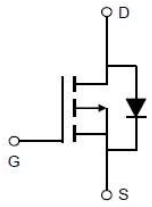
Feature

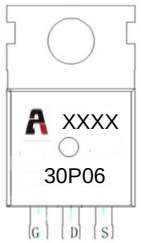
- -60V,-30A
  $R_{DS(ON)}$ <30mΩ @V_{GS}=-10V TYP:23 mΩ
  $R_{DS(ON)}$ <38mΩ @V_{GS}=-4.5V TYP:27 mΩ
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Schematic Diagram

Application

- PWM applications
- Load Switch
- Power management



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
30P06	AP30P06	TO-220	-	-	1000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_c =25℃)	I_D	-30	A
Continuous Drain Current (T_c =100℃)	I_D	-20	A
Pulsed Drain Current (1)	I_{DM}	-120	A
Single Pulsed Avalanche Energy (2)	E_{AS}	90	mJ
Power Dissipation	P_D	100	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.25	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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

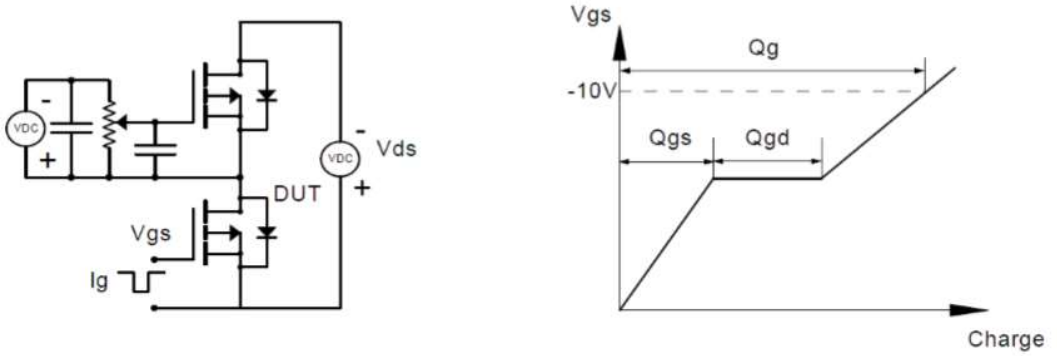
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.7	-2.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-15A	-	23	30	mΩ
		V_{GS} =-4.5V, I_D =-10A	-	27	38	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-25V, V_{GS} =0V, f =1MHz	-	2400	-	pF
Output Capacitance	C_{oss}		-	251	-	
Reverse Transfer Capacitance	C_{rss}		-	196	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V, I_D=-30A, R_L=3Ω V_{GS}=-10V, R_G=3Ω	-	15	-	ns
Turn-on rise time	t_r		-	120	-	
Turn-off delay time	$t_{d(off)}$		-	245	-	
Turn-off fall time	t_f		-	199	-	
Total Gate Charge	Qg	VDS=-30V, ID=-15A, VGS=-10V	-	49	-	nC
Gate-Source Charge	Qgs		-	8	-	
Gate-Drain Charge	Qgd		-	12	-	
Source-Drain Diode characteristics						
Diode Forward voltage(2)	V_{DS}	V_{GS} =0V, I_S=-10A	-	-	-1.2	V
Diode Forward current(3)	I_S		-	-	-30	A

Notes:

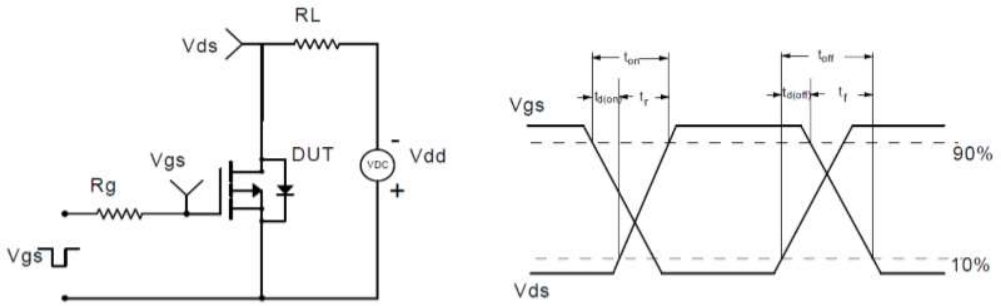
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=-30V,R_G=20Ω,L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit

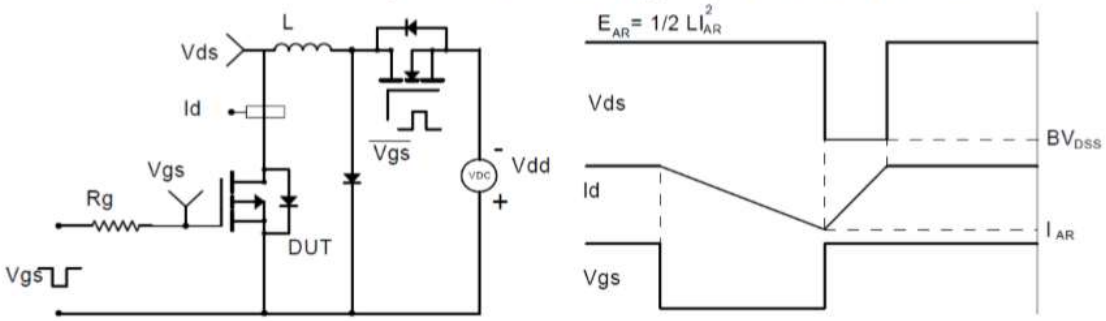
Gate Charge Test Circuit & Waveform



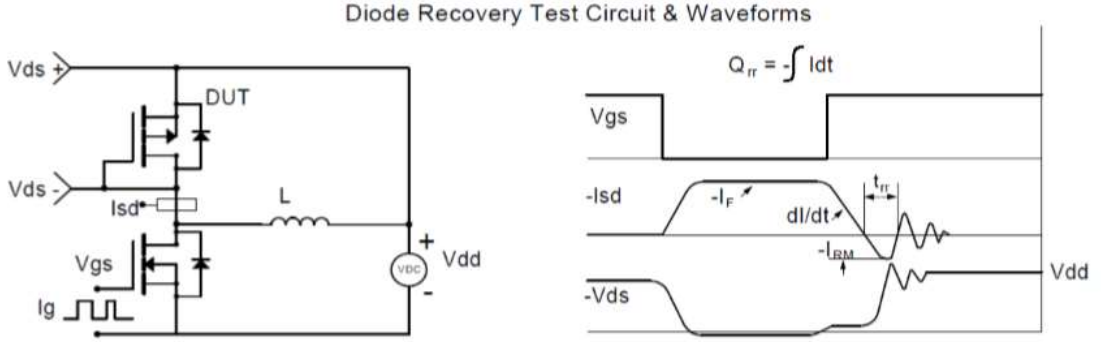
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Figure1: Output Characteristics

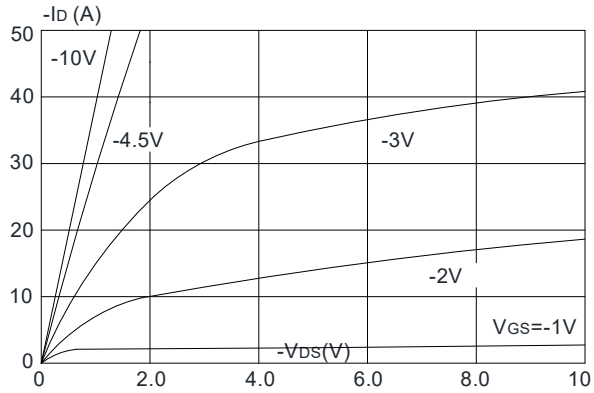


Figure 2: Typical Transfer Characteristics

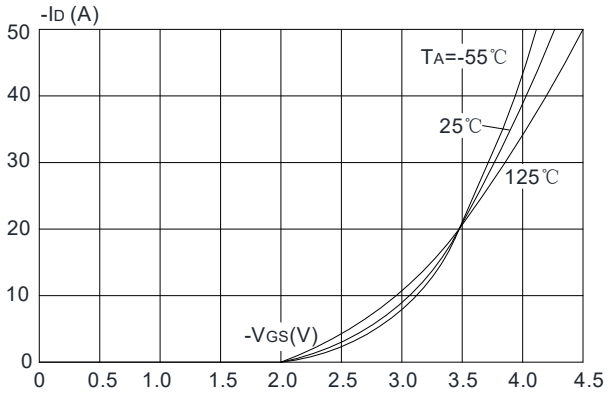


Figure 3: On-resistance vs. Drain Current

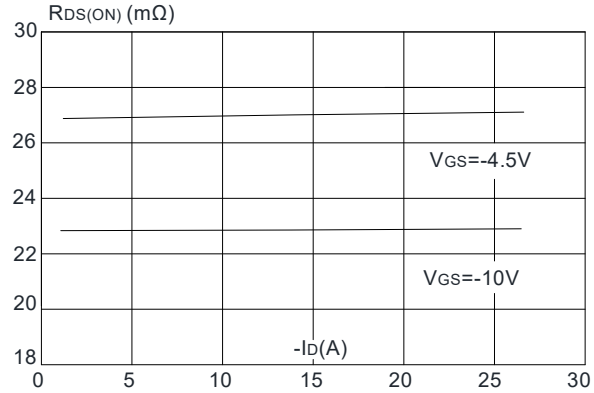


Figure 4: Body Diode Characteristics

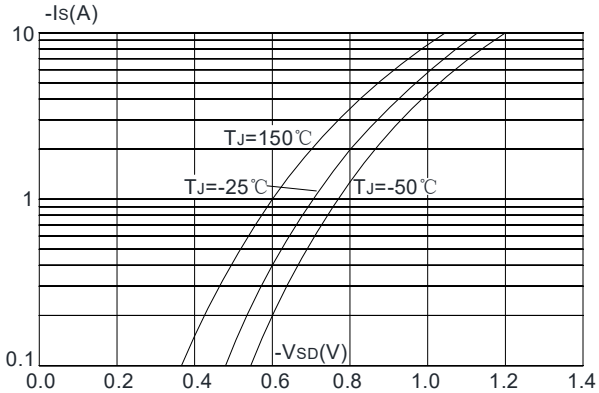


Figure 5: Gate Charge Characteristics

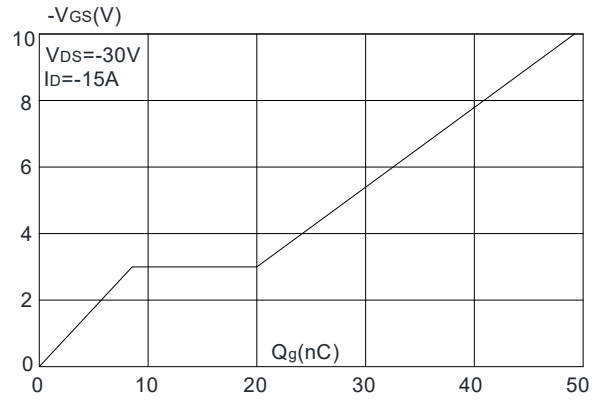


Figure 6: Capacitance Characteristics

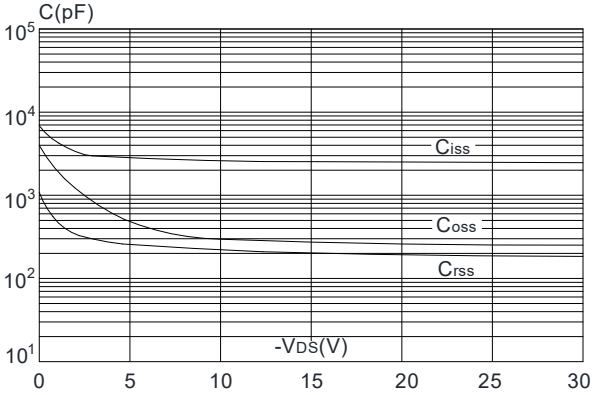


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

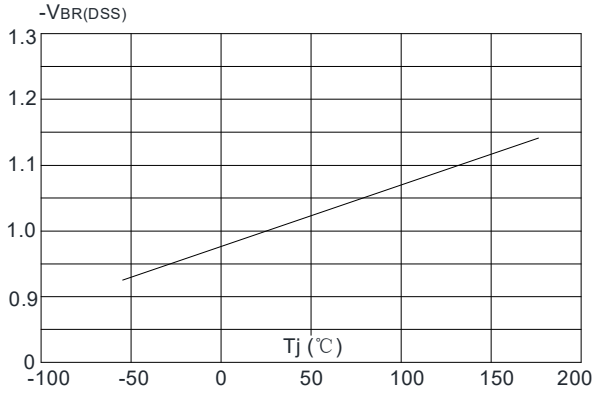


Figure 8: Normalized on Resistance vs. Junction Temperature

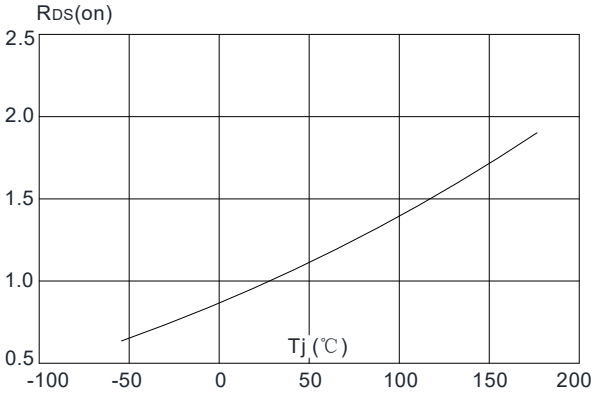


Figure 9: Maximum Safe Operating Area

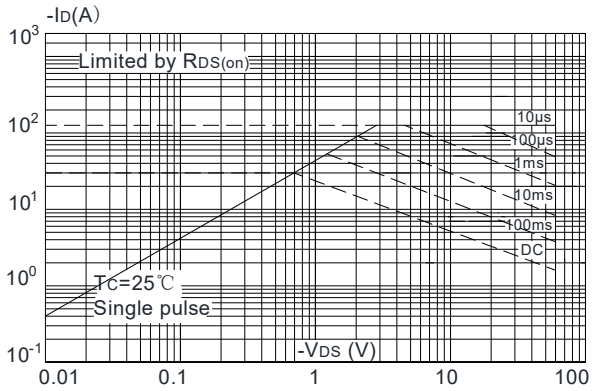


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

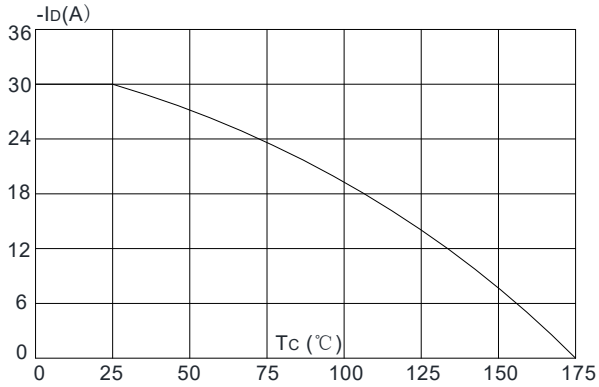
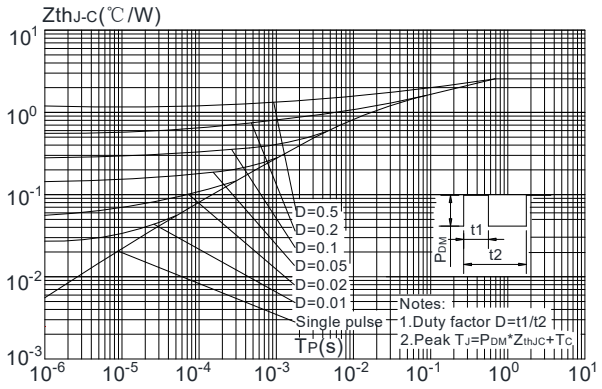
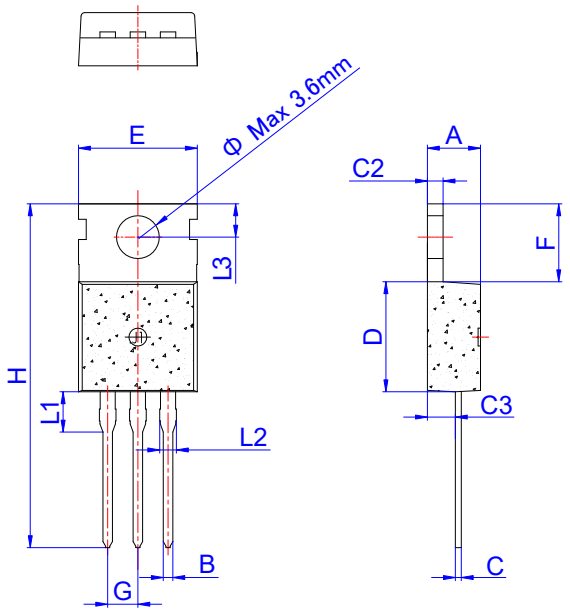


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-220 Package Information



TO-220

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	