AT06N80

60V N-Channel MOSFET

Features

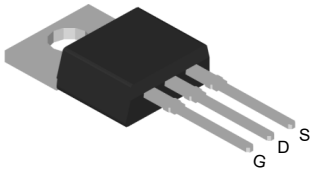
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

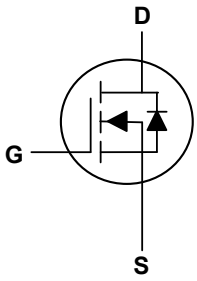
V_{DS}	60	V
I_D	80	A
$R_{DS(ON)}$ (at V_{GS}=10V)	7	mΩ

Applications

- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



TO-220 Top View



Absolute Maximum Ratings(T_A=25℃, unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C=25℃	I_D	80	A
Continuous Drain Current[1]	T_C=100℃	I_D	56	A
Pulsed Drain Current[2]		I_{DM}	320	A
Single Pulse Avalanche Energy[3]		EAS	100	mJ
Total Power Dissipation[4]	T_C=25℃	P_D	100	W
Total Power Dissipation[4]	T_C=100℃	P_D	50	W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	---	100	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	1.5	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	60	---	---	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V , I_D=30A	---	5.2	7	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	2	3	4	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=68V, V_{GS}=0V, T_J=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Gate Resistance	R_g	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	---	Ω
Total Gate Charge	Q_g	V_{DS}=30V , V_{GS}=10V , I_D=30A	---	75	---	nC
Gate-Source Charge	Q_{gs}		---	18	---	
Gate-Drain Charge	Q_{gd}		---	29	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=30V , V_{GS}=10V , R_G=3Ω, I_D=30A	---	17	---	ns
Rise Time	T_r		---	53	---	
Turn-Off Delay Time	$T_{d(off)}$		---	40	---	
Fall Time	T_f		---	24	---	
Input Capacitance	C_{iss}	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	3310	---	pF
Output Capacitance	C_{oss}		---	295	---	
Reverse Transfer Capacitance	C_{rss}		---	270	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[1,5]	I_S	T_C=25℃	---	---	80	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=30A , T_J=25℃	---	0.8	1.2	V
Reverse Recovery Time	t_{rr}	I_F=30A ,di/dt=100A/μs, T_J=25℃	---	32	---	nS
Reverse Recovery Charge	Q_{rr}		---	45	---	nC

Note:

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

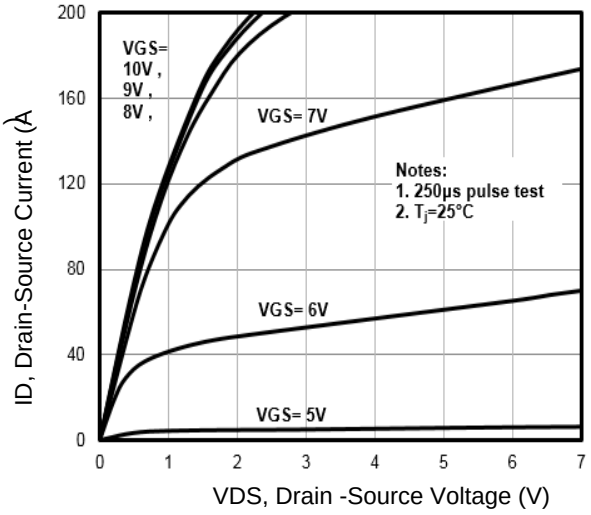


Fig1. Typical Output Characteristics

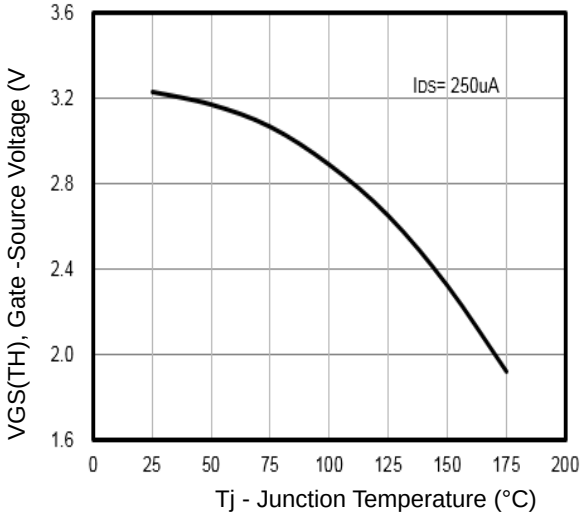


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.

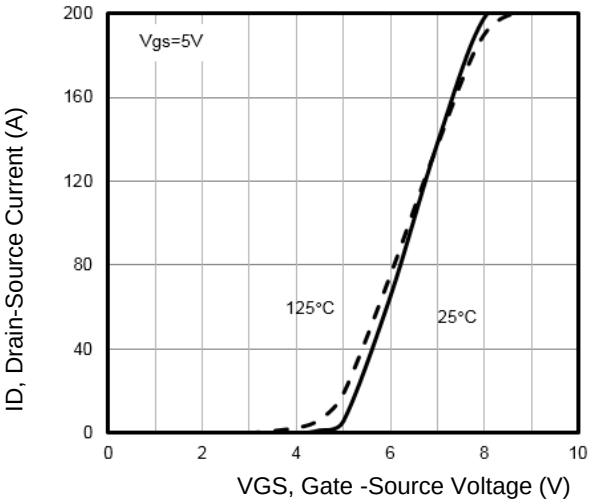


Fig3. Typical Transfer Characteristics

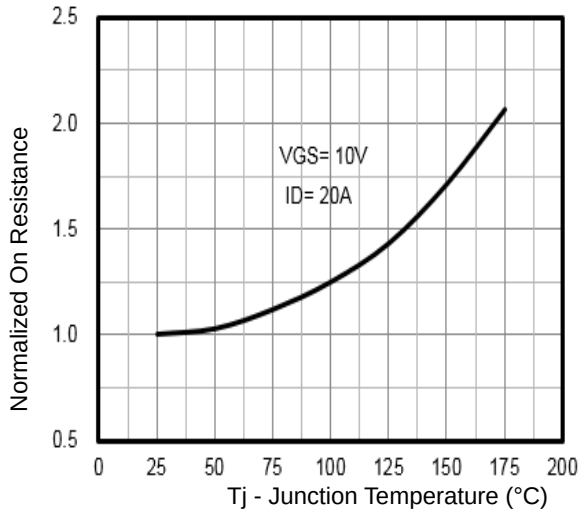


Fig4. Normalized On-Resistance Vs. Tj

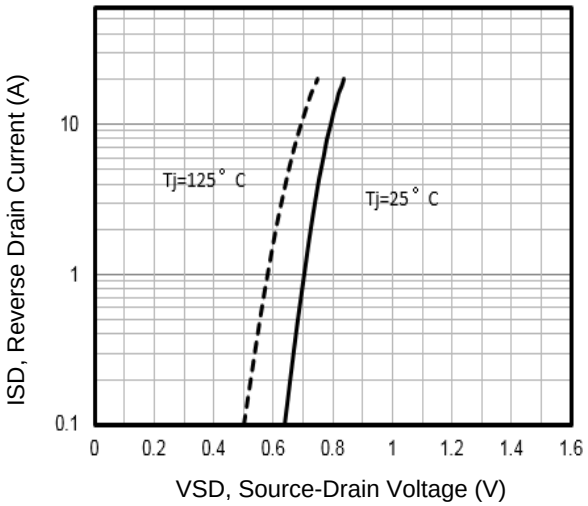


Fig5. Typical Source-Drain Diode Forward Voltage

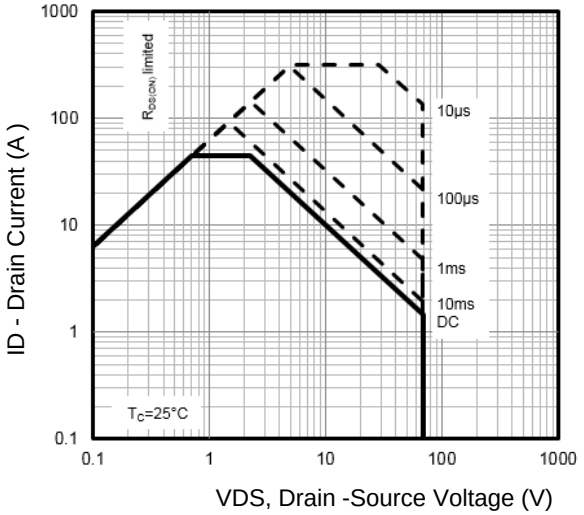


Fig6. Maximum Safe Operating Area

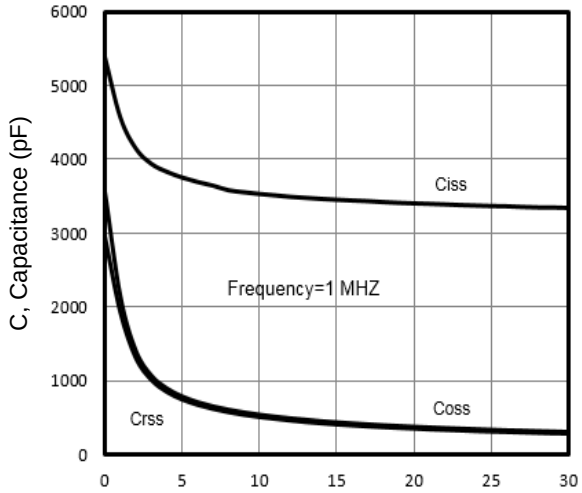


Fig7. Typical Capacitance Vs. Drain-Source Voltage

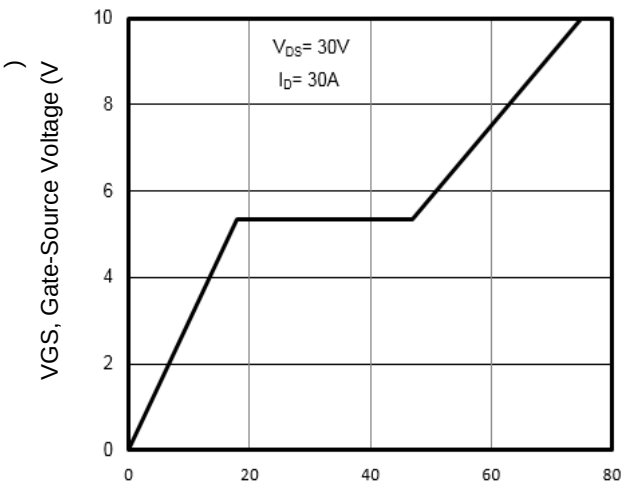
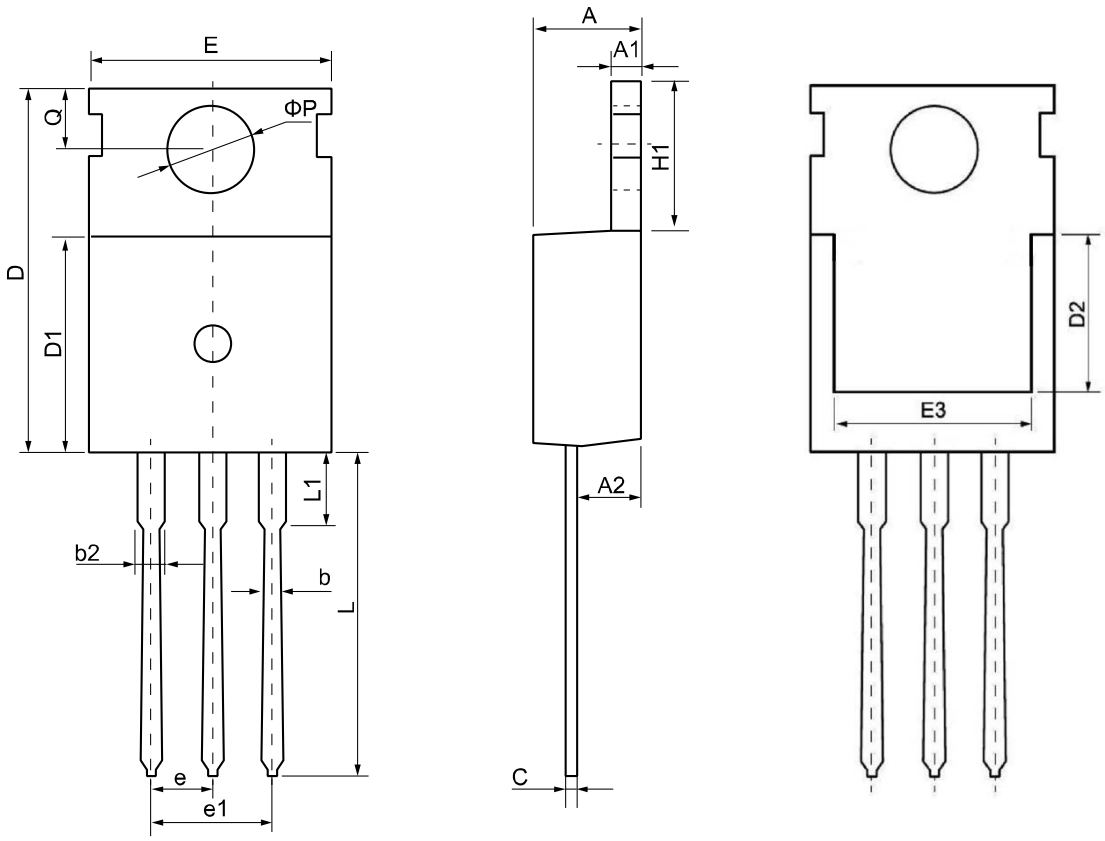


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

TO-220 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	4.30	4.55	4.75	**E**	9.65	10.00	10.25
A1	1.15	1.30	1.45	**E3**	7.00	--	--
A2	2.20	2.40	2.60	**e**	2.54 BSC		
b	0.70	0.80	0.95	**e1**	5.08 BSC		
b2	1.17	1.27	1.47	**H1**	6.30	6.50	6.80
c	0.40	0.50	0.65	**L**	12.70	13.50	14.10
D	15.30	15.60	15.90	**L1**	--	3.20	3.95
D1	8.90	9.10	9.35	**ϕ P**	3.40	3.60	3.80
D2	5.50	--	--	**Q**	2.60	2.80	3.00