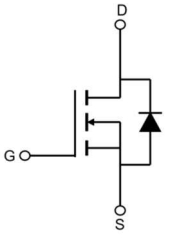
Feature

- 60V,30A
  $R_{DS(ON)}$ <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



Marking and pin assignment

Application

- PWM applications
- Load Switch
- Power management

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
25N06K	AP25N06K	TO-252	13 inch	-	2500

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	17	A
Pulsed Drain Current (1)	I_{DM}	80	A
Single Pulsed Avalanche Energy (2)	E_{AS}	34	mJ
Power Dissipation	P_D	25	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

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

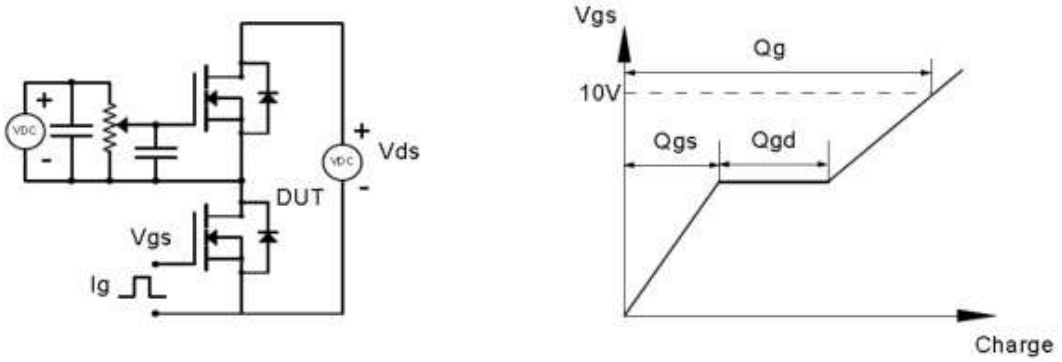
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	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		-	-	30	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:

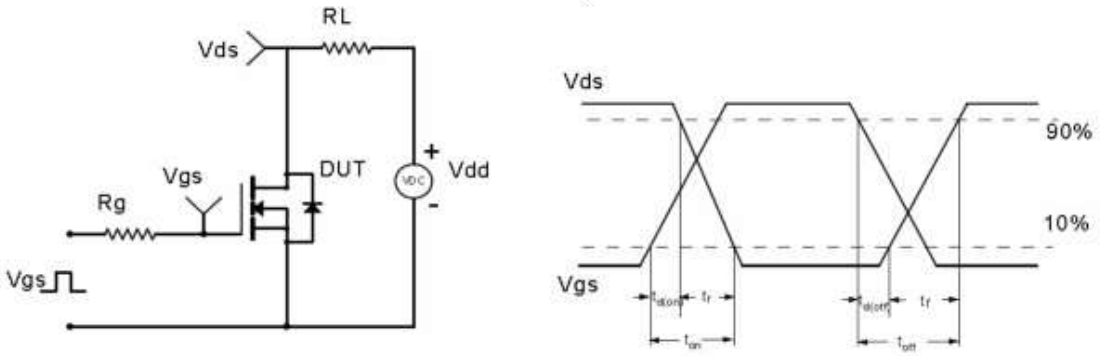
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=30V,R_G=25Ω,L=0.5mH
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit & Waveform

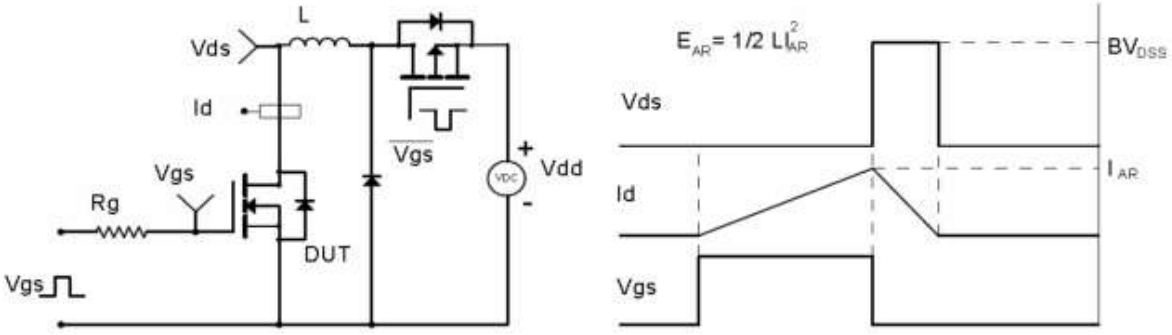
Gate Charge Test Circuit & Waveform



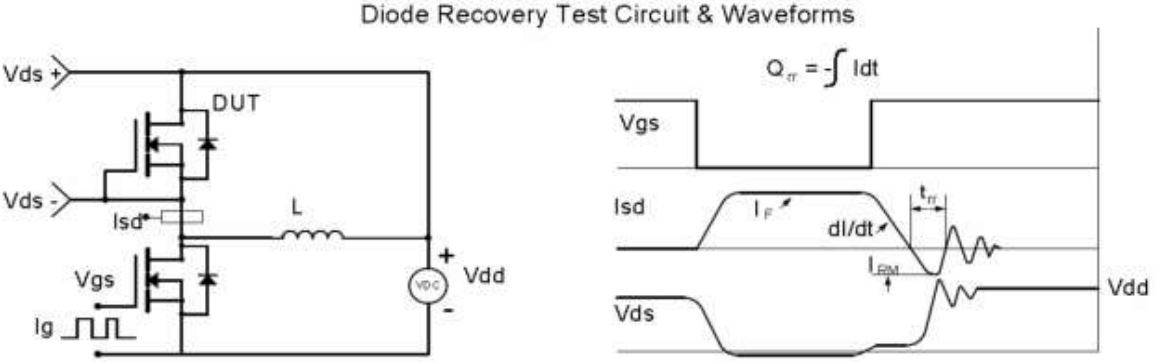
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Output Characteristics

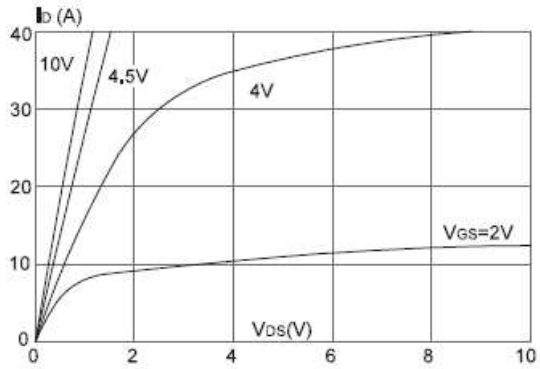


Fig.2 Typical Transfer Characteristics

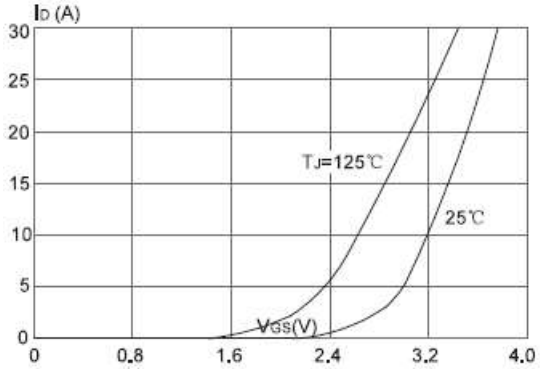


Fig.3 On-resistance VS Drain Current

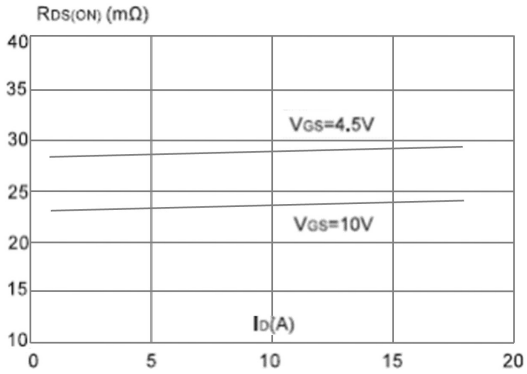


Fig. 4 Body Diode Characteristics

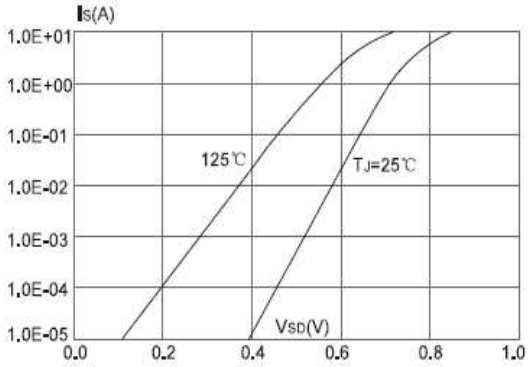


Fig.5 Gate Charge Characteristics

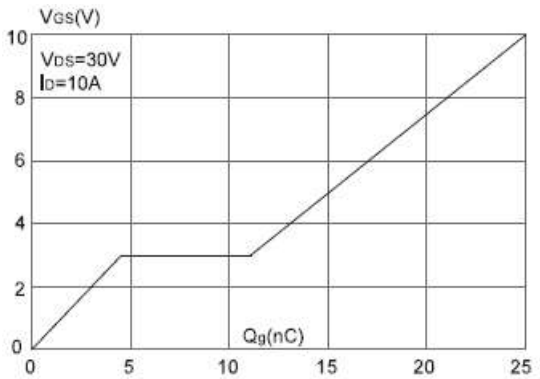


Fig. 6 Capacitance Characteristics

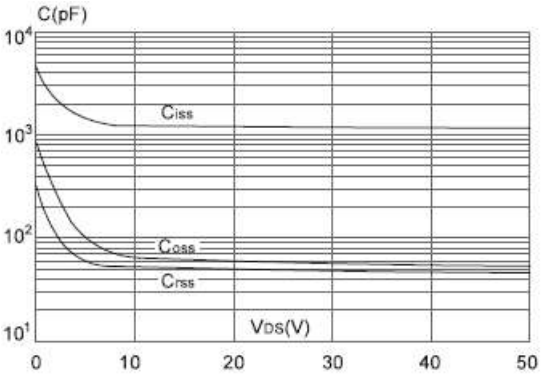


Fig.7 Normalized Breakdown Voltage VS Junction Temperature

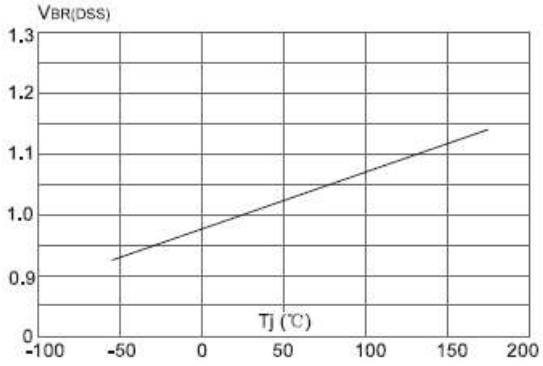


Fig. 8 Normalized On-Resistance Variation VS Junction Temperature

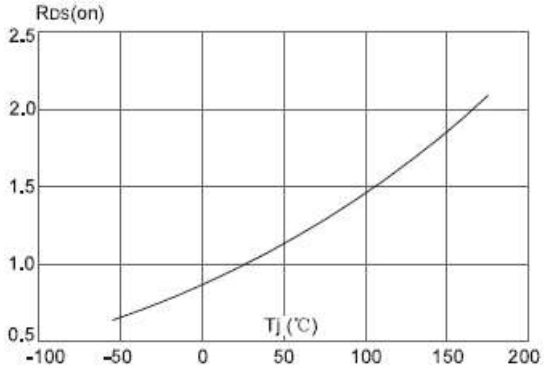


Fig.9 Maximum Continuous Drain Current VS. Case Temperature

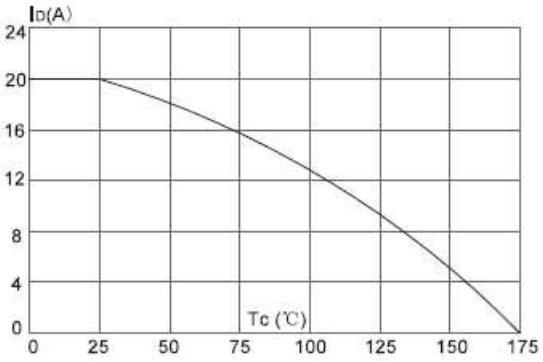


Fig.10 Safe Operating Area

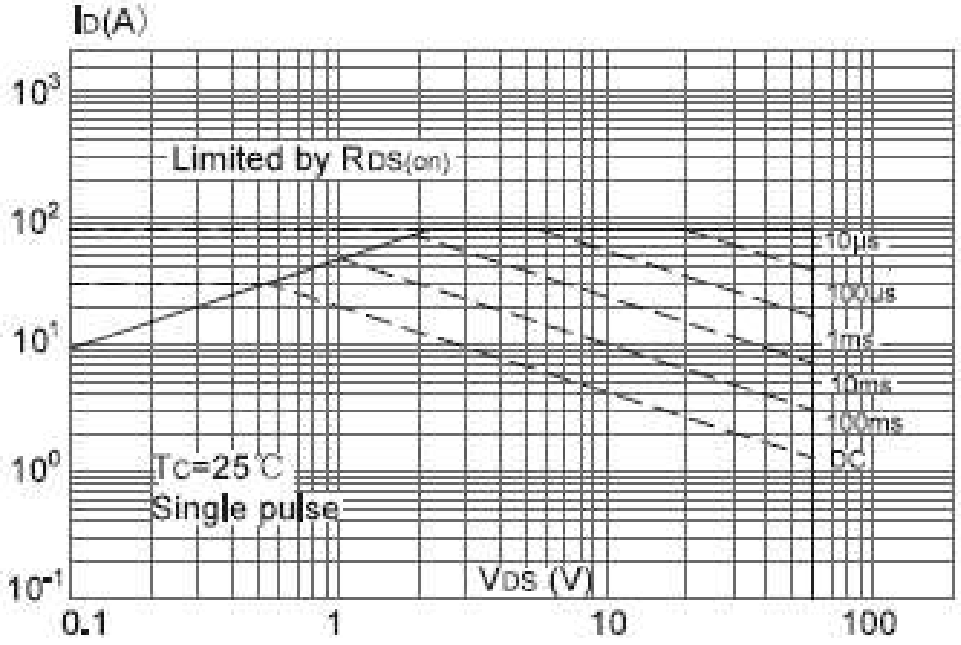
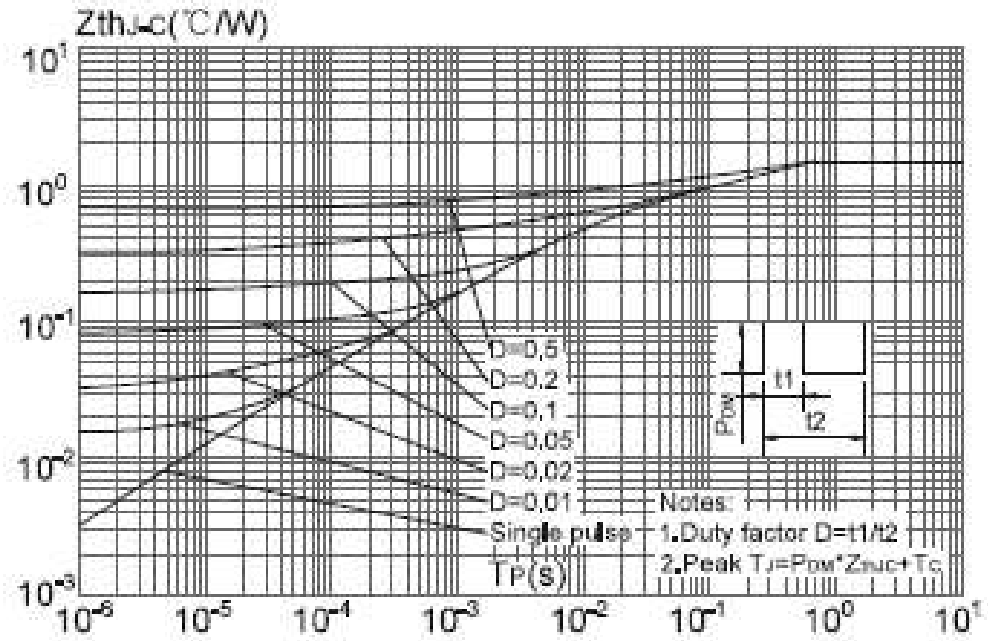
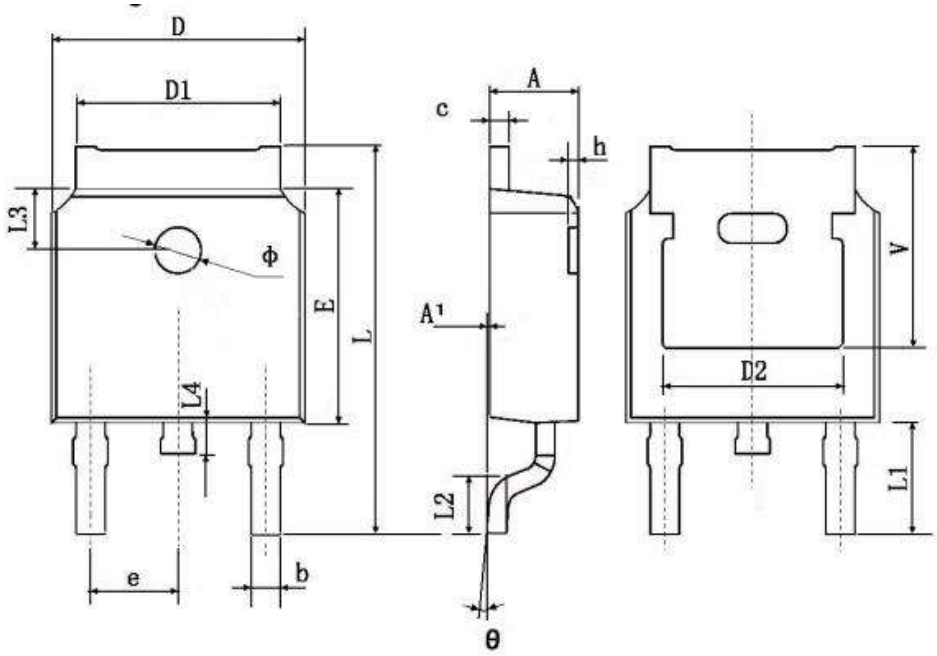


Fig. 11 Transient Thermal Response Curve



TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.250	2.350	0.089	0.093
A1	0.050	0.150	0.002	0.006
b	0.660	0.860	0.026	0.034
c	0.458	0.558	0.018	0.022
D	6.550	6.650	0.259	0.263
D1	5.234	5.434	0.207	0.215
D2	4.826 TYP.		0.191 TYP.	
E	6.050	6.150	0.239	0.243
e	2.236	2.336	0.088	0.092
L	9.820	10.220	0.388	0.404
L1	3.000 TYP.		0.119 TYP.	
L2	1.400	1.600	0.055	0.063
L3	1.800 TYP.		0.071 TYP.	
L4	0.700	0.900	0.028	0.036
Φ	1.150	1.250	0.045	0.049
θ	0°	3°	0°	3°
h	0.000	0.300	0.000	0.012
V	5.399 TYP		0.213 TYP	