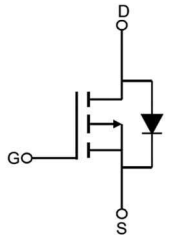
AP30P30S

P-Channel Enhancement Mosfet

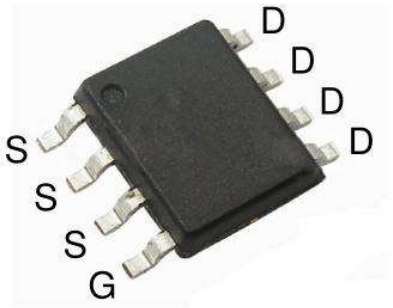
DATA SHEET

Feature

- -30V,-15A
  $R_{DS(ON)}$ <12mΩ @V_{GS}=-10V
  $R_{DS(ON)}$ <16mΩ @V_{GS}=-4.5V
- 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)
30P30S	AP30P30S	SOP-8	13 inch	-	4000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ 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℃)	I_D	-15	A
Continuous Drain Current (T_a =100℃)	I_D	-11.5	A
Pulsed Drain Currenr (1)	I_{DM}	-70	A
Singel 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	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

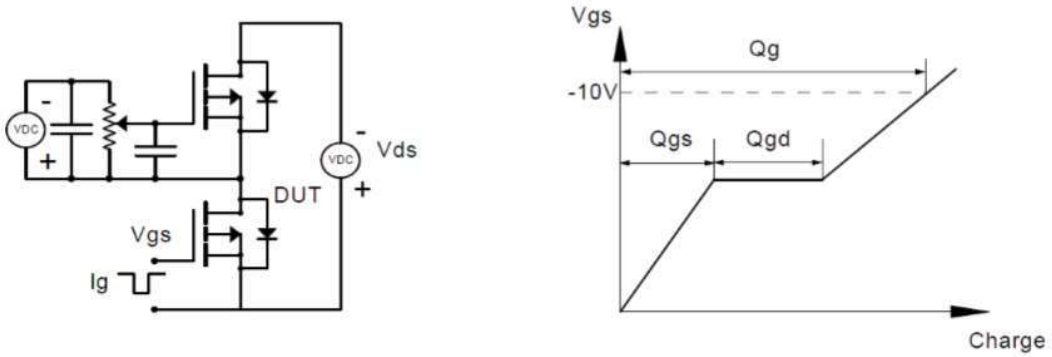
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-30V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.6	-2.2	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-10A	-	8.5	12	mΩ
		V_{GS} =-4.5V, I_D =-8A	-	12	16	
Forward tranconductance(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=1.5Ω V_{GS}=-10V, R_G=3Ω	-	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	Qg	VDS=-15V, ID=-20A, VGS=-10V	-	37	-	nC
Gate-Source Charge	Qgs		-	6.5	-	
Gate-Drain Charge	Qgd		-	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:

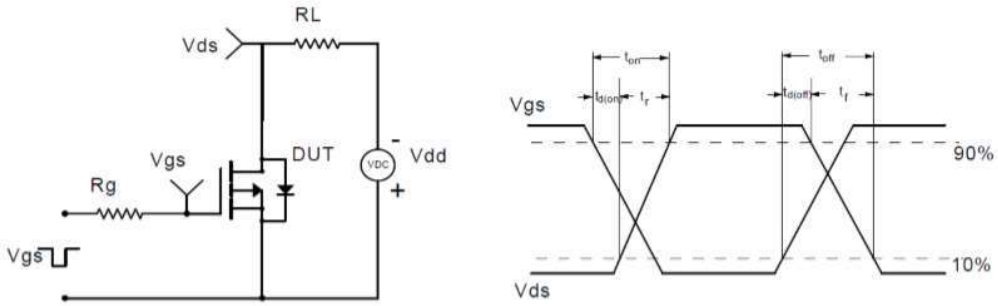
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=-15V,R_G=20Ω,L=0.1mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit

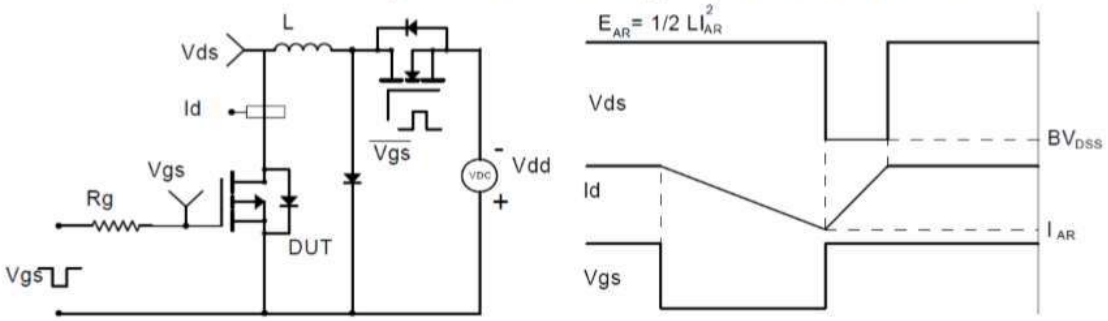
Gate Charge Test Circuit & Waveform



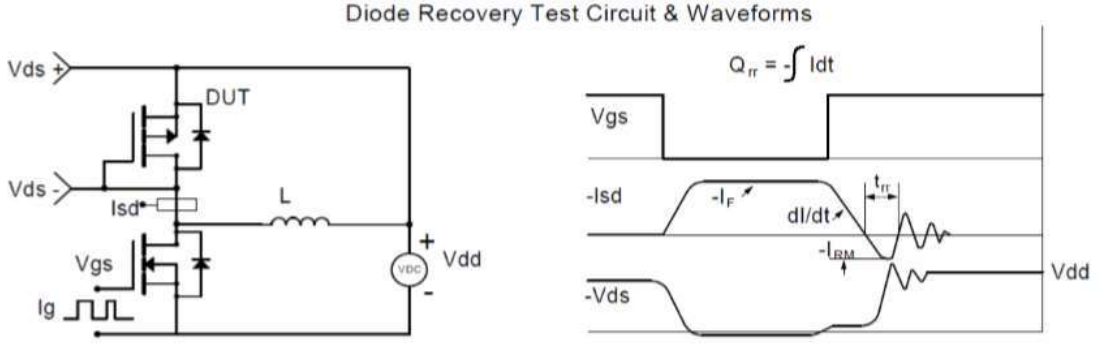
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Figure1: Output Characteristics

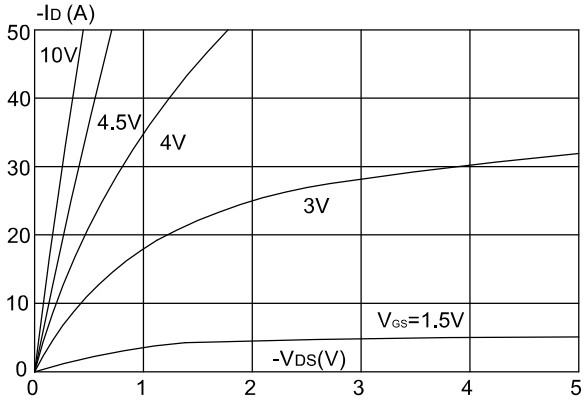


Figure 2: Typical Transfer Characteristics

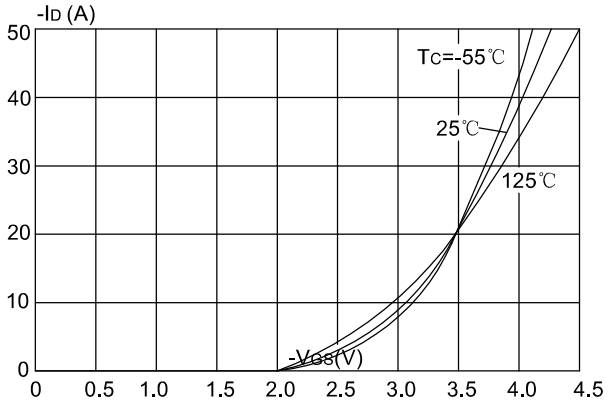


Figure 3: On-resistance vs. Drain Current

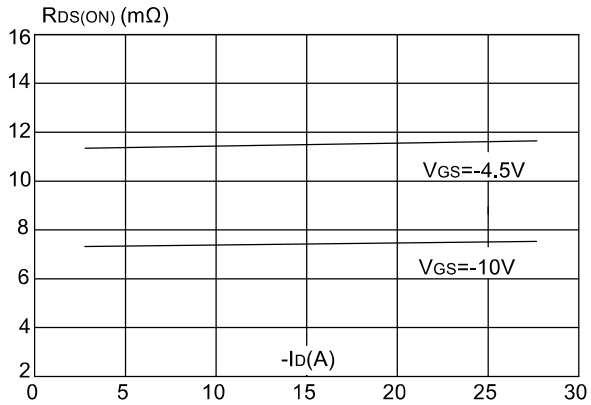


Figure 4: Body Diode Characteristics

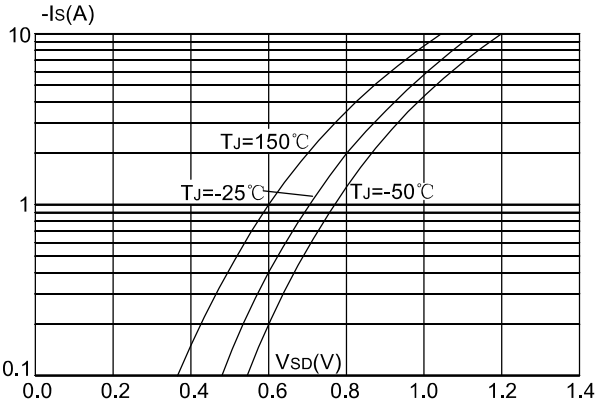


Figure 5: Gate Charge Characteristics

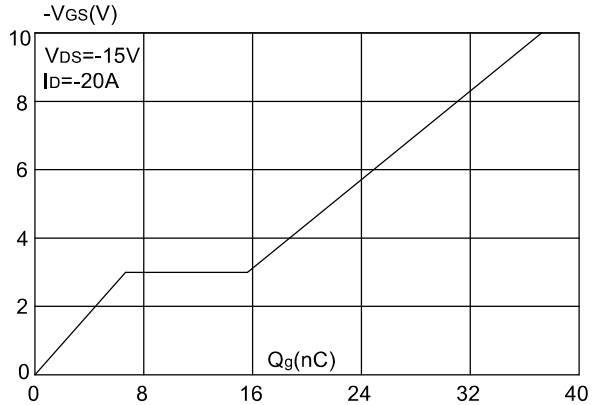


Figure 6: Capacitance Characteristics

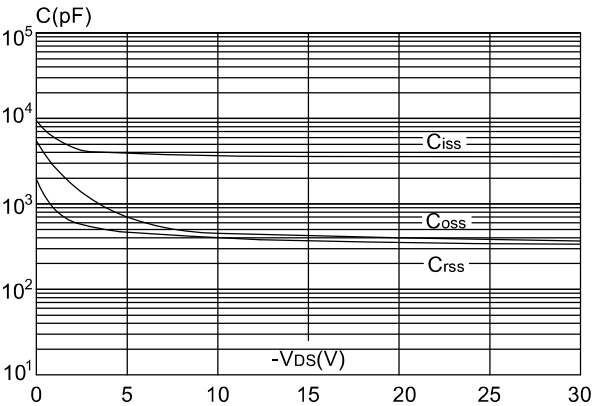


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

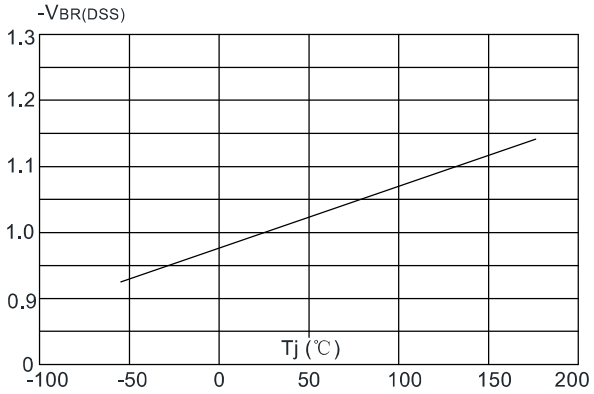


Figure 8: Normalized on Resistance vs. Junction Temperature

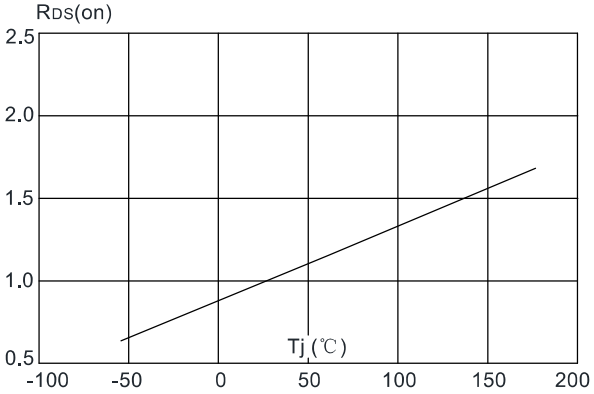


Figure 9: Maximum Safe Operating Area

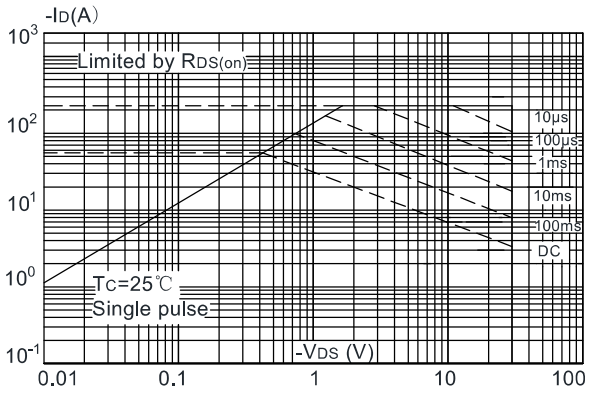


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

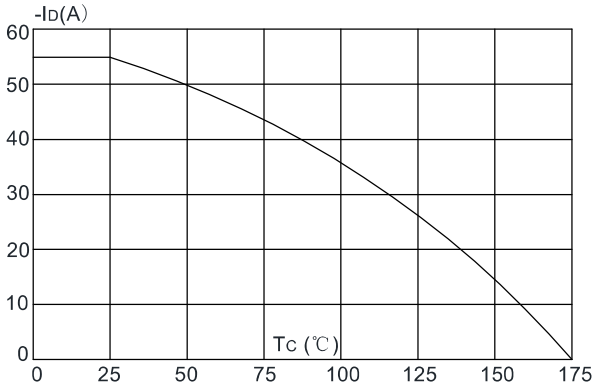
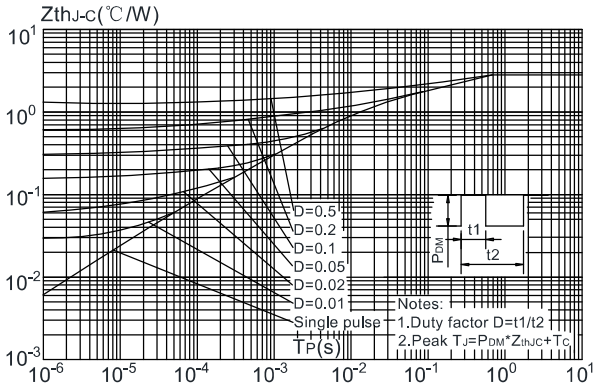
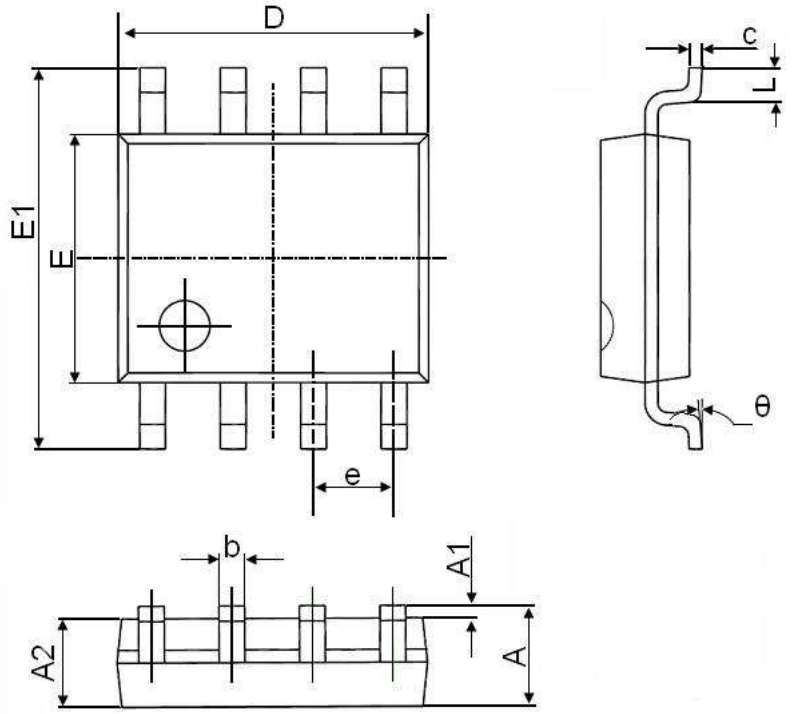


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



SOP-8 Package Information



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°