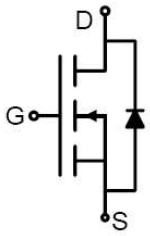
Feature

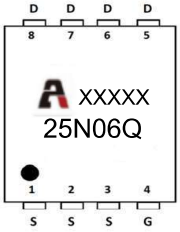
- 60V,20A
  $R_{DS(ON)}$ <29mΩ @V_{GS}=10V TYP:24 mΩ
  $R_{DS(ON)}$ <33mΩ @V_{GS}=4.5V TYP:28.5 mΩ
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



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)
25N06Q	AP25N06Q	PDFN3X3	13 inch	-	5000

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	20	A
Continuous Drain Current (T_C=100℃)	I_D	14	A
Pulsed Drain Current (1)	I_{DM}	60	A
Single Pulsed Avalanche Energy (2)	E_{AS}	34	mJ
Power Dissipation	P_D	20	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	7.2	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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

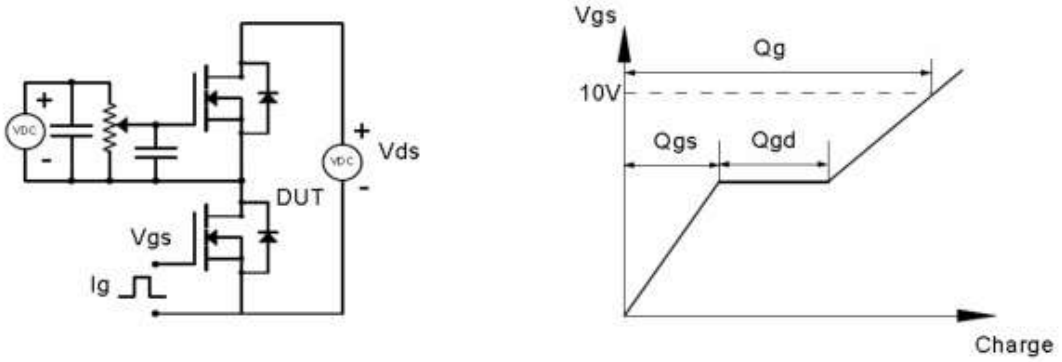
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.1	1.6	2.2	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =15A	-	24	29	mΩ
		V_{GS} =4.5V, I_D =10A	-	28.5	33	
Forward tranconductance(3)	g_{FS}	V_{DS} =10V, I_D =15A	20	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1MHz	-	1090	-	pF
Output Capacitance	C_{oss}		-	56	-	
Reverse Transfer Capacitance	C_{rss}		-	47	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_D=20A V_{GS}=10V, R_G=1.8Ω	-	7.2	-	ns
Turn-on rise time	t_r		-	19	-	
Turn-off delay time	$t_{d(off)}$		-	14	-	
Turn-off fall time	t_f		-	22	-	
Total Gate Charge	Qg	VDS=30V, ID=10A, VGS=10V	-	19.2	-	nC
Gate-Source Charge	Qgs		-	3.6	-	
Gate-Drain Charge	Qgd		-	5.1	-	
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0V, I_S=15A	-	-	1.2	V
Diode Forward current(4)	I_S		-	-	20	A
Body Diode Reverse Recovery Time	trr	T_J=25°， IF=20A,di/dt=100A/us		27		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25°， IF=20A,di/dt=100A/us		40		nc

Notes:

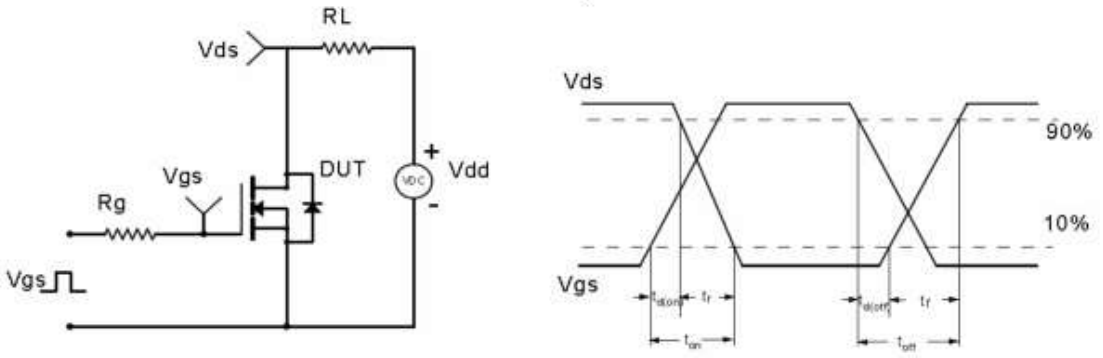
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=30V,R_G=25Ω,L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit & Waveform

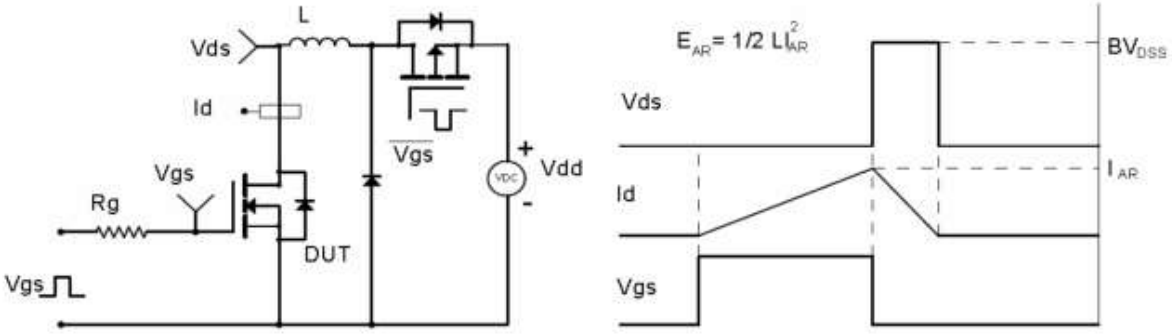
Gate Charge Test Circuit & Waveform



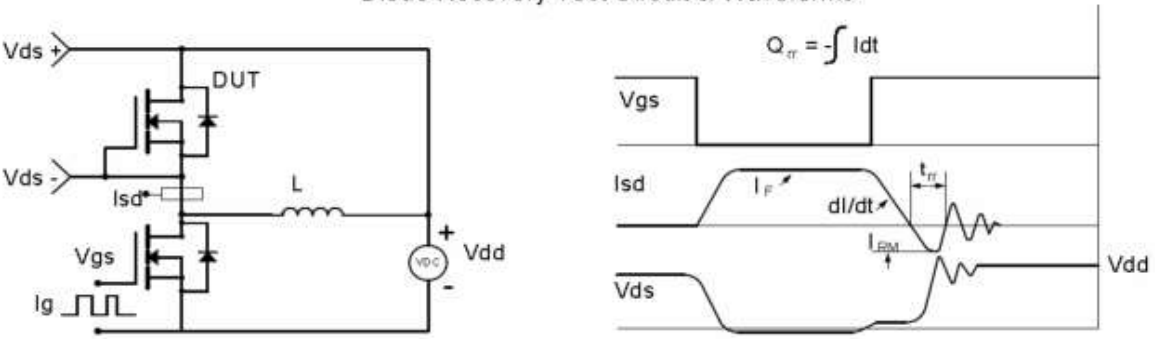
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Output Characteristics

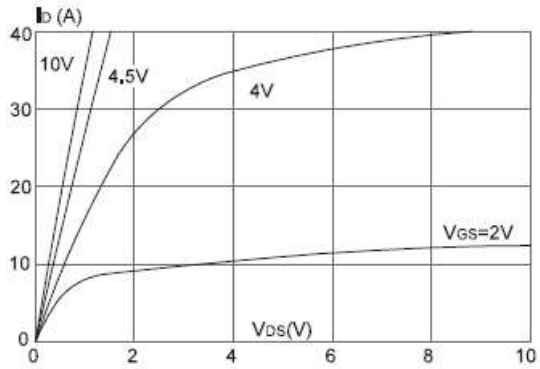


Fig.2 Typical Transfer Characteristics

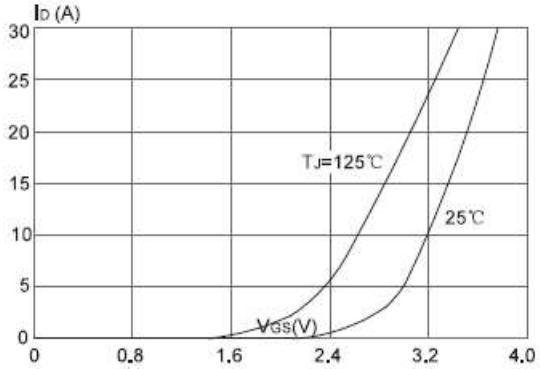


Fig.3 On-resistance VS Drain Current

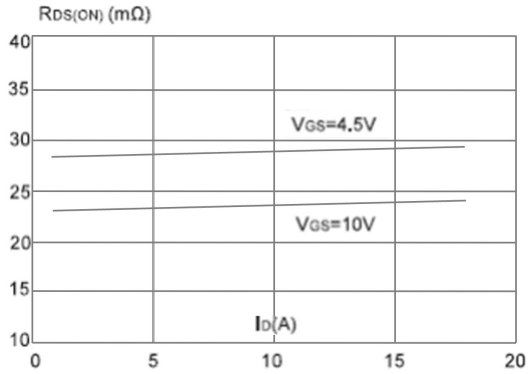


Fig. 4 Body Diode Characteristics

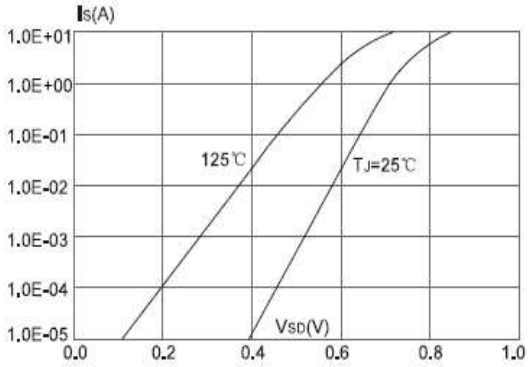


Fig.5 Gate Charge Characteristics

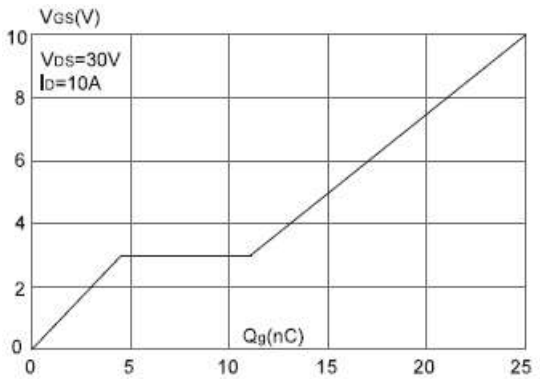


Fig. 6 Capacitance Characteristics

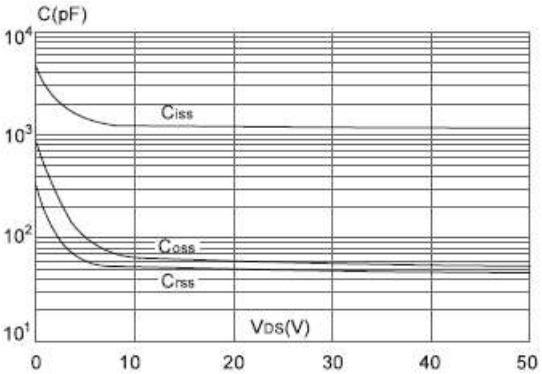


Fig.7 Normalized Breakdown Voltage VS Junction Temperature

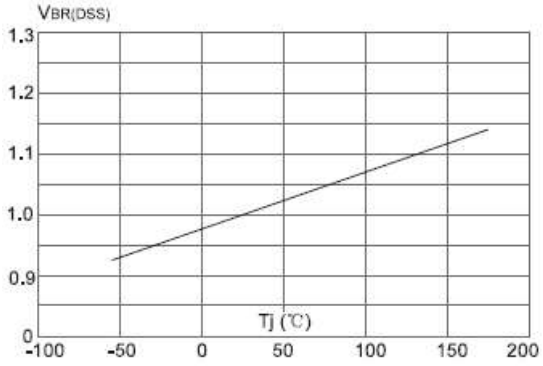


Fig. 8 Normalized On-Resistance Variation VS Junction Temperature

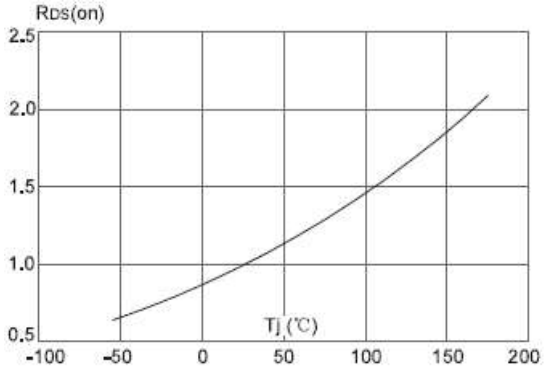


Fig.9 Maximum Continuous Drain Current VS. Case Temperature

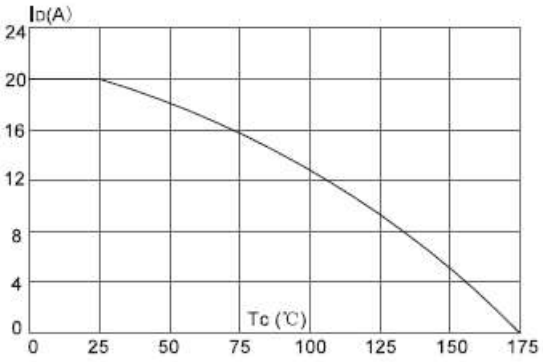


Fig.10 Safe Operating Area

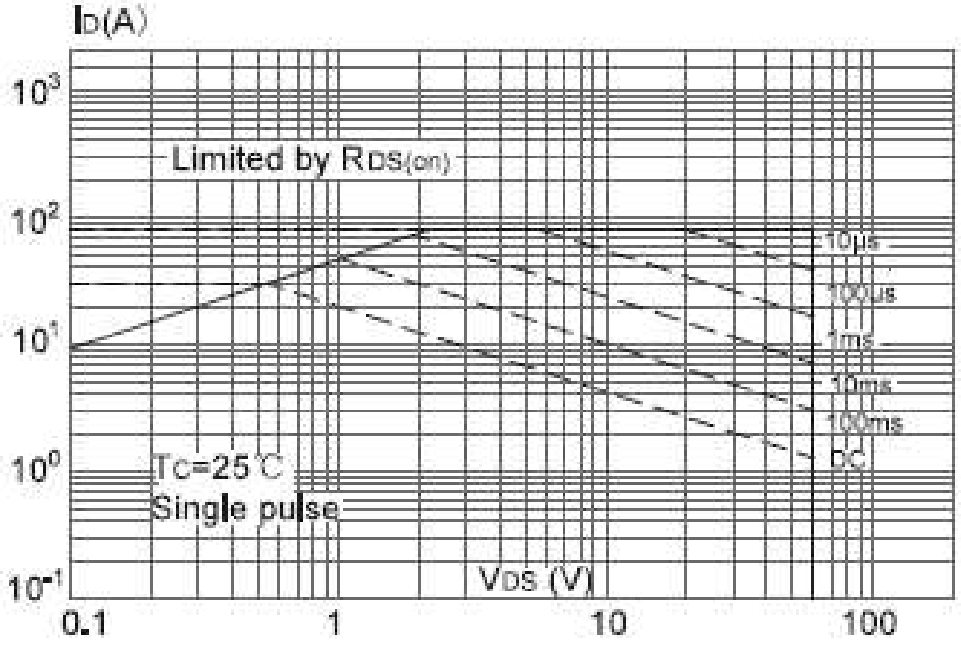
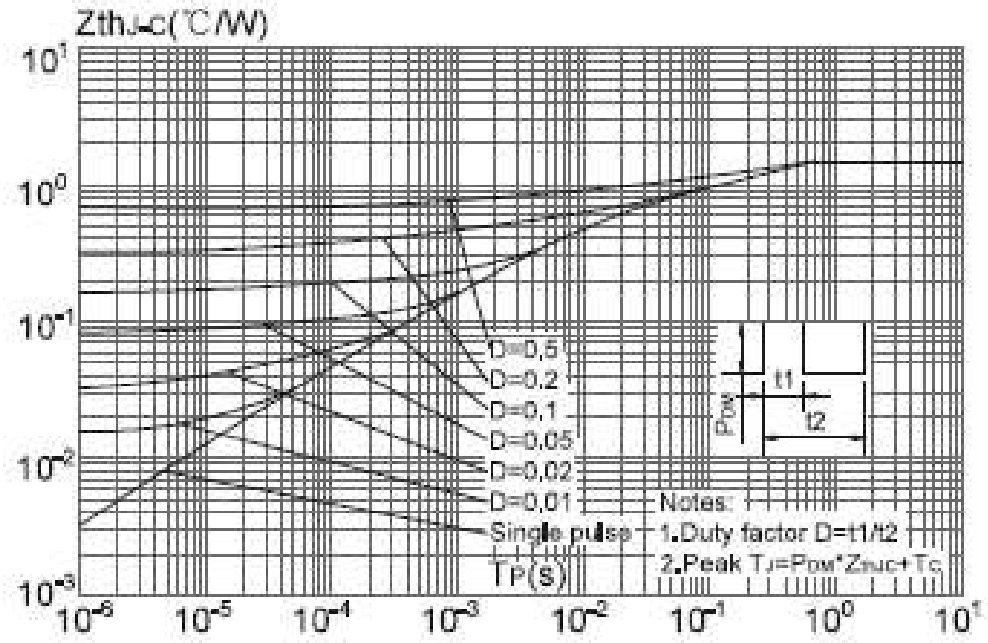
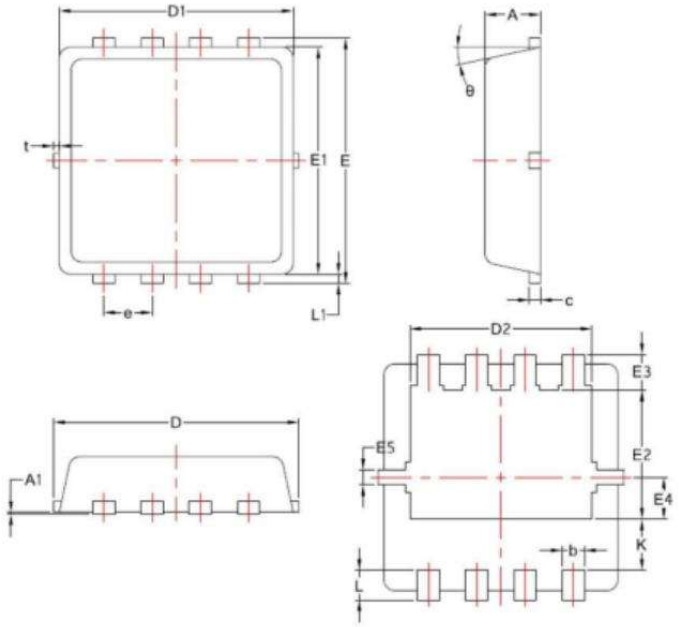


Fig. 11 Transient Thermal Response Curve



PDFN3X3 Package Information



SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°