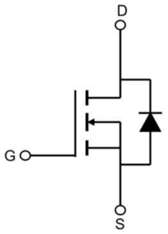
AP30H80K

N-Channel Enhancement Mosfet

AllPOWER
DATA SHEET

Feature

- 30V,80A
  $R_{DS（ON）}$<5mΩ@V_{GS}=10V TYP:4.1mΩ
  $R_{DS（ON）}$<8mΩ@V_{GS}=4.5V TYP:6.2mΩ
- 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)
30H80K	AP30H80K	TO-252	13 inch	-	2500

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	80	A
Continuous Drain Current (T_a =100℃)	I_D	56	A
Pulsed Drain Current (1)	I_{DM}	320	A
Single Pulsed Avalanche Energy (2)	E_{AS}	88	mJ
Power Dissipation	P_D	75	W
Thermal Resistance from Junction to Case(4)	$R_{\theta JC}$	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	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	1.5	2.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =30A	-	4.1	5.0	mΩ
		V_{GS} =4.5V, I_D =20A	-	6.2	8.0	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =15V, V_{GS} =0V, f =1MHz	-	1614	-	pF
Output Capacitance	C_{oss}		-	245	-	
Reverse Transfer Capacitance	C_{rss}		-	215	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, I_D=30A, V_{GS}=10V, R_G=3Ω	-	7.5	-	ns
Turn-on rise time	t_r		-	14.5	-	
Turn-off delay time	$t_{d(off)}$		-	35.2	-	
Turn-off fall time	t_f		-	9.6	-	
Total Gate Charge	Qg	VDS=15V, ID=30A, VGS=10V	-	33.7	-	nC
Gate-Source Charge	Qgs		-	8.5	-	
Gate-Drain Charge	Qgd		-	7.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0V, I_S=1A	-	-	1.2	V
Diode Forward current(4)	I_S		-	-	80	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=25V,R_G=25Ω,L=0.1mH,I_{AS}=42A
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit

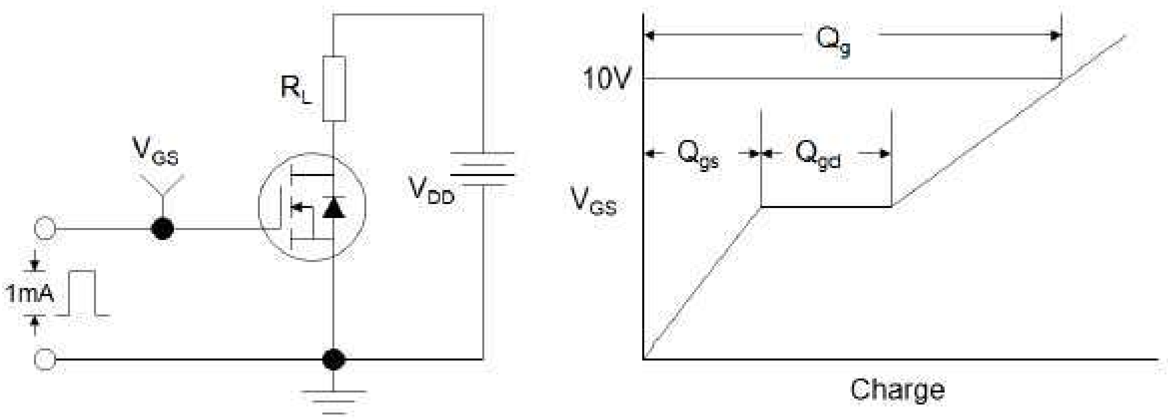


Figure1:Gate Charge Test Circuit & Waveform

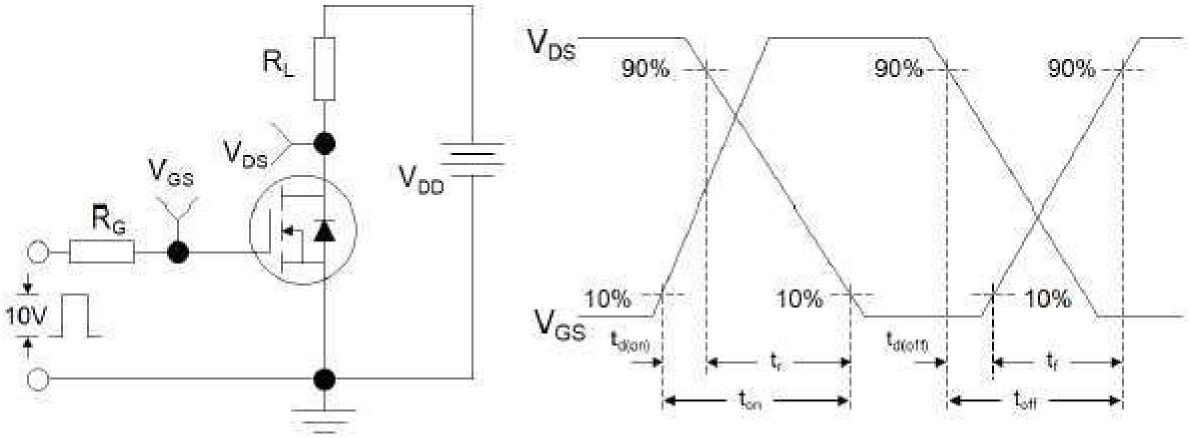


Figure 2: Resistive Switching Test Circuit & Waveforms

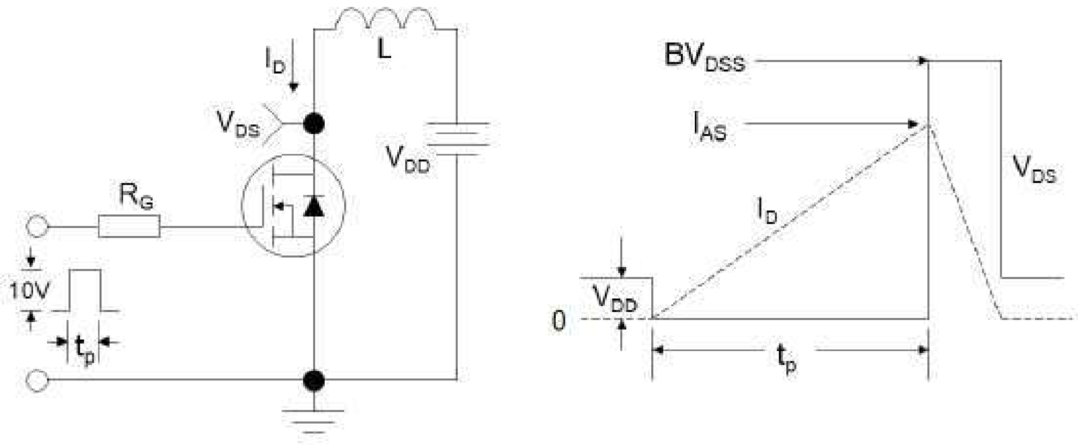


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure1: Output Characteristics

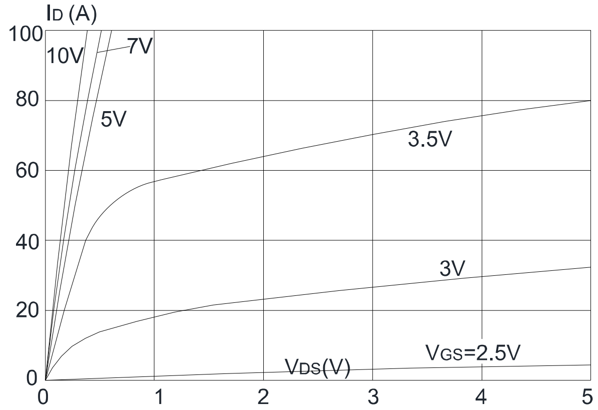


Figure 2: Typical Transfer Characteristics

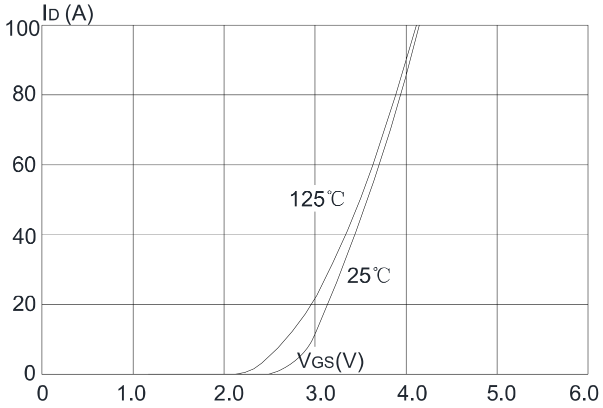


Figure 3: On-resistance vs. Drain Current

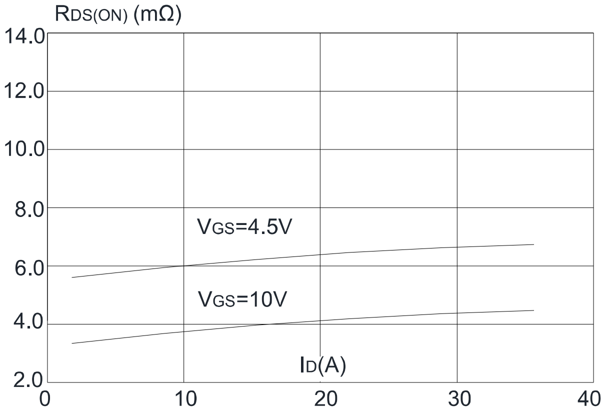


Figure 4: Body Diode Characteristics

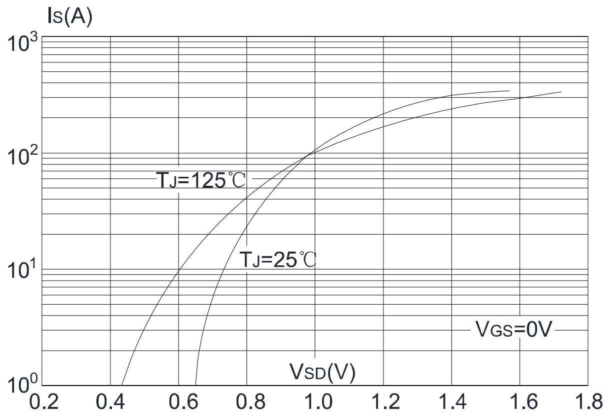


Figure 5: Gate Charge Characteristics

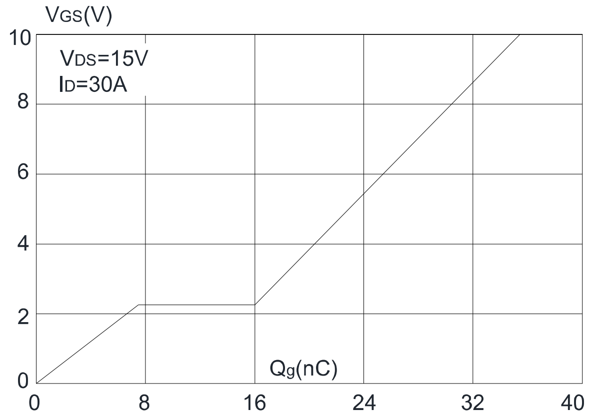


Figure 6: Capacitance Characteristics

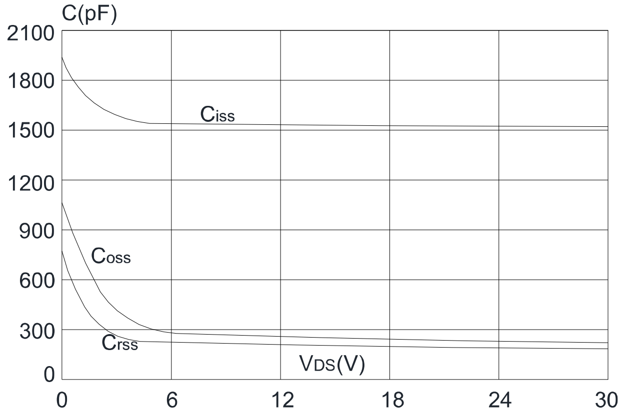


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

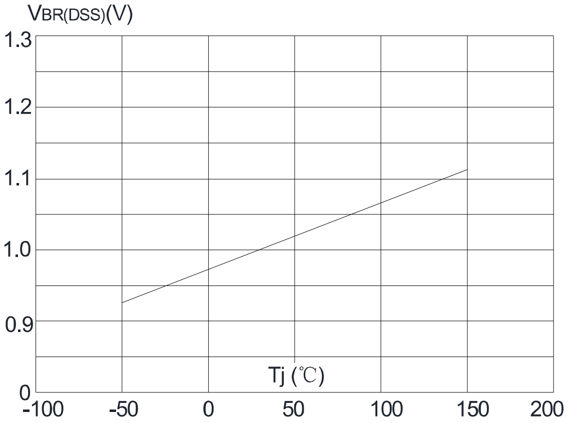


Figure 8: Normalized on Resistance vs. Junction Temperature

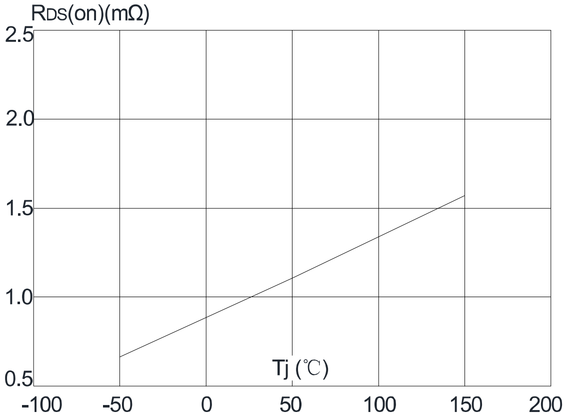


Figure 9: Maximum Safe Operating Area

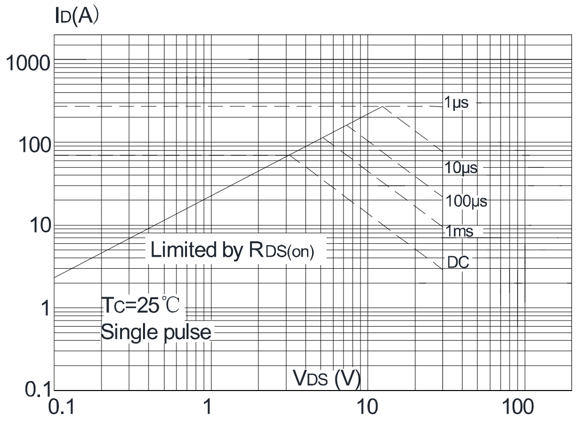


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

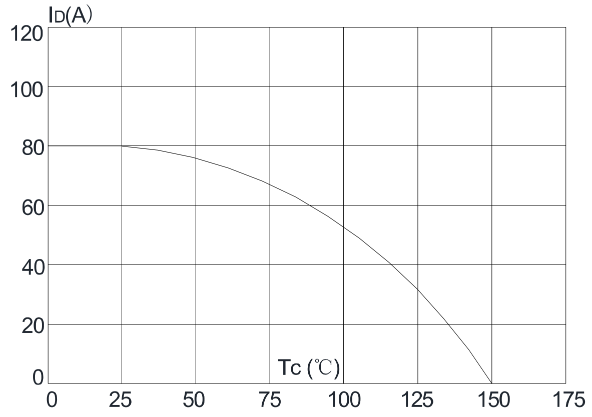
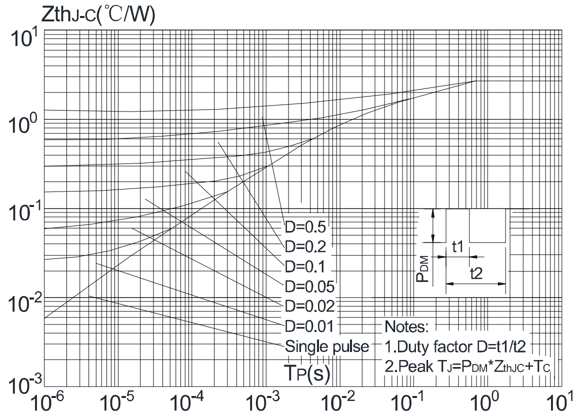
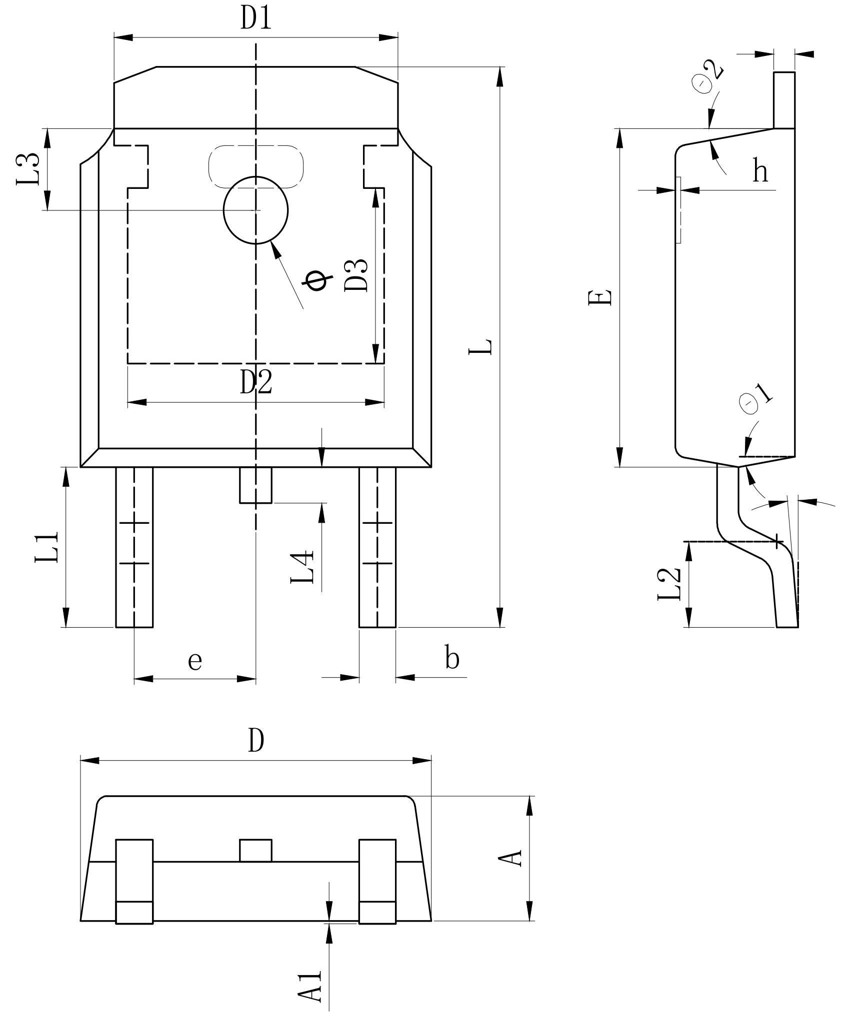


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-252 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ1	9° TYP		
θ2	9° TYP		