AT08120S

80V N-Channel MOSFET

Features

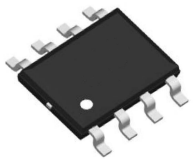
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

V_{DS}	80	V
I_D	12	A
$R_{DS(ON)}$ (at V_{GS}=10V)	8	mΩ
$R_{DS(ON)}$ (at V_{GS}=10V)	12	mΩ

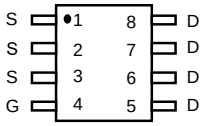
Applications

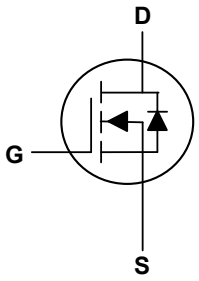
- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



SOP-8 Top View

Top View





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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1]	I_D@T_A=25℃	12	A
Continuous Drain Current[1]	I_D@T_A=70℃	9.6	A
Pulsed Drain Current[2]	I_{DM}	48	A
Single Pulse Avalanche Energy[3]	E_{AS}	125	mJ
Total Power Dissipation[4]	P_D@T_A=25℃	2	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]	$R_{\theta JA}$	---	62.5	℃/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	80	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=6A	---	6.7	8	mΩ
		V_{GS}=4.5V , I_D=5A	---	9	12	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1.0	1.6	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V , V_{GS}=0V , T_J=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Forward Transconductance	gfs	V_{DS}=10V , I_D=3A	---	10	---	S
Gate Resistance	R_g	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.1	---	Ω
Total Gate Charge	Q_g	V_{DS}=40V , V_{GS}=10V , I_D=10A	---	31	---	nC
Gate-Source Charge	Q_{gs}		---	4	---	
Gate-Drain Charge	Q_{gd}		---	9	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=40V , V_{GS}=10V , R_G=6Ω, I_D=8A	---	22	---	ns
Rise Time	T_r		---	16	---	
Turn-Off Delay Time	$T_{d(off)}$		---	40	---	
Fall Time	T_f		---	30	---	
Input Capacitance	C_{iss}	V_{DS}=40V , V_{GS}=0V , f=1MHz	---	1710	---	pF
Output Capacitance	C_{oss}		---	330	---	
Reverse Transfer Capacitance	C_{rss}		---	10	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[1]	I_S	T_C=25℃	---	---	12	A
Pulsed Source Current[2]	I_{SM}		---	---	24	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.1	V
Reverse Recovery Time	t_{rr}	I_S=10A ,V_R=30V di/dt=100A/μs，T_J=25℃	---	35	---	nS
Reverse Recovery Charge	Q_{rr}		---	33	---	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}=25V,V_{GS}=10V,L=0.1mH

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

Typical Characteristics

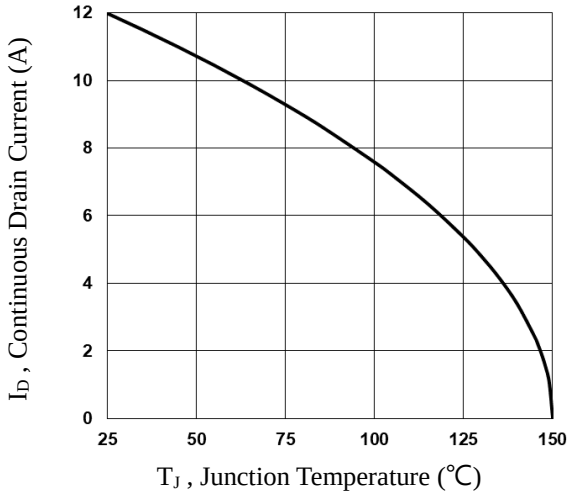


Fig.1 Continuous Drain Current vs. T_J

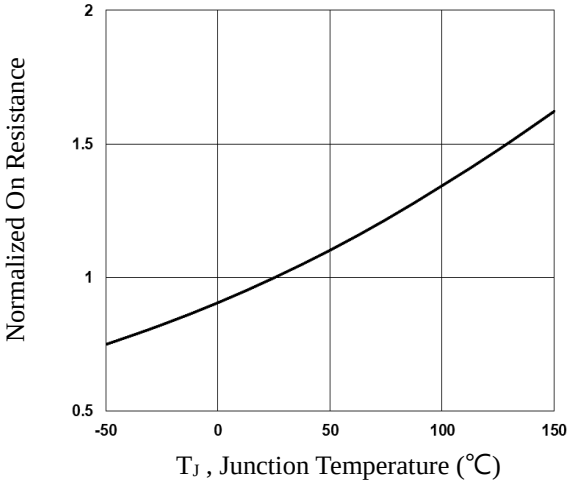


Fig.2 Normalized RDSON vs. T_J

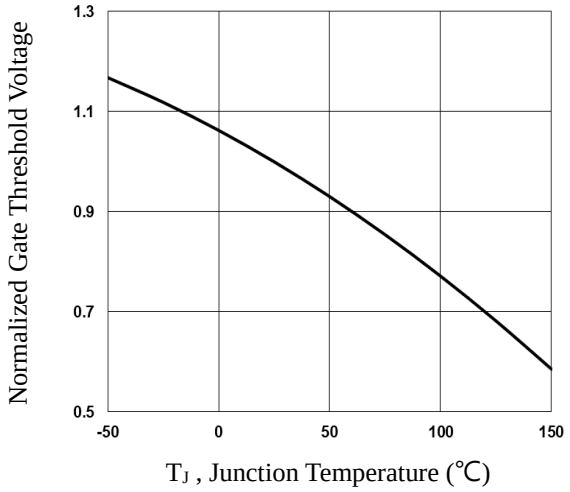


Fig.3 Normalized Vth vs. T_J

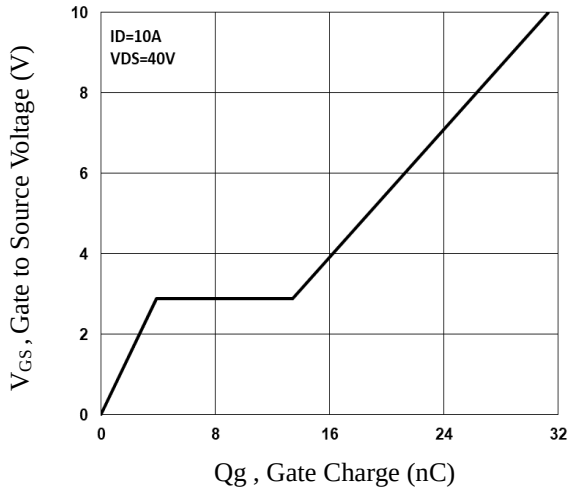


Fig.4 Gate Charge Characteristics

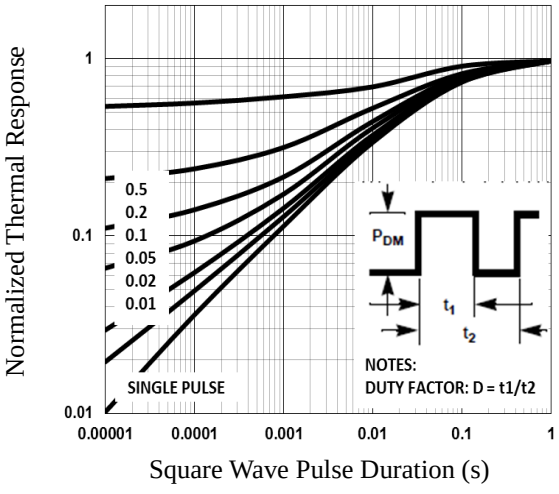


Fig.5 Normalized Transient Impedance

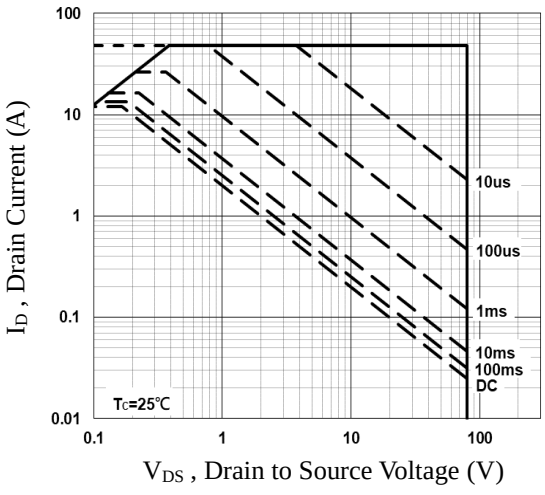


Fig.6 Maximum Safe Operation Area

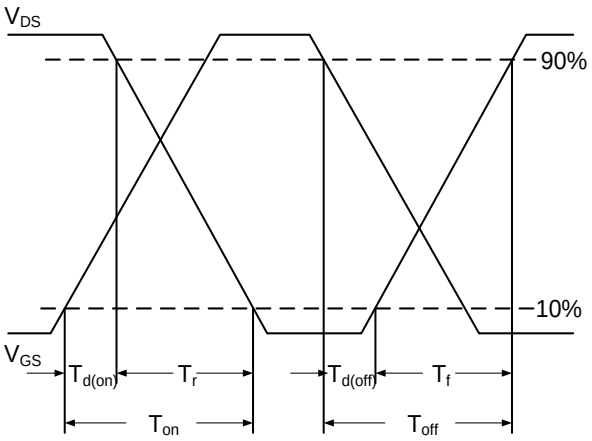


Fig.7 Switching Time Waveform

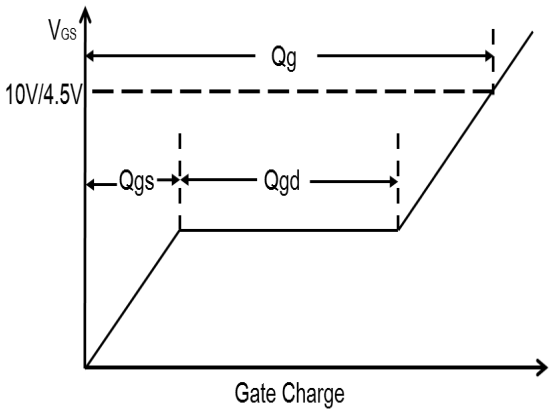
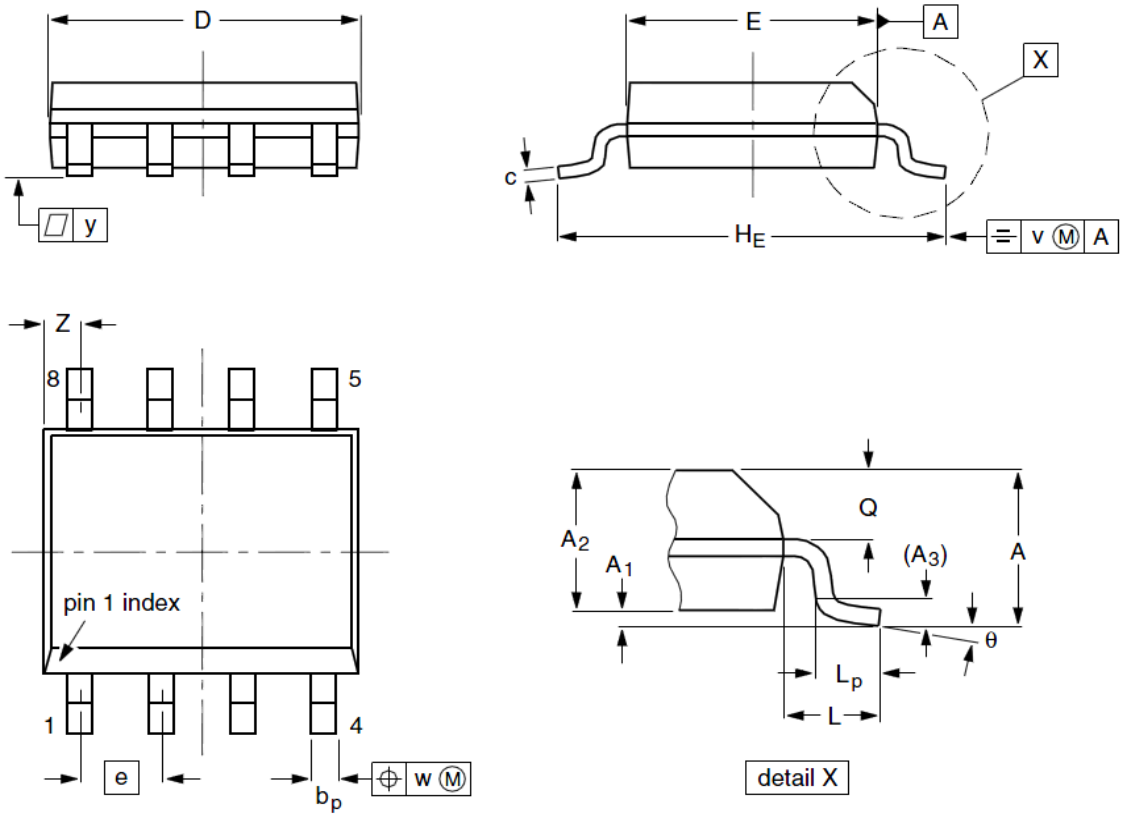


Fig.8 Gate Charge Waveform

SOP-8 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.35	1.55	1.75	**A_1**	0.10	0.18	0.25
A_2	1.25	1.45	1.65	**A_3**	--	0.25	--
b_p	0.36	0.42	0.51	**c**	0.19	0.22	0.25
D	4.70	4.92	5.10	**E**	3.80	3.90	4.00
e	--	1.27	--	**H_E**	5.80	6.00	6.20
L	--	1.05	--	**L_P**	0.40	0.68	1.00
Q	0.60	0.65	0.73	**v**	--	0.25	--
w	--	0.25	--	**y**	--	0.10	--
Z	0.30	0.50	0.70	**θ**	0°		8°