AT06360R

60V N-Channel MOSFET

Features

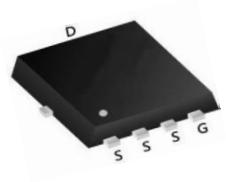
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

V_{DS}	60	V
I_D	36	A
$R_{DS(ON)}$ (at V_{GS}=10V)	17	mΩ
$R_{DS(ON)}$ (at V_{GS}=4.5V)	19.5	mΩ

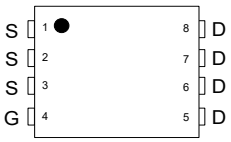
Applications

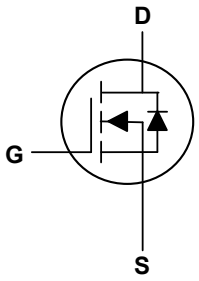
- High Frequency Point-of-Load,Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



DFN3X3-8L Top View

Top View





Absolute Maximum Ratings(T_C=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	36	A
Continuous Drain Current[1]	T_C=100℃	I_D	23	A
Pulsed Drain Current[2]		I_{DM}	91	A
Single Pulse Avalanche Energy[3]		EAS	26	mJ
Avalanche Current		I_{AS}	23	A
Total Power Dissipation[4]	T_C=25℃	P_D	42	W
Total Power Dissipation[4]	T_C=100℃	P_D	17	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]	$R_{\theta JA}$	---	80	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	3	℃/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=6A	---	14	17	mΩ
		V_{GS}=4.5V , I_D=5A	---	15	19.5	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1	1.5	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=48V, 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}=5V , I_D=6A	---	16.2	---	S
Gate Resistance	R_g	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.5	---	Ω
Total Gate Charge	Q_g	V_{DS}=30V , V_{GS}=10V , I_D=6A	---	51	---	nC
Gate-Source Charge	Q_{gs}		---	10	---	
Gate-Drain Charge	Q_{gd}		---	7.8	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=30V , V_{GS}=10V , R_G=6Ω, I_D=1A	---	9.2	---	ns
Rise Time	T_r		---	18	---	
Turn-Off Delay Time	$T_{d(off)}$		---	42	---	
Fall Time	T_f		---	31	---	
Input Capacitance	C_{iss}	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	2175	---	pF
Output Capacitance	C_{oss}		---	115	---	
Reverse Transfer Capacitance	C_{rss}		---	80	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	0.7	1.1	V
Reverse Recovery Time	t_{rr}	I_F=1A ,di/dt=100A/μs, T_J=25℃	---	17.8	---	nS
Reverse Recovery Charge	Q_{rr}		---	11.2	---	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

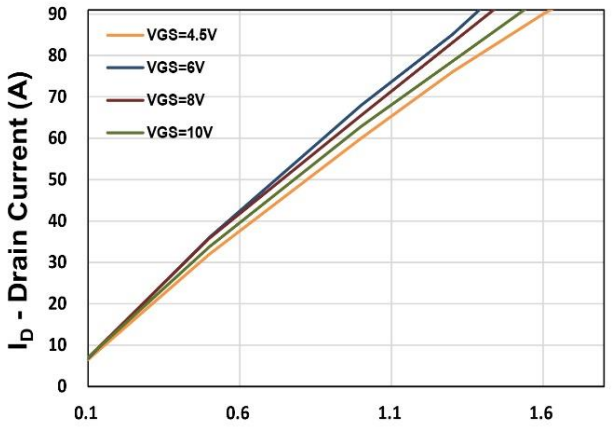


Figure 1. Output Characteristics

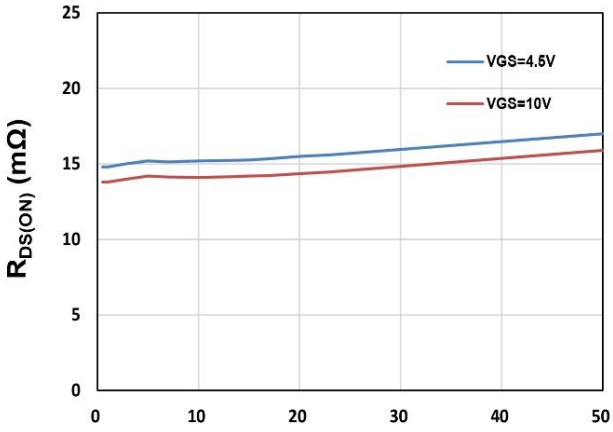


Figure 2. On-Resistance vs. ID

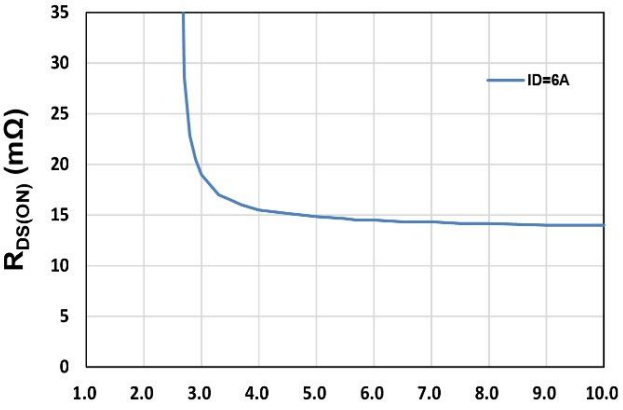


Figure 3. On-Resistance vs. VGS

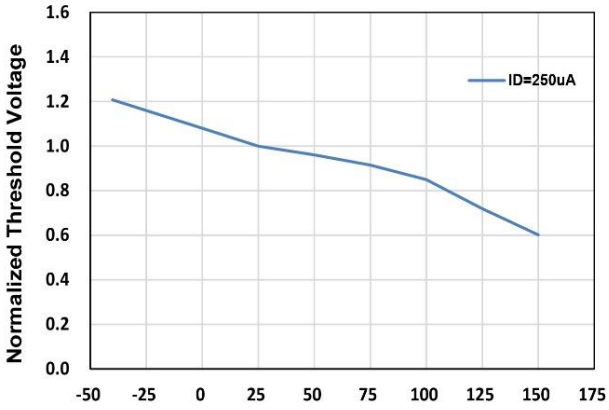


Figure 4. Gate Threshold Voltage

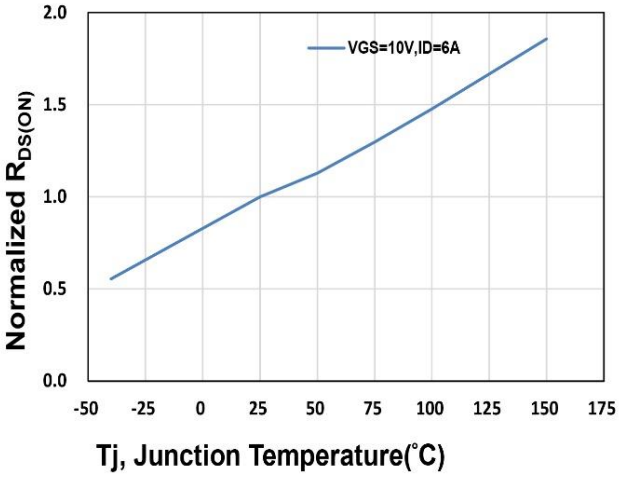


Figure 5. Drain-Source On Resistance

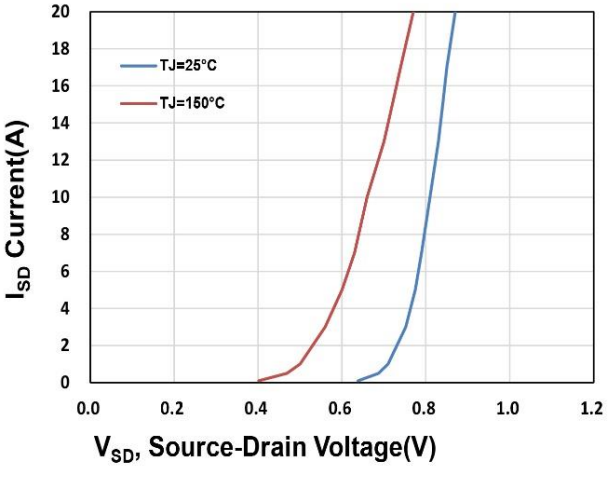


Figure 6. Source-Drain Diode Forward

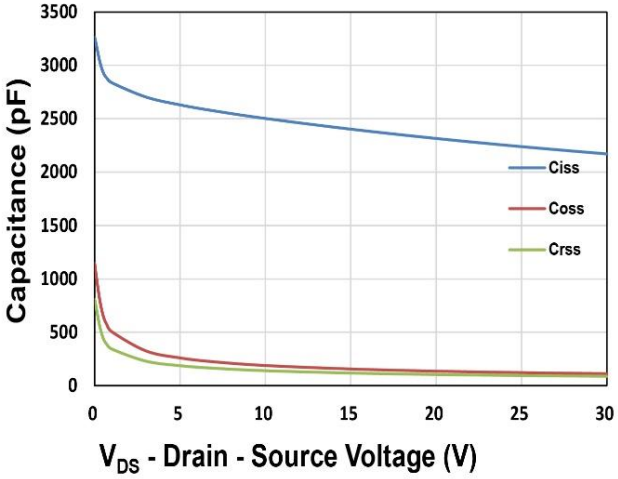


Figure 7. Capacitance

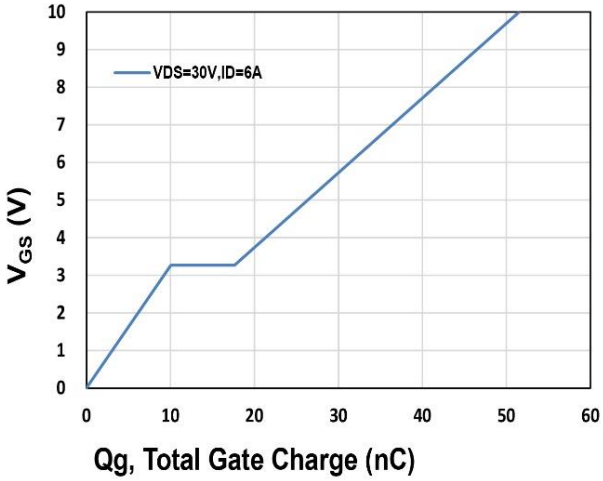


Figure 8. Gate Charge Characteristics

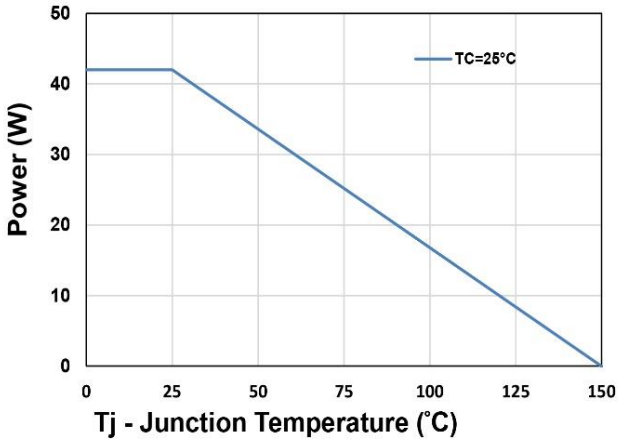


Figure 9. Power Dissipation

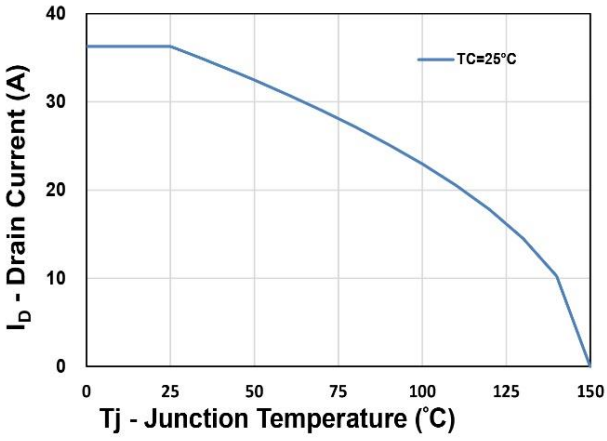


Figure 10. Drain Current

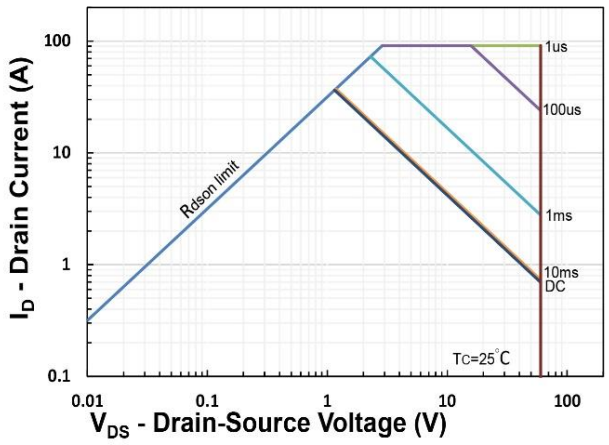


Figure 11. Safe Operating Area

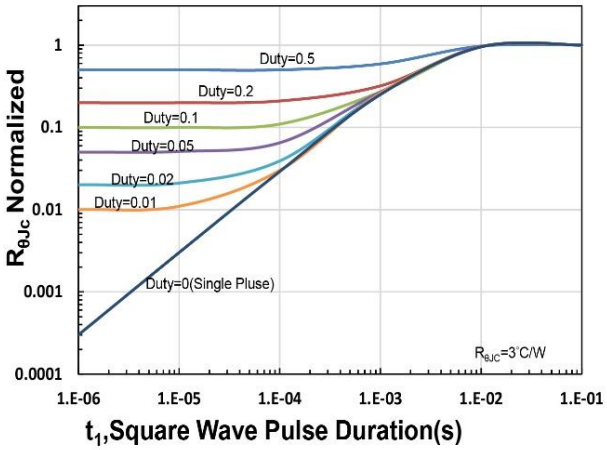
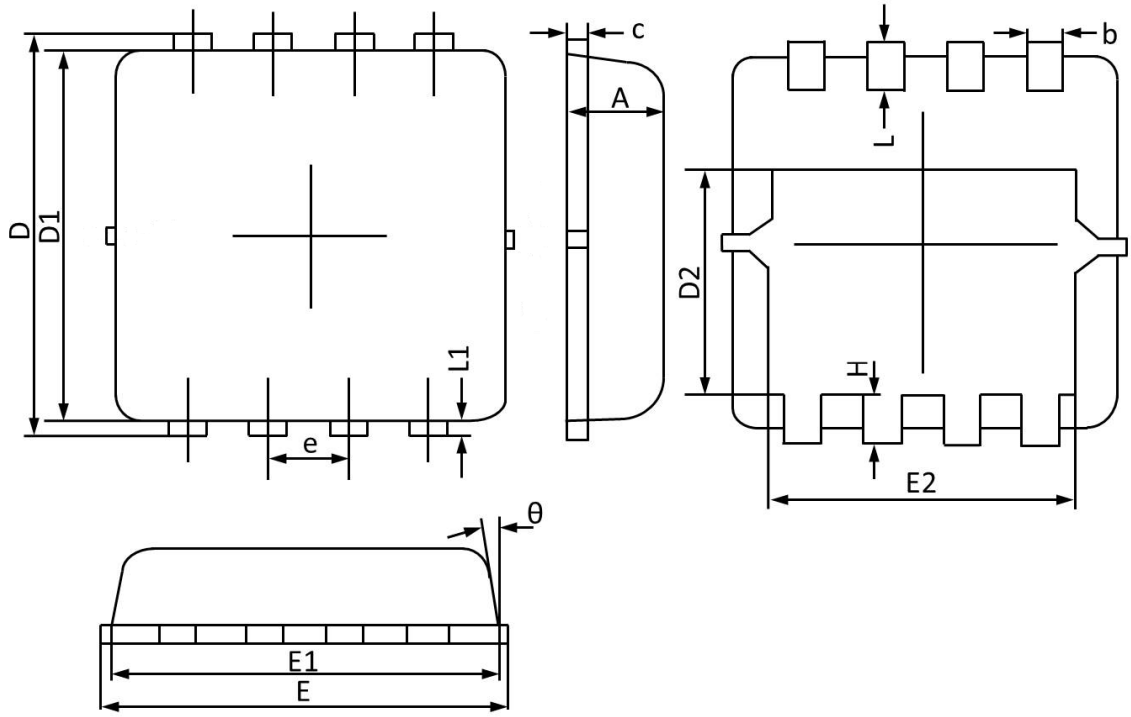


Figure 12. RθJC Transient Thermal Impedance

DFN3X3-8L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.70	0.75	0.85	**E1**	2.90	3.10	3.25
b	0.24	0.30	0.35	**E2**	2.35	2.50	2.60
c	0.10	0.17	0.25	**e**	0.65 BSC		
D	3.10	3.30	3.45	**H**	0.30	0.40	0.50
D1	2.90	3.05	3.20	**L**	0.30	0.40	0.50
D2	1.45	1.70	1.95	**L1**	--	0.13	--
E	3.05	3.25	3.40	**θ**	0°		14°