AT06900T

60V N-Channel MOSFET

Features

- Advanced Shield Gate Trench technology
- Super Low Gate Charge
- High-Speed Switching
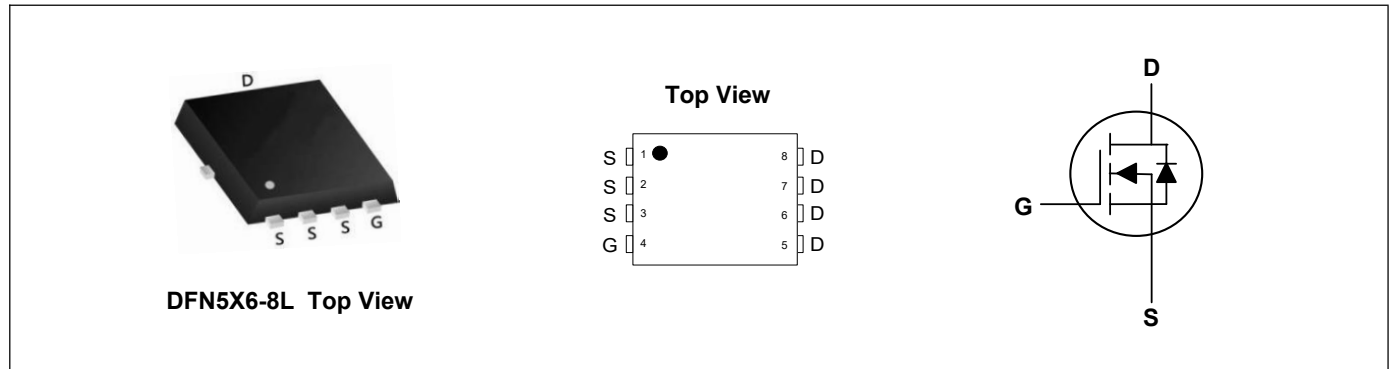- 100% EAS Guaranteed
- Green Device Available

Applications

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

Product Summary

V_{DS}	60	V
I_D	90	A
$R_{DS(ON)}$ (at V_{GS}=10V)	3.3	mΩ
$R_{DS(ON)}$ (at V_{GS}=4.5V)	4.5	mΩ

RoHS

DFN5X6-8L Top View

Top View

S	1 ●	8	D
S	2	7	D
S	3	6	D
G	4	5	D

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]		I_D	90	A
Continuous Drain Current[1]	T_C=100℃	I_D	63.6	A
Pulsed Drain Current[2]		I_{DM}	360	A
Single Pulse Avalanche Energy[3]		E_{AS}	500	mJ
Total Power Dissipation		P_D	100	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-Case[1]	$R_{θJC}$	---	1.25	℃/W

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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	R$_{DS(ON)}$	V$_{GS}$=10V , I$_D$=45A	---	2.8	3.3	mΩ
		V$_{GS}$=4.5V , I$_D$=20A	---	3.6	4.5	mΩ
Gate Threshold Voltage	V$_{GS(th)}$	V$_{GS}$=V$_{DS}$, I$_D$ =250uA	1	1.7	2.5	V
Drain-Source Leakage Current	I$_{DSS}$	V$_{DS}$=60V, V$_{GS}$=0V	---	---	1	uA
Gate-Source Leakage Current	I$_{GSS}$	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
Forward Transconductance	gfs	V$_{DS}$=10V , I$_D$=45A	40	---	---	S
Total Gate Charge	Q$_g$	V$_{DS}$=30V , V$_{GS}$=10V , I$_D$=45A	---	67	---	nC
Gate-Source Charge	Q$_{gs}$		---	12	---	
Gate-Drain Charge	Q$_{gd}$		---	8	---	
Turn-On Delay Time	T$_{d(on)}$	V$_{DD}$=30V , V$_{GS}$=10V , R$_G$=4.7Ω, I$_D$=45A	---	11	---	ns
Rise Time	T$_r$		---	5	---	
Turn-Off Delay Time	T$_{d(off)}$		---	56	---	
Fall Time	T$_f$		---	12	---	
Input Capacitance	C$_{iss}$	V$_{DS}$=30V , V$_{GS}$=0V , f=1MHz	---	4000	---	pF
Output Capacitance	C$_{oss}$		---	680	---	
Reverse Transfer Capacitance	C$_{rss}$		---	22	---	

Drain-Source Diode Characteristics

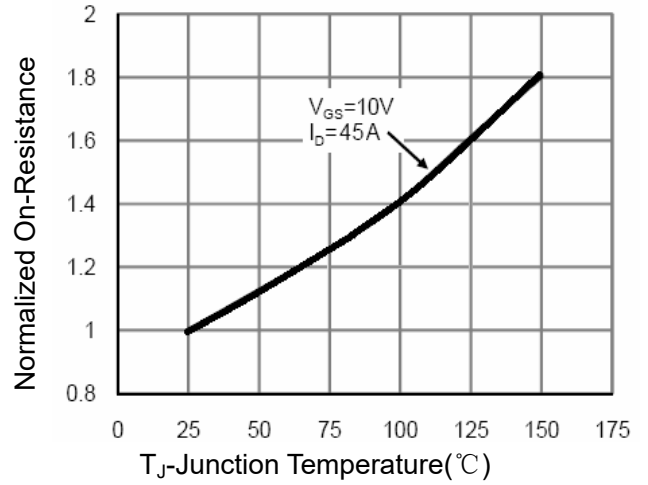| Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage[2]	V$_{SD}$	V$_{GS}$=0V , I$_S$=45A , T$_J$=25℃	---	---	1.2	V
Reverse Recovery Time	t$_{rr}$	I$_F$=45A di/dt=100A/μs，T$_J$=25℃	---	48	---	nS
Reverse Recovery Charge	Q$_{rr}$		---	60	---	nC

Note:

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

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

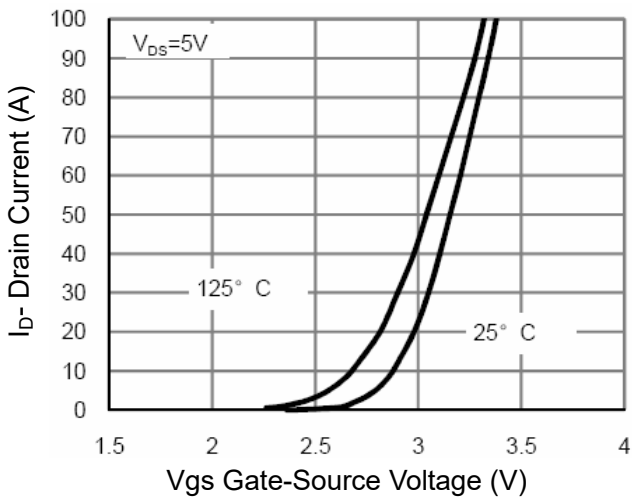3.The EAS data shows Max. rating . The test condition is V$_{DD}$=30V,R$_G$=25Ω,L=0.5mH

Typical Characteristics

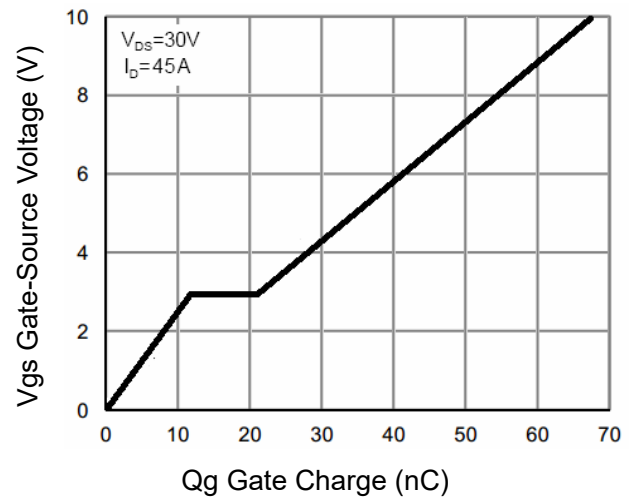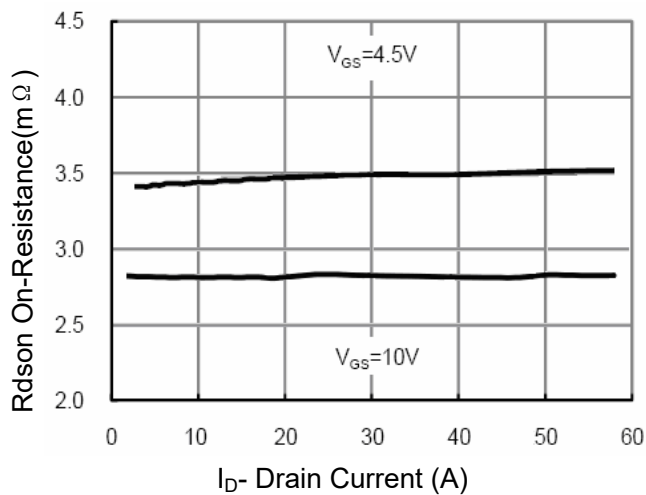

Figure 1 Output Characteristics
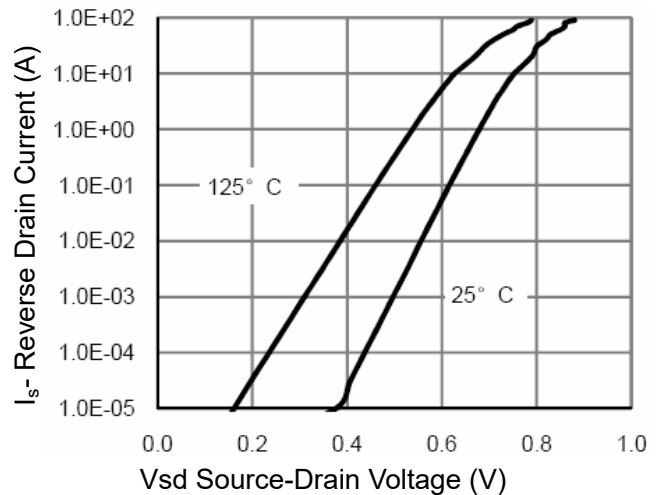

Figure 2 Rdson-JunctionTemperature

Figure 3 Transfer Characteristics
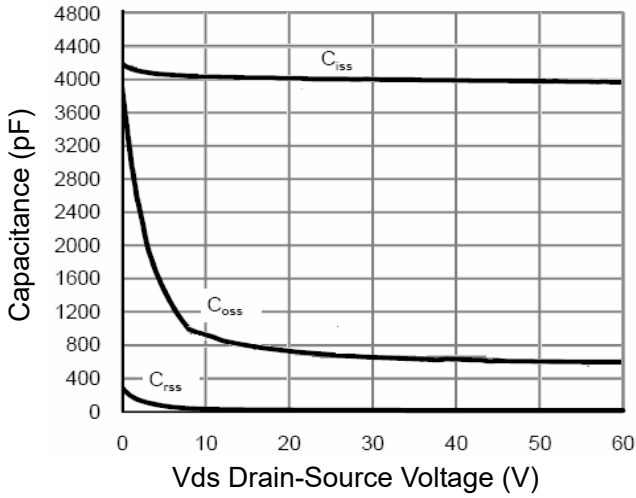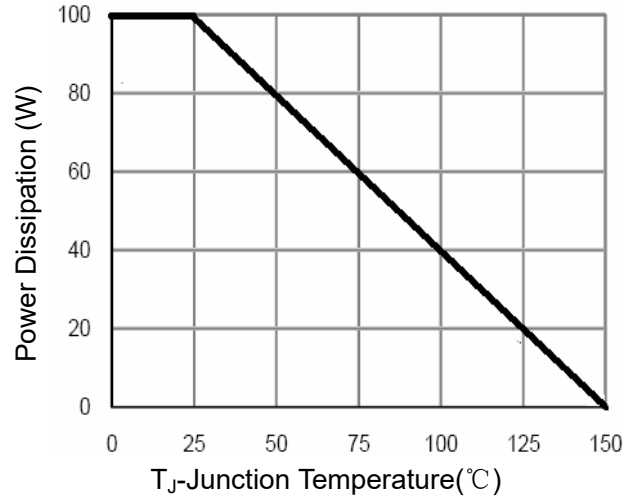

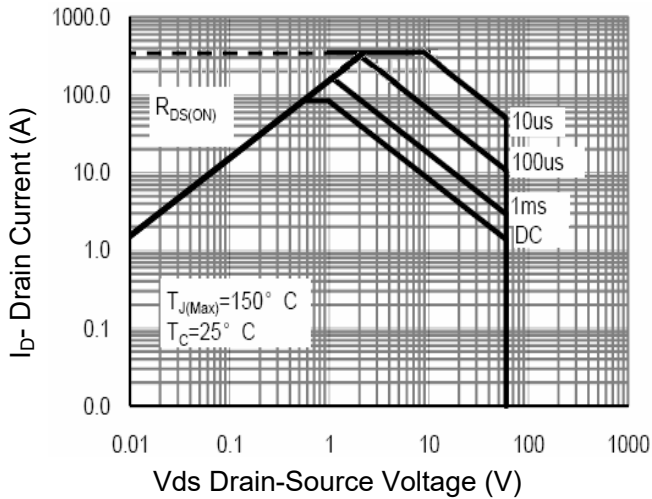**Figure 4 Gate Charge**

Figure 5 Rdson- Drain Current

Figure 6 Source- Drain Diode Forward
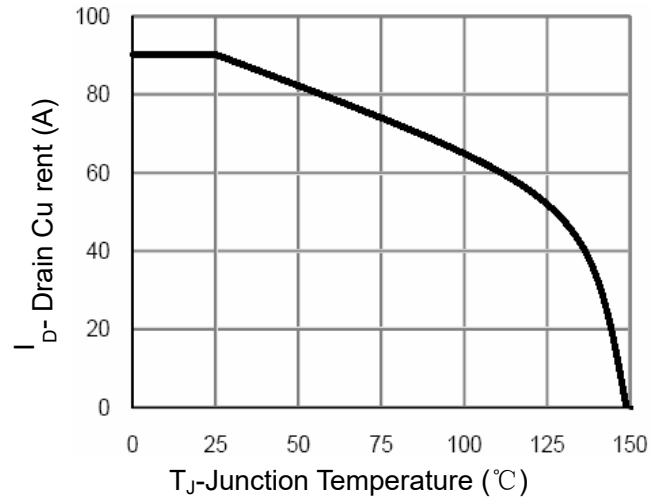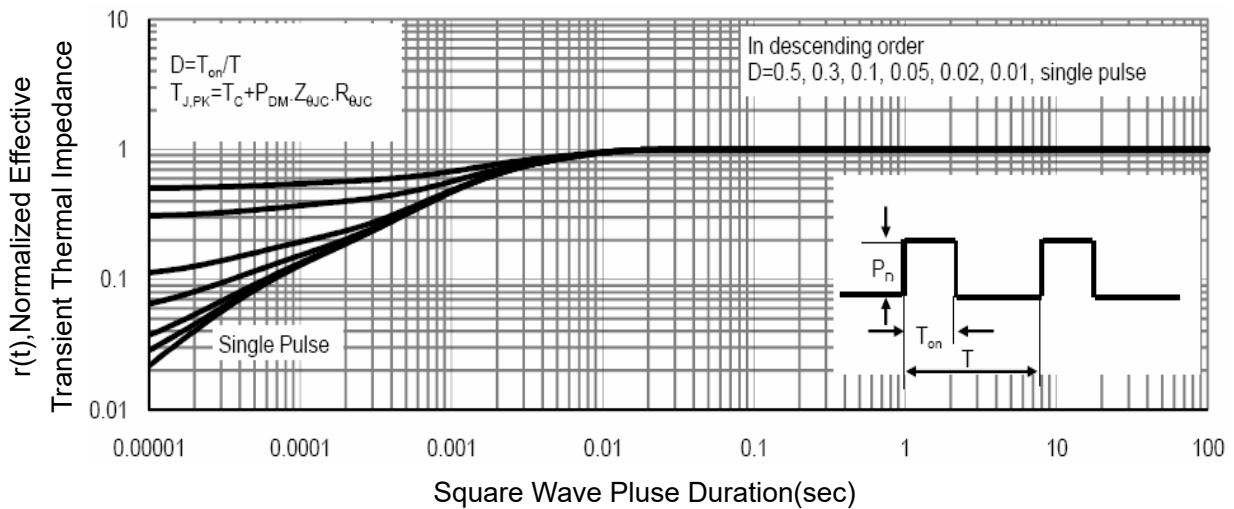
Figure 7 Capacitance vs Vds

Figure 8 Power De-rating

Figure 9 Safe Operation Area

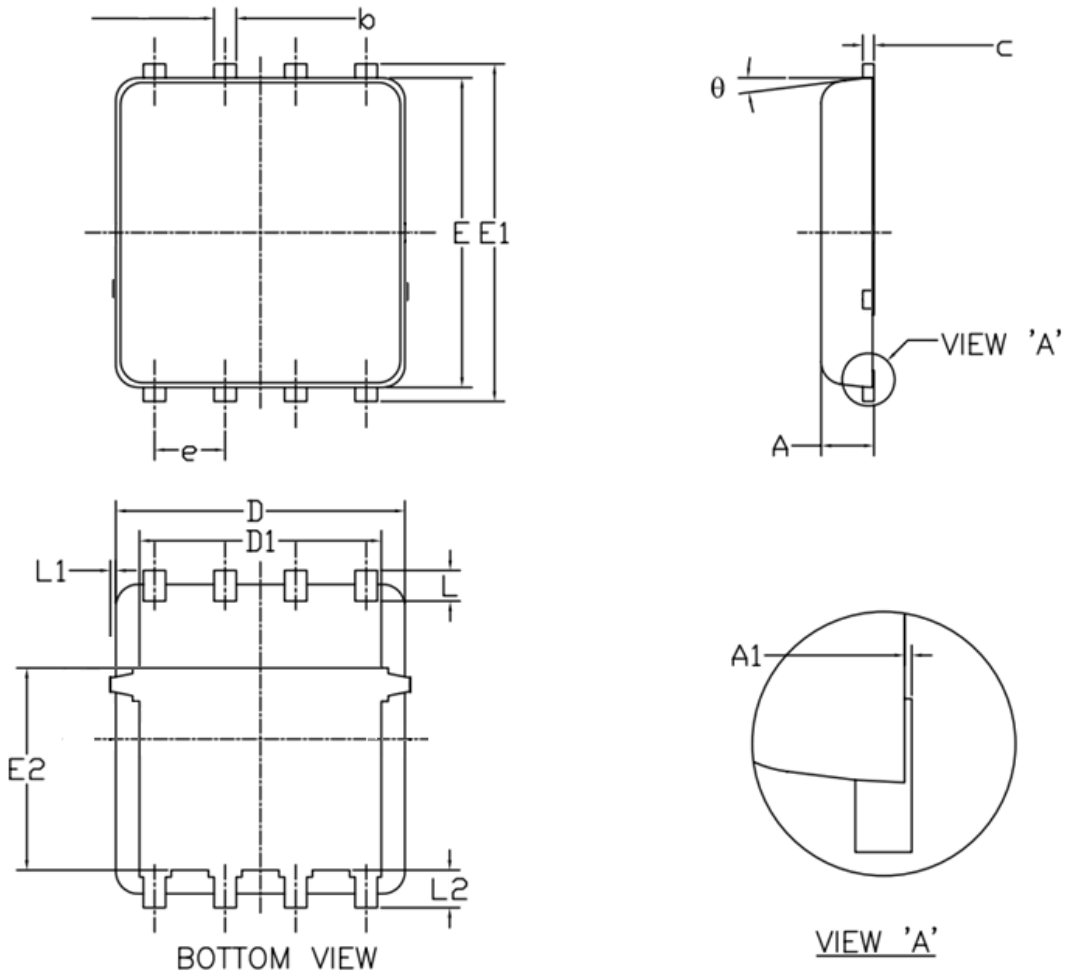Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

DFN5X6-8L Package Outline Dimensions

BOTTOM VIEW

VIEW 'A'

Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.20	E1	5.90	6.10	6.35
A1	0.00	--	0.05	E2	3.38	3.58	3.92
b	0.30	0.40	0.51	e	1.27 BSC		
c	0.20	0.25	0.33	L	0.51	0.61	0.71
D	4.80	4.90	5.40	L1	--	--	0.15
D1	3.61	4.00	4.25	L2	0.41	0.51	0.61
E	5.65	5.80	6.06	θ	0°	--	12°