

-30V P-Channel Enhancement Mode MOSFET

Description

The AP9435C uses advanced Trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

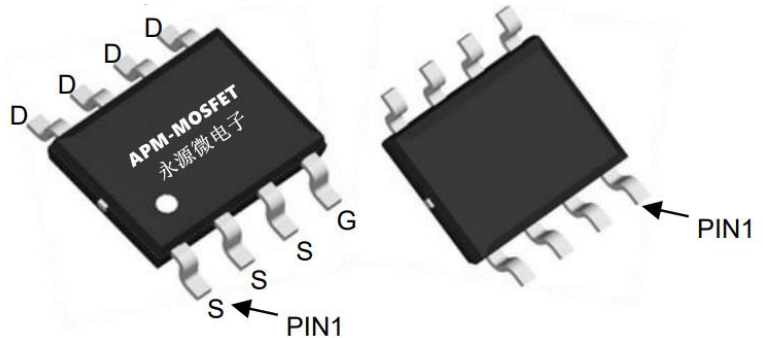
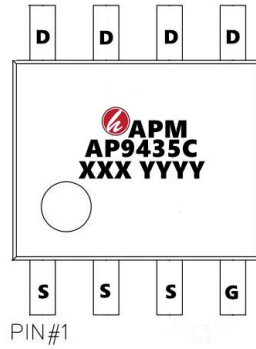
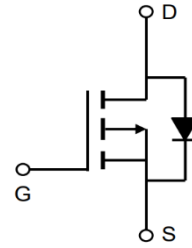
General Features

$V_{DS} = -30V$ $I_D = -6.2A$

$R_{DS(ON)} < 50m\Omega$ @ $V_{GS}=10V$ (Type: 40m Ω)

Application

Battery protection
Load switch
Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP9435C	SOP-8L	AP9435C	3000

Absolute Maximum Ratings ($T_c=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-6.2	A
$I_D @ T_c=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2.6	A
I_{DM}	Pulsed Drain Current ^{note1}	-16.8	A
P_D	Power Dissipation $T_A = 25^{\circ}C$	1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	125	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance from Junction to Ambient ²	135	$^{\circ}C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^{\circ}C$



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

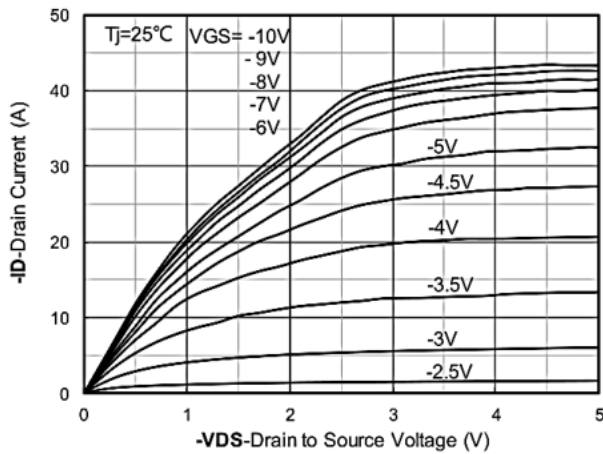
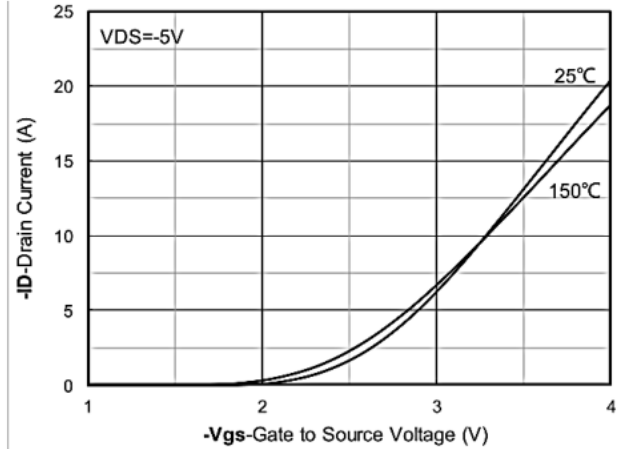
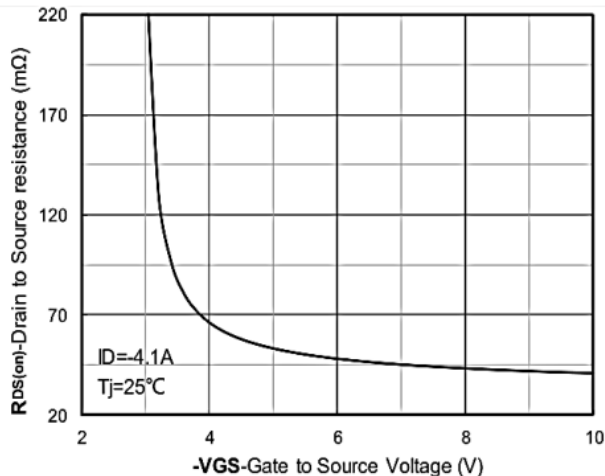
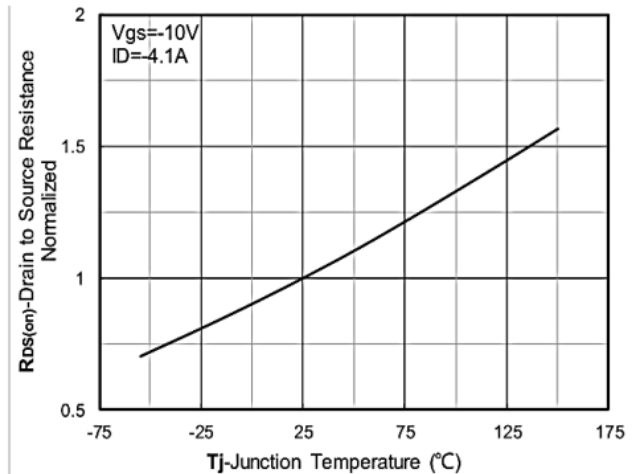
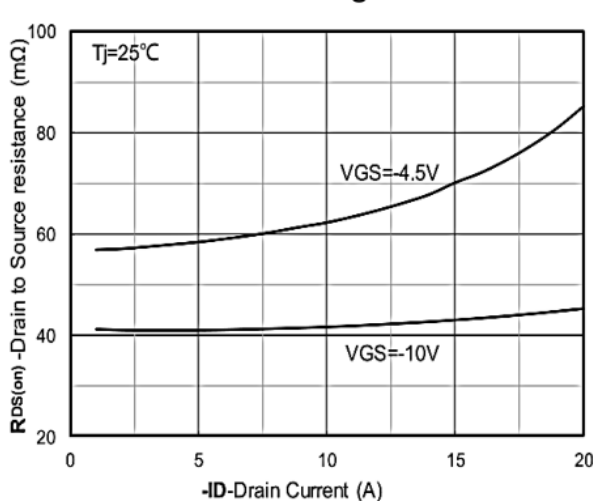
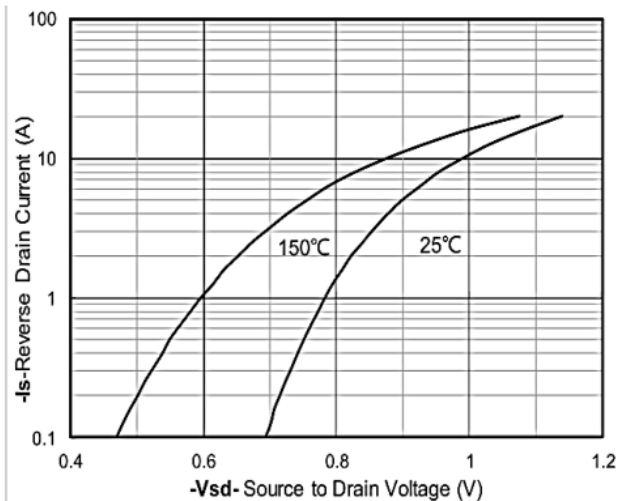
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = -250μA	-30	-	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
IGSS	Gate-Source Leakage	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
VGS(th)	Gate-Source Threshold voltage	V _{DS} = V _{GS} , I _D = -250μA	-1.2	-1.5	-2.5	V
RDS(on)	Drain-Source on-State Resistance ³	V _{GS} = -10V, I _D = -4A	-	40	50	mΩ
		V _{GS} = -4.5V, I _D = -3A	-	52	75	
Ciss	Input Capacitance	V _{GS} = 0V, V _{DS} = -15V, f = 1.0MHz	-	520	-	pF
Coss	Output Capacitance		-	70	-	
Crss	Reverse Transfer Capacitance		-	60	-	
Qg	Total Gate Charge	V _{GS} = -10V, V _{DS} = -15V, I _D = -4.1A	-	12	-	nC
Qgs	Gate-Source Charge		-	3	-	
Qgd	Gate-Drain Charge		-	2	-	
td(on)	Turn-on Delay Time	V _{GS} = -10V, V _{DS} = -15V , R _L = 15Ω, R _{GEN} = 2.5Ω	-	5	-	ns
t _r	Rise Time		-	28	-	
td(off)	Turn-off Delay time		-	30	-	
t _f	Fall Time		-	35	-	
VSD	Diode Forward Voltage ³	I _S = -4.1A, V _{GS} = 0V	-	-	-1.2	V
IS	Continuous Source Current		-	-	-4.1	A

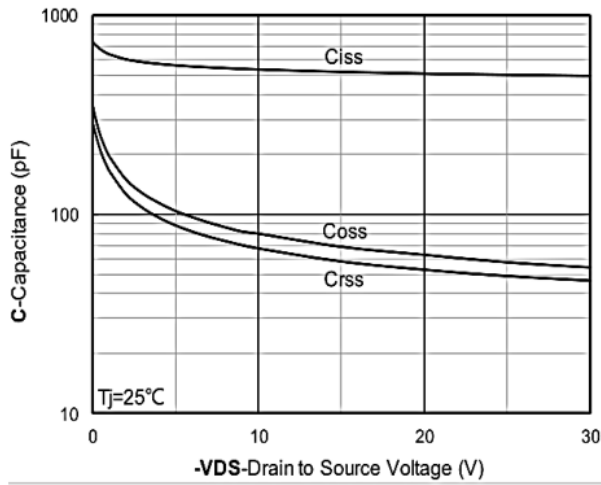
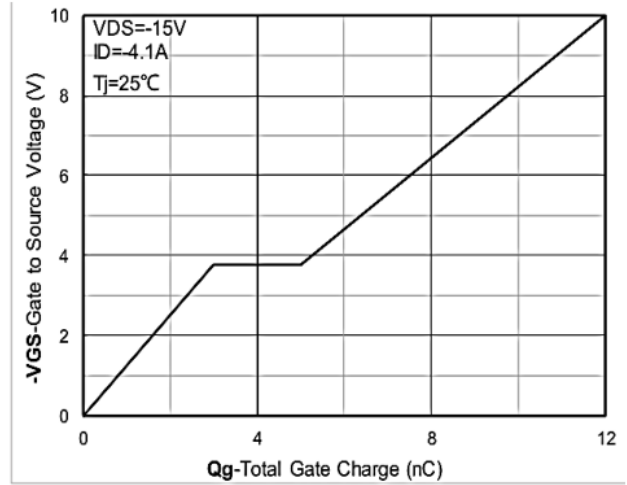
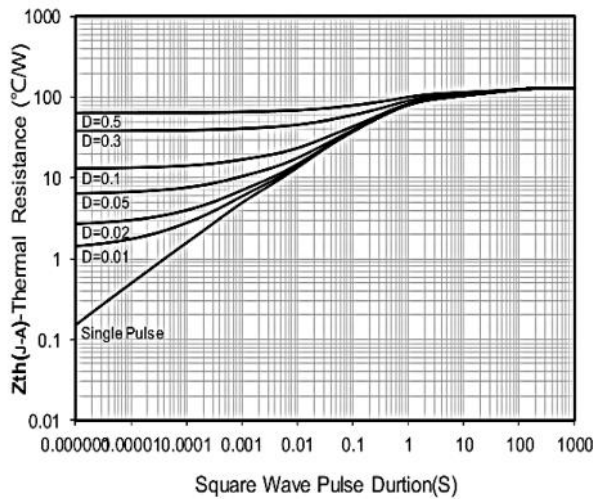
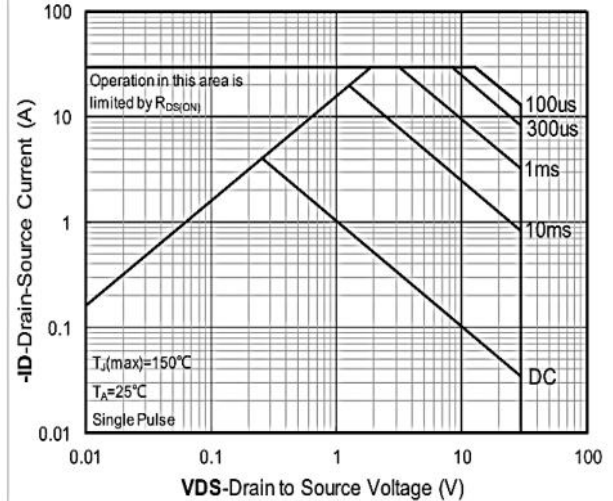
Note :

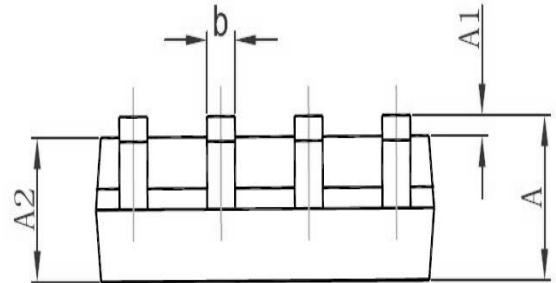
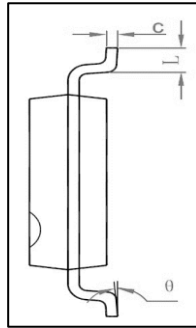
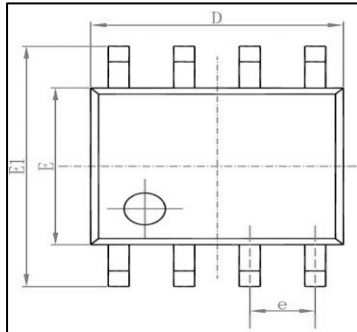
- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

**APM**

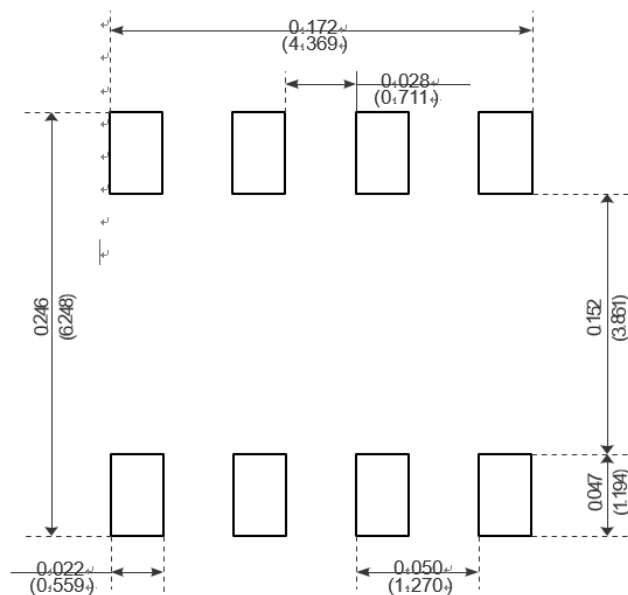
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AP9435C**-30V P-Channel Enhancement Mode MOSFET****Typical Characteristics****Figure 1. Output Characteristics****Figure 2. Transfer Characteristics****Figure 4. On-Resistance vs Gate to****Figure 5. Normalized On-Resistance****Figure 6. $R_{DS(on)}$ VS Drain Current****Figure 7. Forward characteristics of reverse diode**

**-30V P-Channel Enhancement Mode MOSFET****Figure 7. Capacitance Characteristics****Figure 8. Gate Charge****Figure 9. Maximum Transient Thermal Impedance****Figure 10. Safe Operation Area**

**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**

-30V P-Channel Enhancement Mode MOSFET**Attention**

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Edition	Date	Change
REV1.0	2022/8/31	Initial release

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