



ZHEJIANG UNIÜ-NE Technology CO., LTD

浙江宇力微新能源科技有限公司



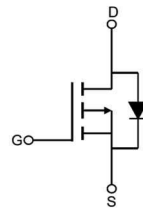
## AP4407C Data Sheet

V 1.0

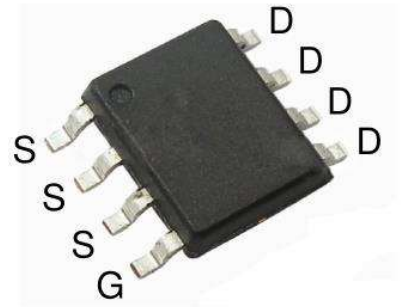
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## Feature

- -30V,-12A  
 $R_{DS(ON)} < 14m\Omega @ V_{GS} = -10V$  TYP:10.5 m $\Omega$   
 $R_{DS(ON)} < 19m\Omega @ V_{GS} = -4.5V$  TYP:15 m $\Omega$
- Trench DMOS Power MOSFET
- Fast Switching
- Exceptional on-resistance and maximum DC current capability



Schematic diagram



SOP-8

## Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

## Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
4407C	AP4407C	SOP-8	13 inch	-	4000

## ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_a = 25^\circ\text{C}$ )	$I_D$	-12	A
Continuous Drain Current ( $T_a = 100^\circ\text{C}$ )	$I_D$	-8.4	A
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	-50	A
Singel Pulsed Avalanche Energy <sup>(4)</sup>	$E_{AS}$	100	mJ
Power Dissipation	$P_D$	3.7	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	42.8	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$

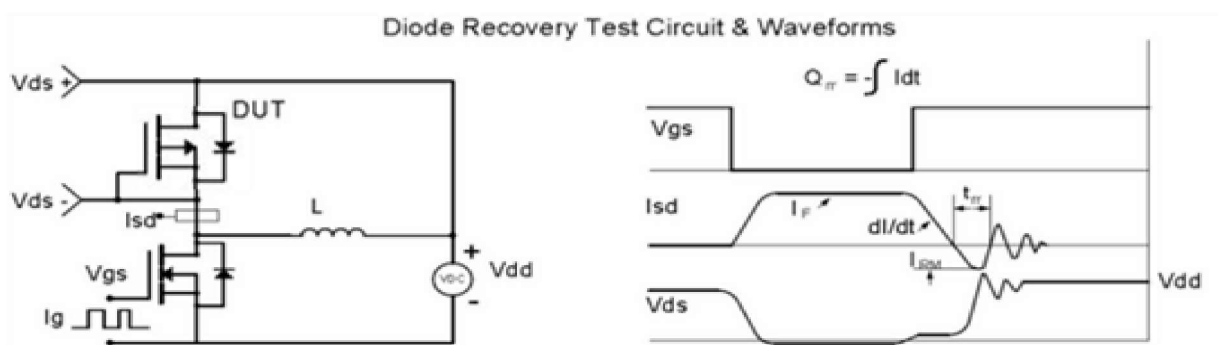
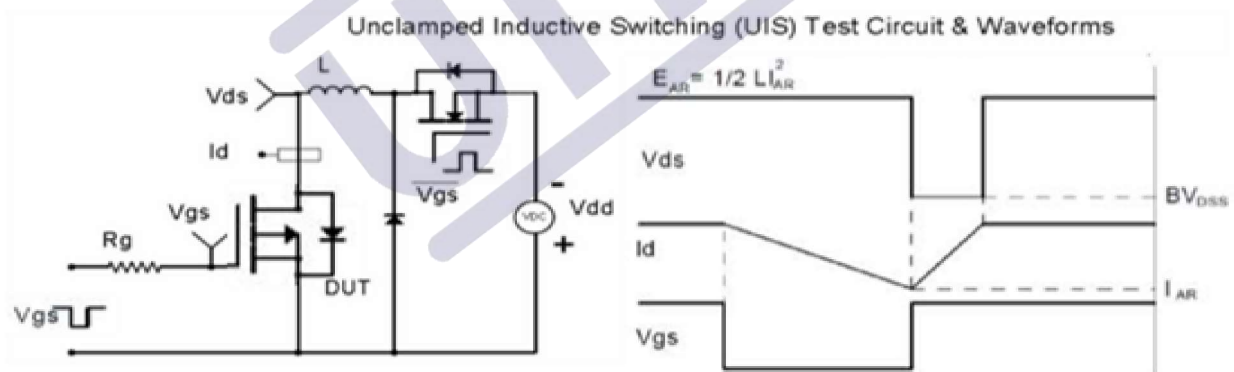
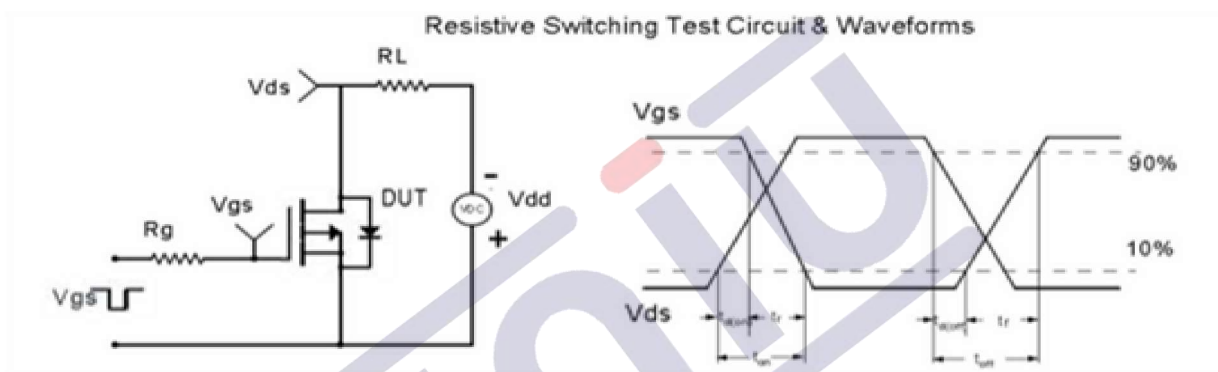
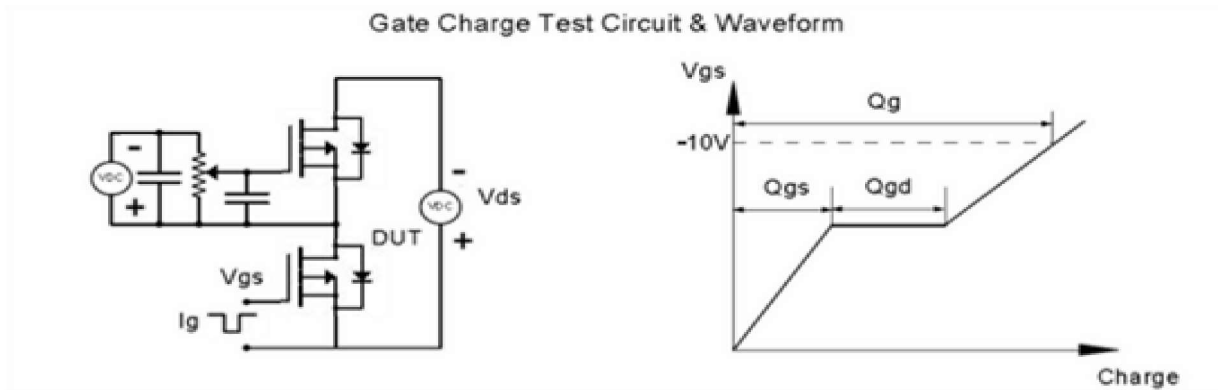
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V	-	-	-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate threshold voltage <sup>(2)</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1	-1.5	-2.5	V
Drain-source on-resistance <sup>(2)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A	-	10.5	14	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5A	-	15	19	
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz	-	2863	-	pF
Output Capacitance	C <sub>oss</sub>		-	349	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	237	-	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -12A V <sub>GS</sub> = -10V, R <sub>G</sub> = 2.5Ω	-	11.5	-	ns
Turn-on rise time	t <sub>r</sub>		-	38.5	-	
Turn-off delay time	t <sub>d(off)</sub>		-	89	-	
Turn-off fall time	t <sub>f</sub>		-	19	-	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, I <sub>D</sub> = -10A, V <sub>GS</sub> = -10V	-	54.8	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	7.5	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	12.5	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>(2)</sup>	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -10A	-	-	-1.2	V
Diode Forward current <sup>(3)</sup>	I <sub>S</sub>		-	-	-12	A

**Notes:**

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%
3. Surface Mounted on FR4 Board, t ≤ 10 sec
4. L = 0.5mH, V<sub>DD</sub> = -15V, R<sub>G</sub> = 25Ω, T<sub>J</sub> = 25°C

**Test Circuit & Waveform**



**Typical Performance Characteristics**

Fig.1 Power Dissipation Derating Curve

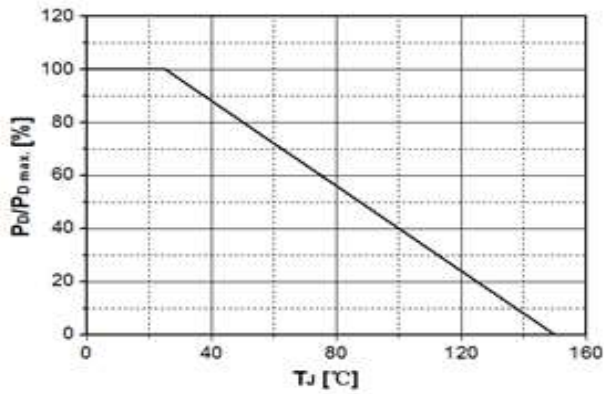


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

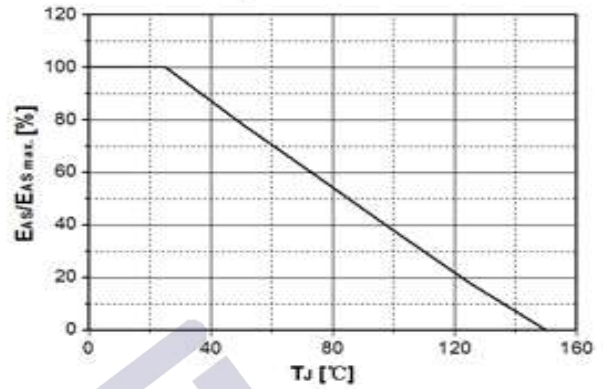


Fig.3 Typical Output Characteristics

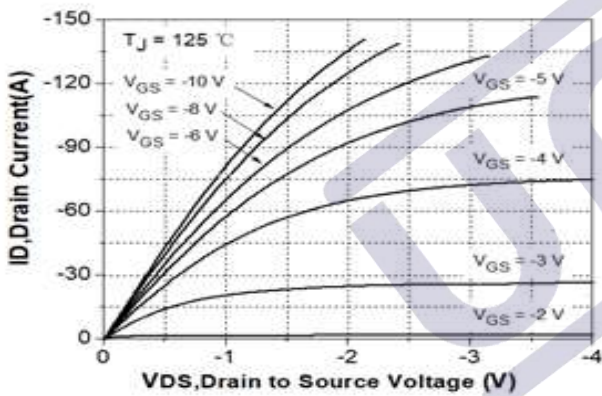


Fig. 4 Transconductance vs. Drain Current

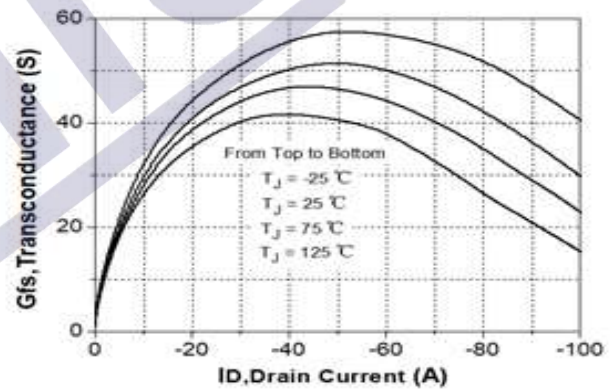


Fig.5 Typical Transfer Characteristics

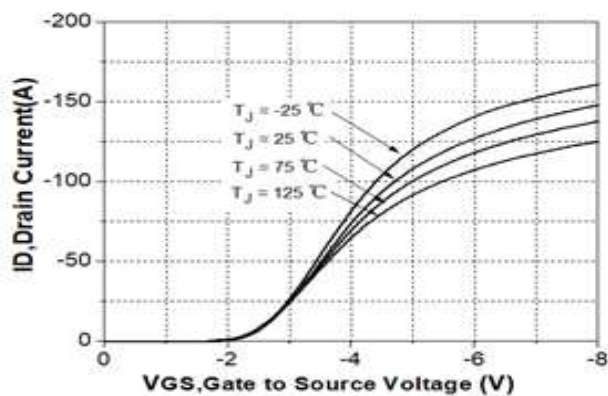
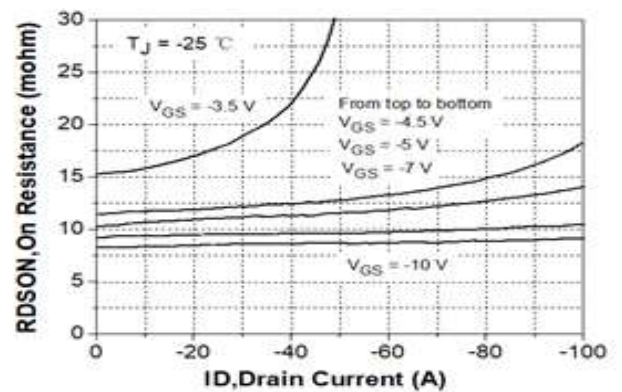


Fig. 6 State Resistance vs. Drain Current @-25°C



## 1.版本记录

DATE	REV.	DESCRIPTION
2018/04/19	1.0	First Release
2021/05/19	1.1	Layout Adjustment

## 2.免责声明

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