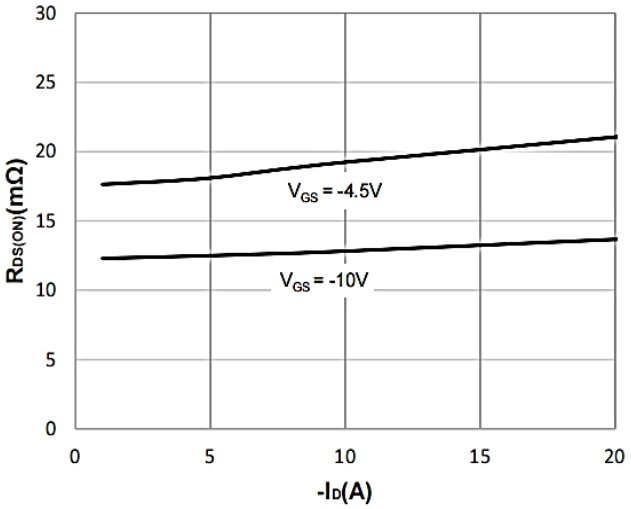


Figure 3:On-resistance vs. Drain Current

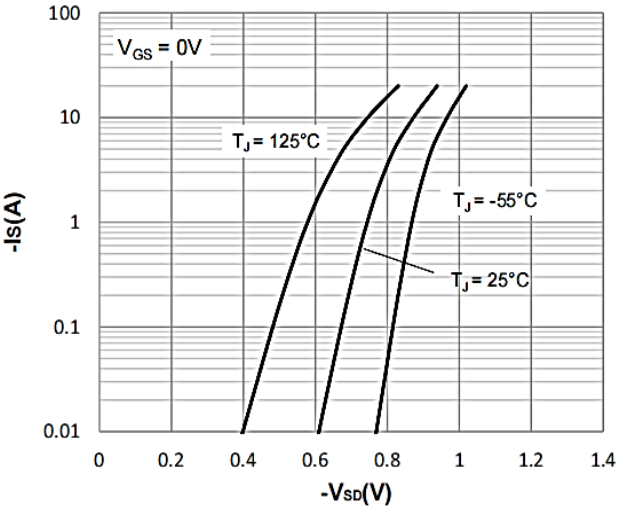


Figure 4: Body Diode Characteristics

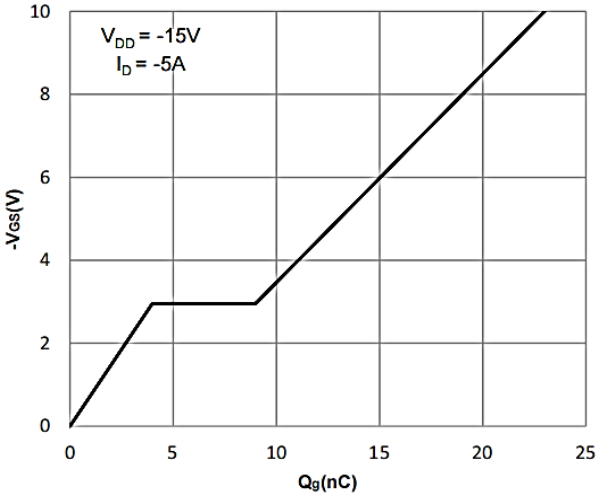


Figure 5: Gate Charge Characteristics

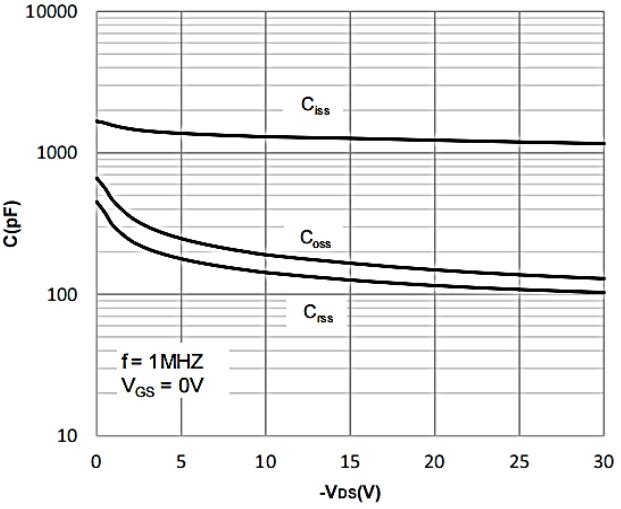


Figure 6: Capacitance Characteristics

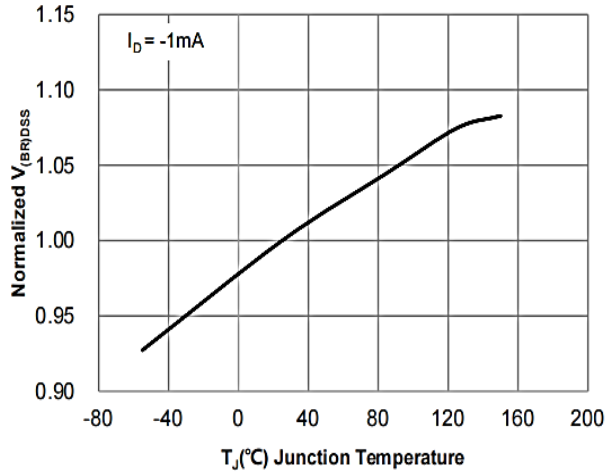


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

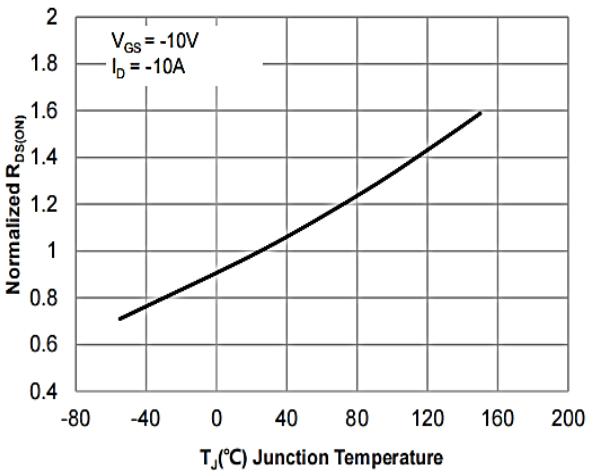


Figure 8: Normalized on Resistance vs. Junction Temperature

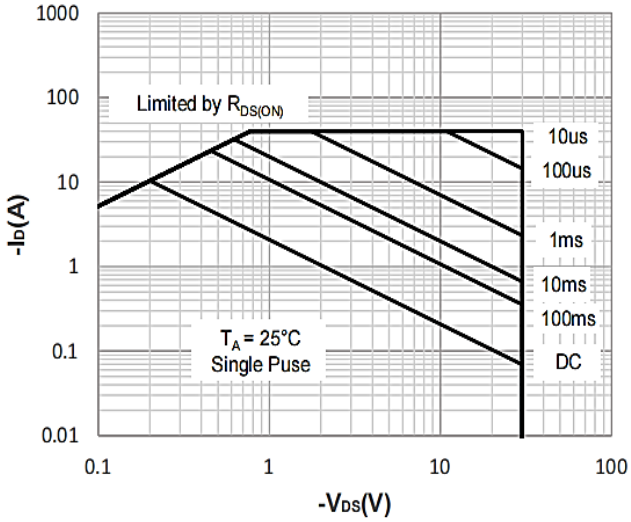


Figure 9: Maximum Safe Operating Area

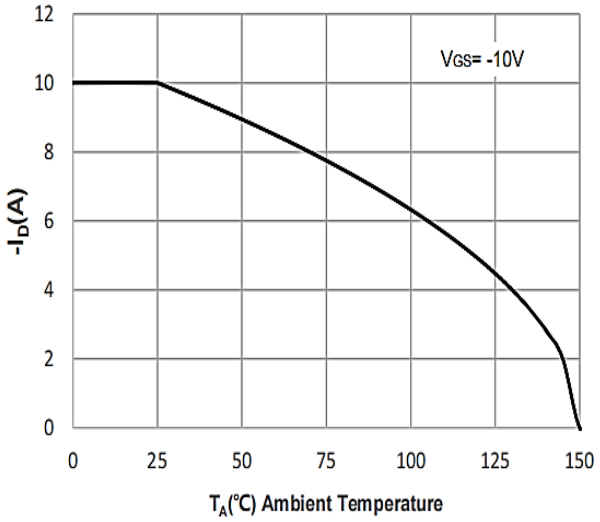


Figure 10: Maximum Continuous Drain Currentvs. Ambient Temperature

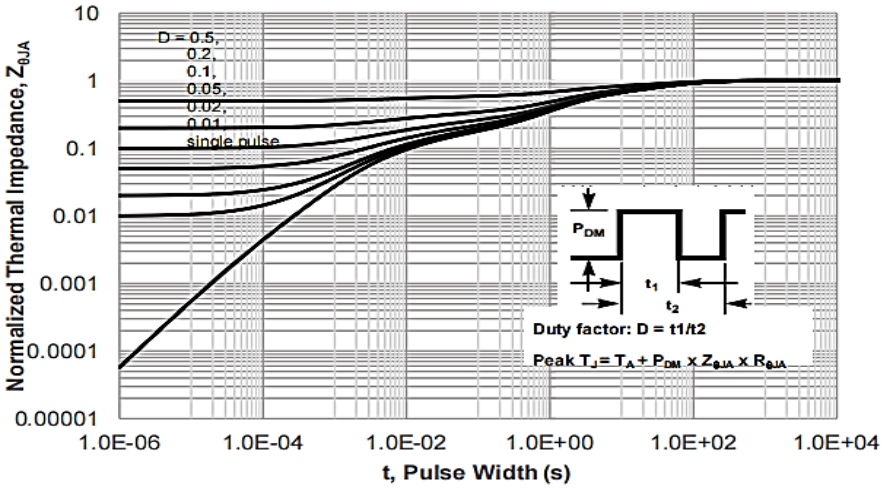
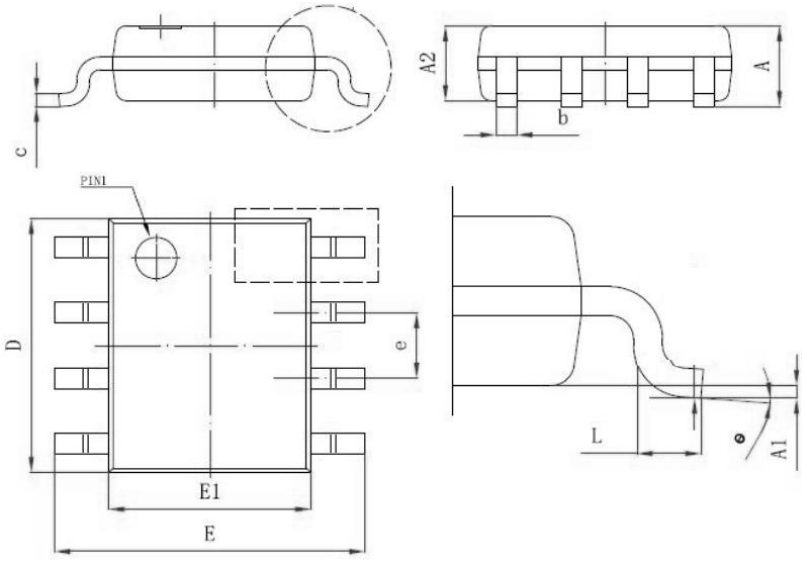


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Mechanical Data: SOP-8L



Symbol	Dim in mm		
	Min	Typ	Max
A	1.35	1.55	1.75
A1	0.02	0.15	0.25
A2	1.425	1.45	1.475
b	0.3	0.4	0.5
c	0.15	0.2	0.25
D	4.8	5	5.2
E	5.8	6	6.2
E1	3.8	4	4.2
e	1.27BSC		
L	0.4		1.27
θ	0°		8°

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Edition	Date	Change
REV1.0	2021/1/31	Initial release

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