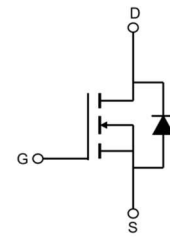


Features

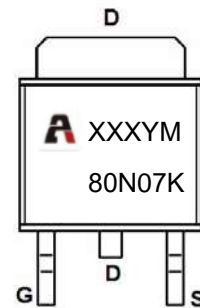
- 70V,80A
 $R_{DS(on)} < 9m\Omega @ V_{GS}=10V$ TYP:7.3m Ω
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation



Schematic Diagram

Applications

- Primary Side Switching
- Synchronous Rectification
- DC/AC Inverters
- LED Backlighting



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
80N07K	AP80N07K	TO-252	-	-	2500

ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	70	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c=25^{\circ}C$) ⁽¹⁾	I_D	80	A
Continuous Drain Current ($T_c=100^{\circ}C$) ⁽¹⁾	I_D	52	A
Pulsed Drain Current ^(2,3)	I_{DM}	320	A
Drain Power Dissipation ⁽¹⁾	P_D	120	W
Single Pulsed Avalanche Energy	E_{AS}	170	mJ
Thermal Resistance from Junction to Case ⁽¹⁾	$R_{\theta JC}$	0.902	$^{\circ}C/W$
Thermal Resistance- Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	52	$^{\circ}C/W$
Junction Temperature	T_J	-55~ +175	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +175	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	70	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 70V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	3.0	4.0	V
Drain-source on-resistance ⁽⁴⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$	-	7.3	9	m Ω
Dynamic characteristics⁽⁵⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$	-	3900	-	pF
Output Capacitance	C_{oss}		-	230	-	
Reverse Transfer Capacitance	C_{rss}		-	220	-	
Switching characteristics⁽⁵⁾						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, I_D = 20A, R_G = 6\Omega, V_{GS} = 10V$	-	19	-	nS
Turn-on rise time	t_r		-	50	-	
Turn-off delay time	$t_{d(off)}$		-	60	-	
Turn-off fall time	t_f		-	40	-	
Total Gate Charge	Q_g	$V_{DS} = 30V, I_D = 20A, V_{GS} = 10V$	-	80	-	nC
Gate-Source Charge	Q_{gs}		-	18	-	
Gate-Drain Charge	Q_{gd}		-	20	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽⁴⁾	V_{SD}	$T_J = 25^\circ\text{C}, V_{GS} = 0V, I_S = 20A$	-	-	1.3	V
Diode Forward current	I_S	$T_C = 25^\circ\text{C}$	-	70	-	A
Body Diode Reverse Recovery Time	t_{rr}	$T_J = 25^\circ\text{C}, I_F = 20A, di/dt = 100A/\mu s$	-	89	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	315	-	nC

Notes:

- 1) Surface Mounted on 1 in² pad area, $t \leq 10$ sec
- 2) Pulse width $\leq 10\mu s$, duty cycle $\leq 1\%$
- 3) Limited by bonding wire
- 4) Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 5) Guaranteed by design, not subject to production testing

Typical Characteristics

Fig.1 Power Dissipation Derating Curve

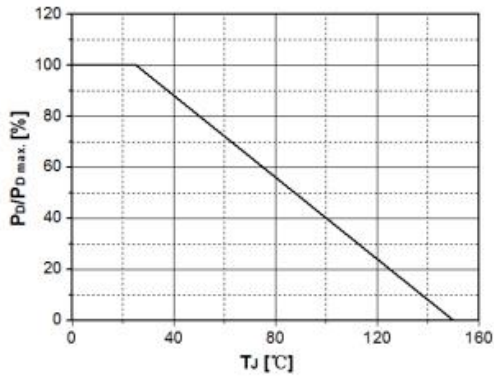


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

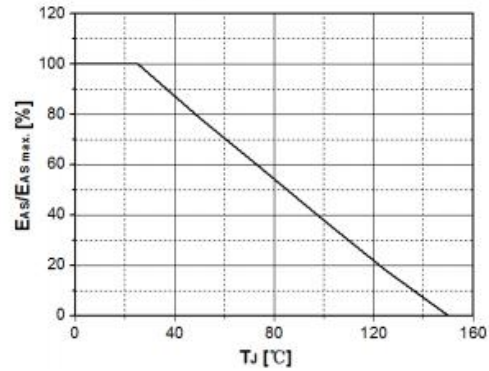


Fig.3 Typical Output Characteristics

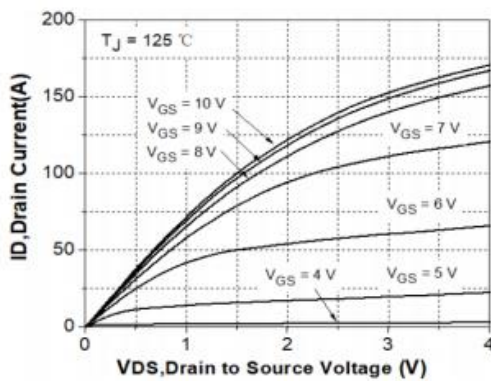


Fig. 4 Transconductance vs. Drain Current

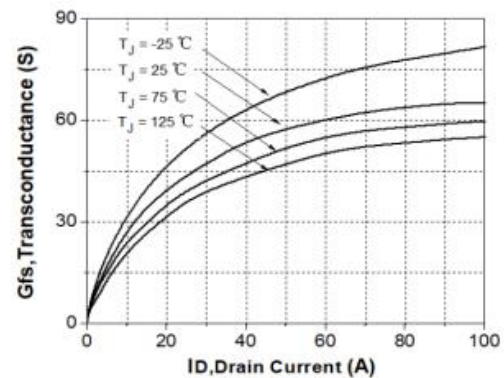


Fig.5 Typical Transfer Characteristics

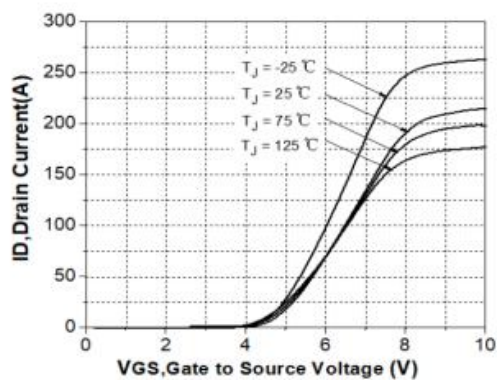
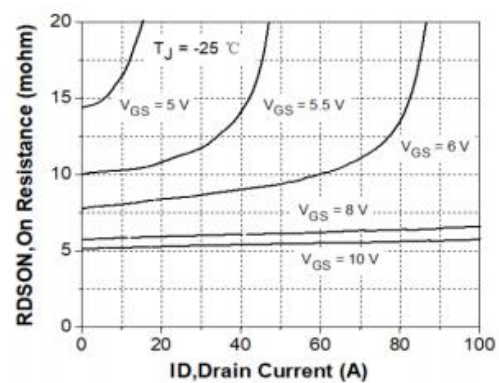


Fig. 6 State Resistance vs. Drain Current @-25°C



Typical Characteristics (cont.)

Fig.7 State Resistance vs. Drain Current @25°C

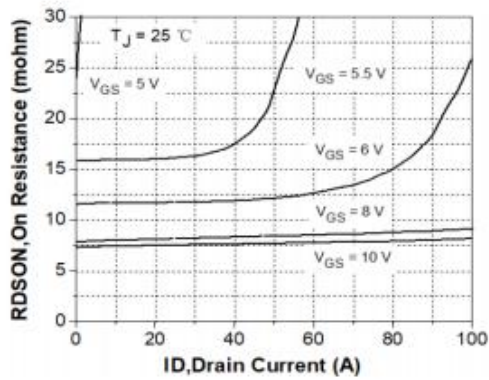


Fig. 8 State Resistance vs. Drain Current @125°C

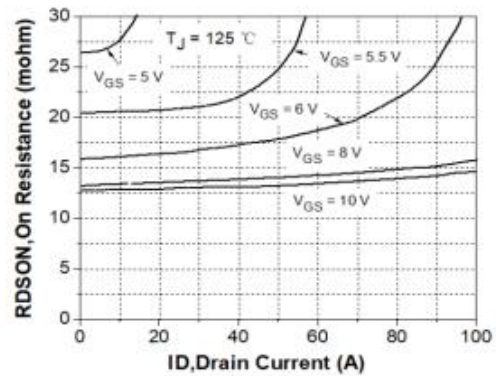


Fig.9 Typical Capacitance vs. Drain Source Voltage

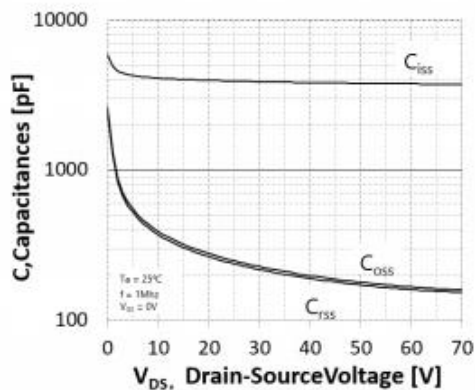


Fig.10 Dynamic Input Characteristics

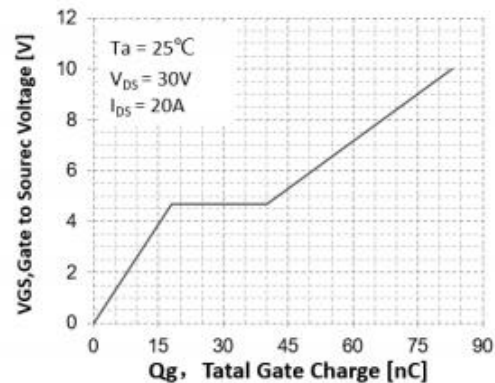


Fig.11 Breakdown Voltage vs. Junction Temperature

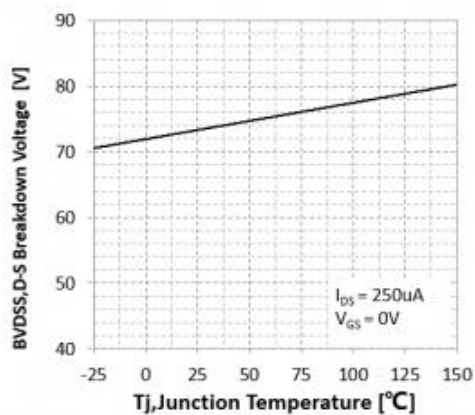
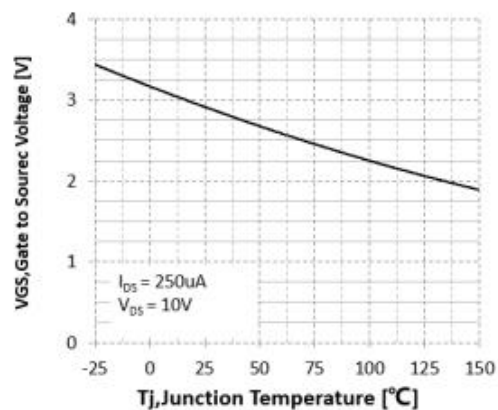


Fig. 12 Gate Threshold Voltage vs. Junction Temperature



Typical Characteristics (cont.)

Fig.13 On-Resistance Variation vs. Junction Temperature

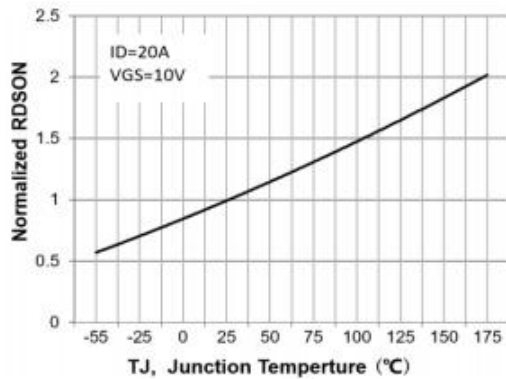


Fig.14 Maximum Drain Current vs. Case Temperature

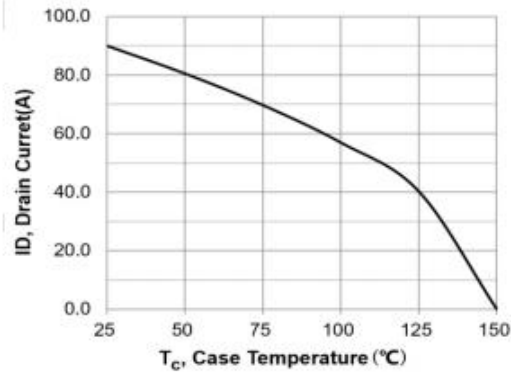


Fig.15 Body Diode Forward Voltage Vs Reverse Drain Current

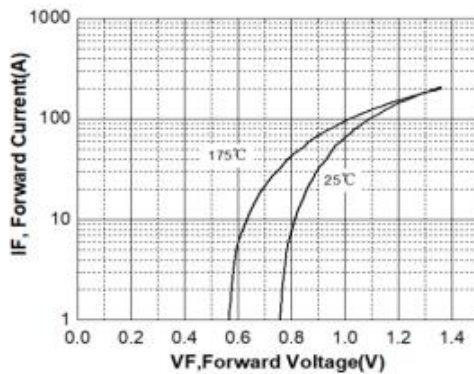


Fig.16 Safe Operating Area

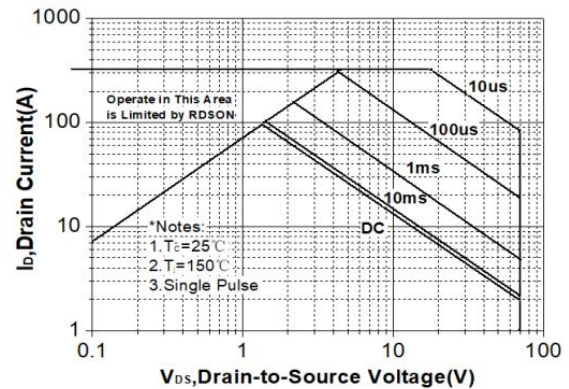
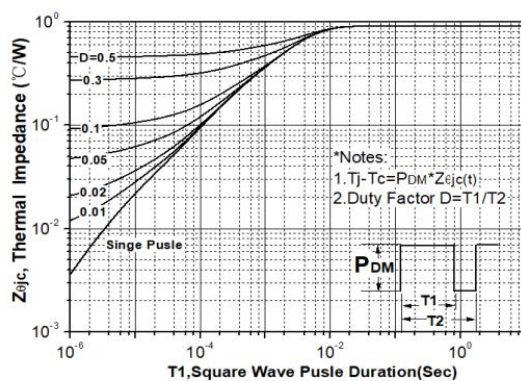
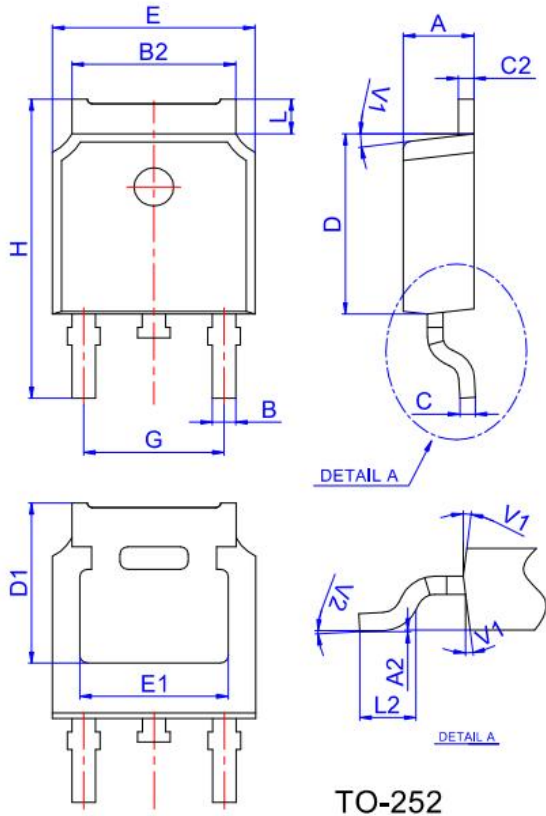


Fig. 17 Transient Thermal Response Curve



TO-252 Package Information



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Revision History

Revision	Release	Remark
V1.0	2023/08/01	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product, but similar performance is not guaranteed under other working conditions, and cannot be guaranteed when installed with other products or equipment. To achieve the required performance of the product in actual scenarios, the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings, operating conditions, or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability. Customers using or selling these products for use in medical, life-saving, or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements, the information described or contained herein may be changed without prior notice.