



ZHEJIANG UNIÜ-NE Technology CO., LTD

浙江宇力微新能源科技有限公司



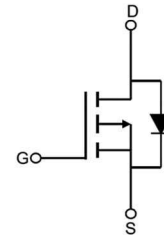
AP30P30S Data Sheet

V 1.1

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Feature

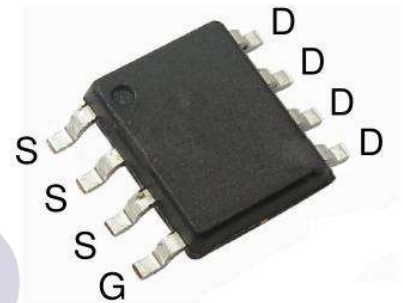
- -30V,-15A
 $R_{DS(on)} < 12m\ \Omega @ V_{GS} = -10V$
 $R_{DS(on)} < 16m\ \Omega @ V_{GS} = -4.5V$
- Trench DMOS Power MOSFET
- Fast Switching
- Exceptional on-resistance and maximum DC current capability



Schematic diagram

Application

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



SOP-8

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
30P30S	AP30P30S	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}	± 20	V
Continuous Drain Current ($T_a = 25^\circ\text{C}$)	I_D	-15	A
Continuous Drain Current ($T_a = 100^\circ\text{C}$)	I_D	-11.5	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-70	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	121	mJ
Power Dissipation	P_D	3.1	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	40	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

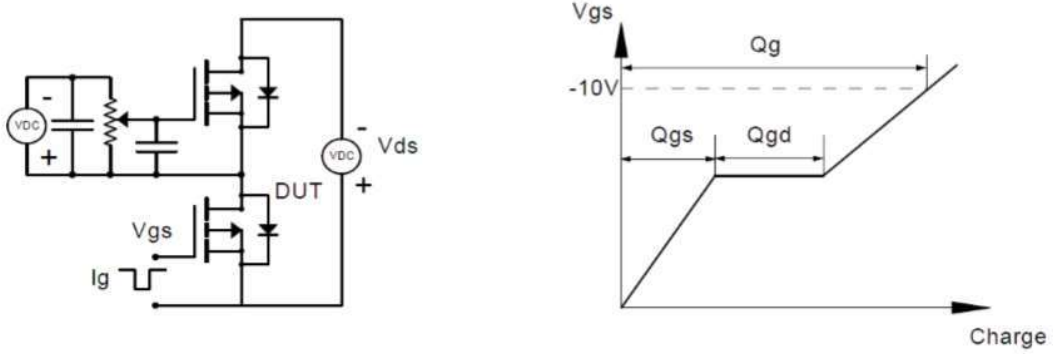
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage ⁽³⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.6	-2.2	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -10A$	-	8.5	12	m Ω
		$V_{GS} = -4.5V, I_D = -8A$	-	12	16	
Forward transconductance ⁽³⁾	g_{FS}	$V_{DS} = -5V, I_D = -15A$	30	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$	-	3564	-	pF
Output Capacitance	C_{oss}		-	416	-	
Reverse Transfer Capacitance	C_{rss}		-	373	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, R_L = 1.5\Omega$ $V_{GS} = -10V, R_G = 3\Omega$	-	16	-	ns
Turn-on rise time	t_r		-	21	-	
Turn-off delay time	$t_{d(off)}$		-	68	-	
Turn-off fall time	t_f		-	52	-	
Total Gate Charge	Q_g	$V_{DS} = -15V, I_D = -20A,$ $V_{GS} = -10V$	-	37	-	nC
Gate-Source Charge	Q_{gs}		-	6.5	-	
Gate-Drain Charge	Q_{gd}		-	9.4	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V_{DS}	$V_{GS} = 0V, I_S = -10A$	-	-	-1	V
Diode Forward current ⁽⁴⁾	I_S		-	-	-15	A

Notes:

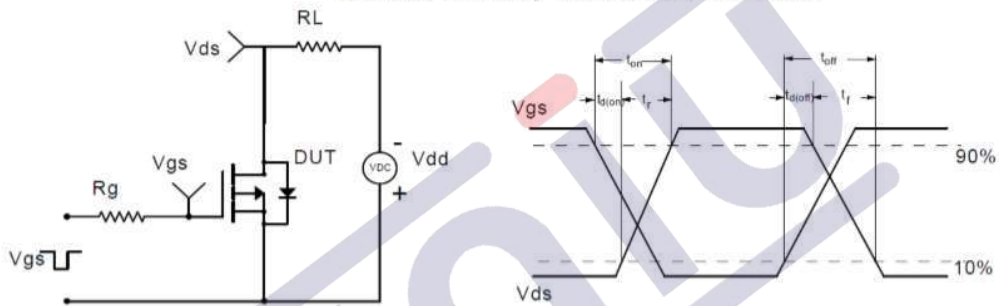
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: $T_J = 25^{\circ}\text{C}, V_{DD} = -15V, R_G = 20\Omega, L = 0.1mH$
3. Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. Surface Mounted on FR4 Board, $t \leq 10$ sec

Test Circuit

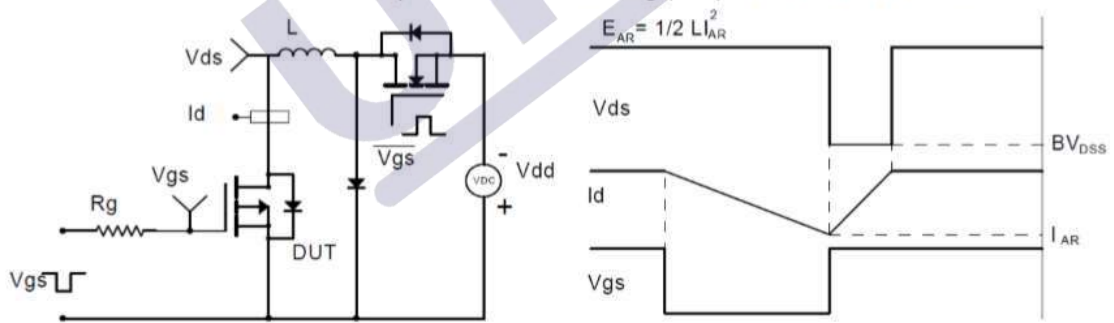
Gate Charge Test Circuit & Waveform



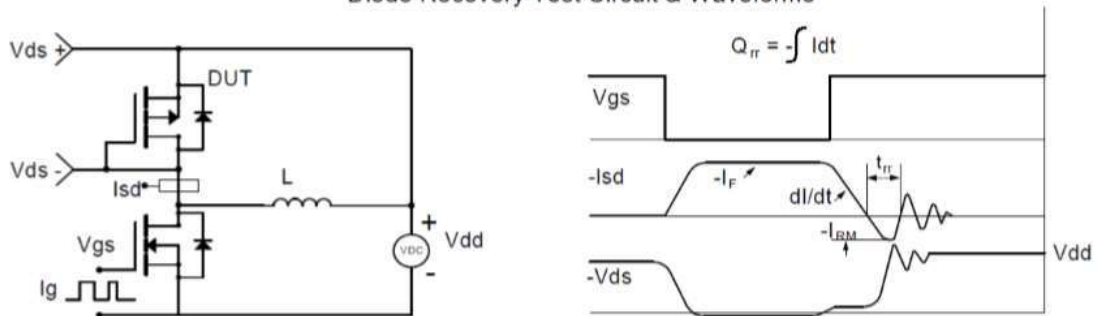
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Figure 1: Output Characteristics

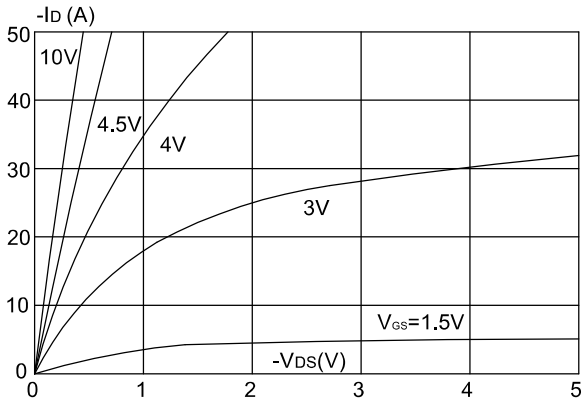


Figure 2: Typical Transfer Characteristics

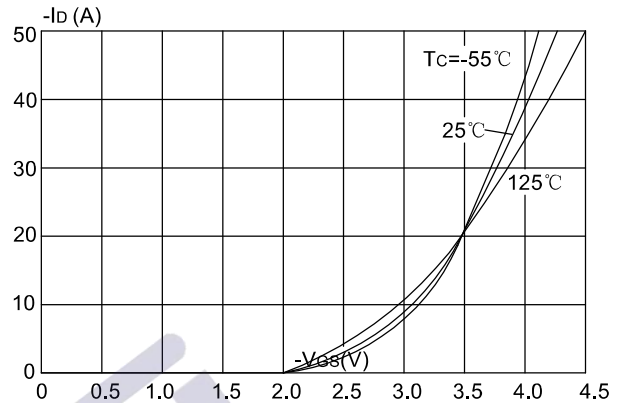


Figure 3: On-resistance vs. Drain Current

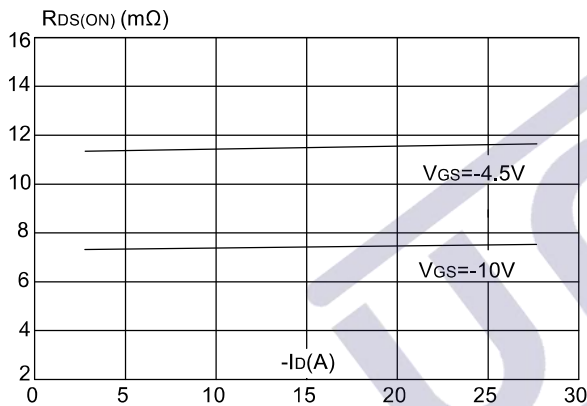


Figure 4: Body Diode Characteristics

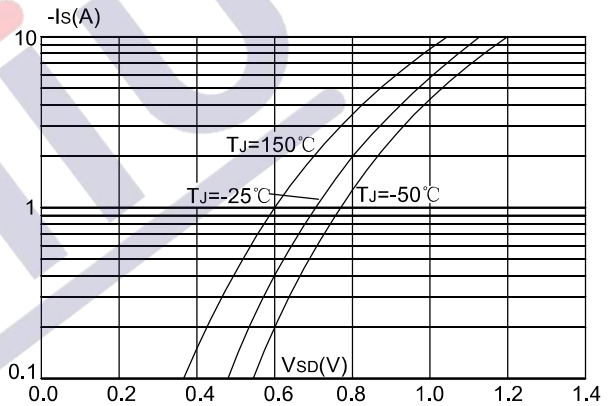


Figure 5: Gate Charge Characteristics

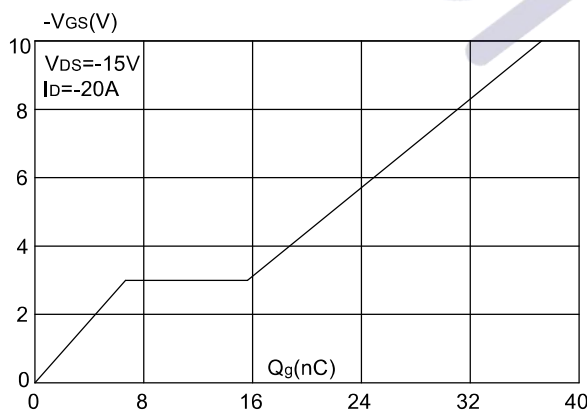


Figure 6: Capacitance Characteristics

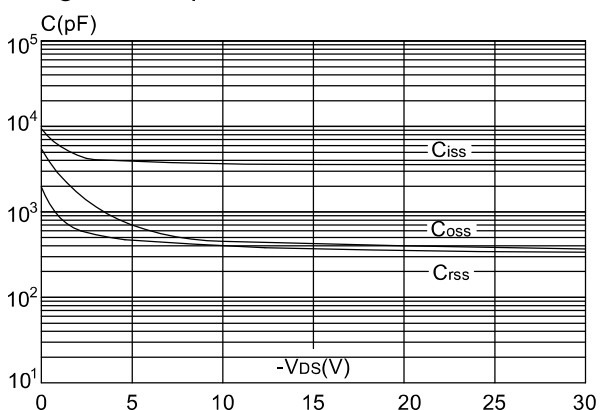


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

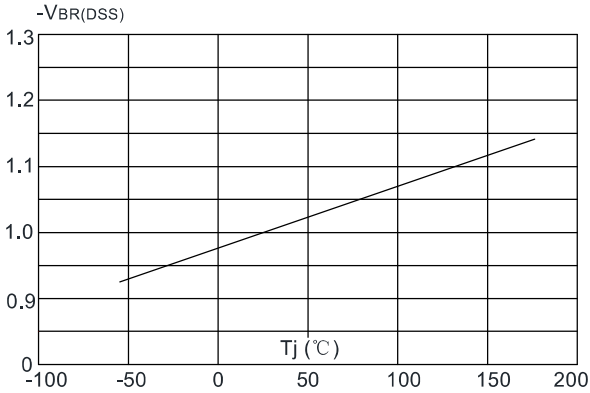


Figure 8: Normalized on Resistance vs. Junction Temperature

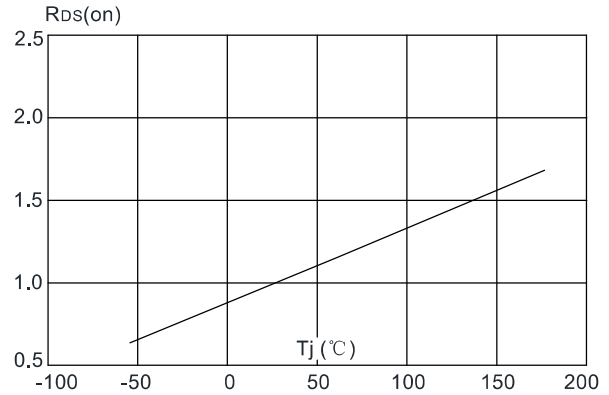


Figure 9: Maximum Safe Operating Area

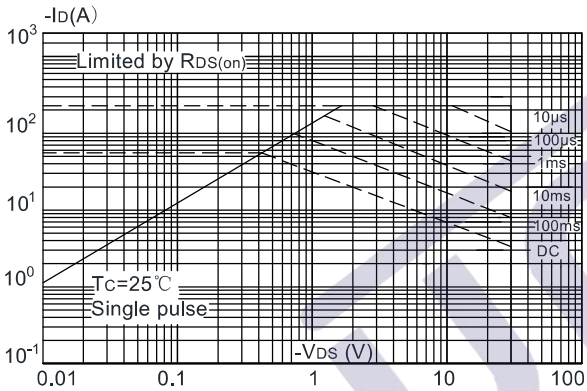


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

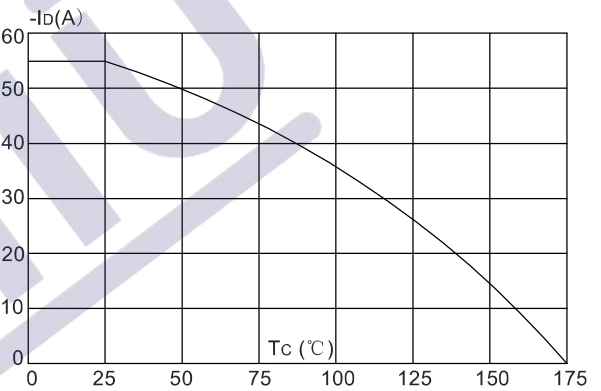
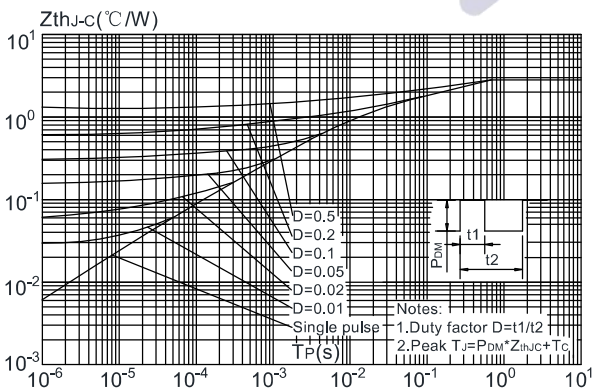


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



1.版本记录

DATE	REV.	DESCRIPTION
2018/04/19	1.0	First Release
2020/08/01	1.1	Layout Adjustment

2.免责声明

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