AT06255AP

60V N-Channel MOSFET

Features

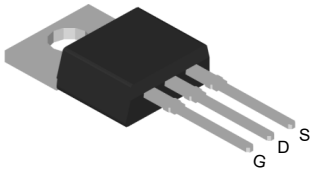
- Advanced Shield Gate Trench technology
- Super Low Gate Charge
- High-Speed Switching
- 100% EAS Guaranteed
- Green Device Available

Product Summary

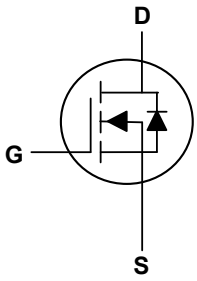
V_{DS}	60	V
I_D	255	A
$R_{DS(ON)}$ (at V_{GS}=10V)	1.6	mΩ
$R_{DS(ON)}$ (at V_{GS}=4.5V)	2.3	mΩ

Applications

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



TO-220 Top View



Absolute Maximum Ratings(T_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	255	A
Continuous Drain Current[1]	T_C=100℃	I_D	176	A
Pulsed Drain Current[2]		I_{DM}	480	A
Single Pulse Avalanche Energy[3]		E_{AS}	420	mJ
Total Power Dissipation[4]		P_D	227	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	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	0.55	℃/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	$R_{DS(ON)}$	V_{GS}=10V , I_D=100A	---	1.6	2	mΩ
		V_{GS}=4.5V , I_D=25A	---	2.3	3	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}=60V, V_{GS}=0V	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Total Gate Charge	Q_g	V_{DS}=30V , V_{GS}=10V , I_D=100A	---	170	---	nC
Gate-Source Charge	Q_{gs}		---	35	---	
Gate-Drain Charge	Q_{gd}		---	38	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=30V , V_{GS}=10V , R_G=3Ω, I_D=100A	---	22	---	ns
Rise Time	T_r		---	140	---	
Turn-Off Delay Time	$T_{d(off)}$		---	110	---	
Fall Time	T_f		---	155	---	
Input Capacitance	C_{iss}	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	11010	---	pF
Output Capacitance	C_{oss}		---	6080	---	
Reverse Transfer Capacitance	C_{rss}		---	85	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=100A , T_J=25℃	---	---	1.3	V
Reverse Recovery Time	t_{rr}	I_F=50A di/dt=100A/μs， T_J=25℃	---	120	---	nS
Reverse Recovery Charge	Q_{rr}		---	280	---	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}=50V,R_G=25Ω,L=0.3mH

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

Typical Characteristics

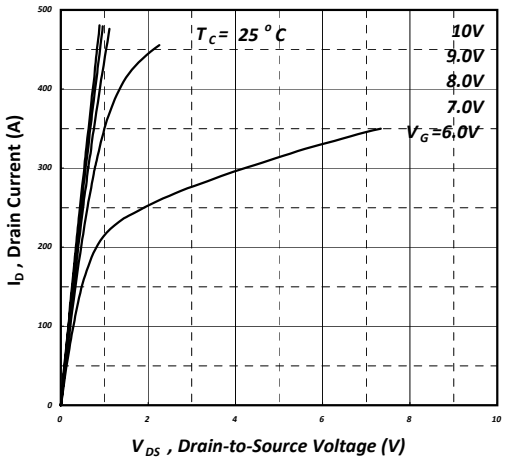


Fig 1. Typical Output Characteristics

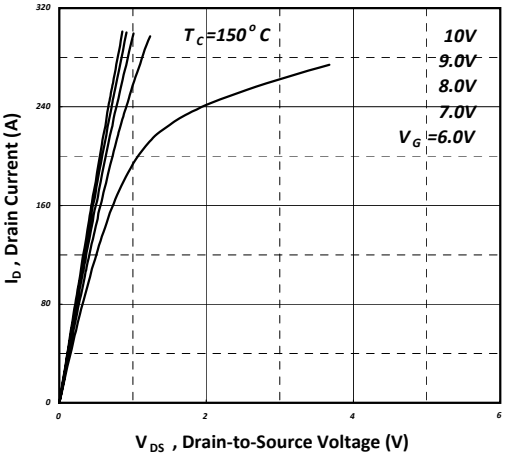


Fig 2. Typical Output Characteristics

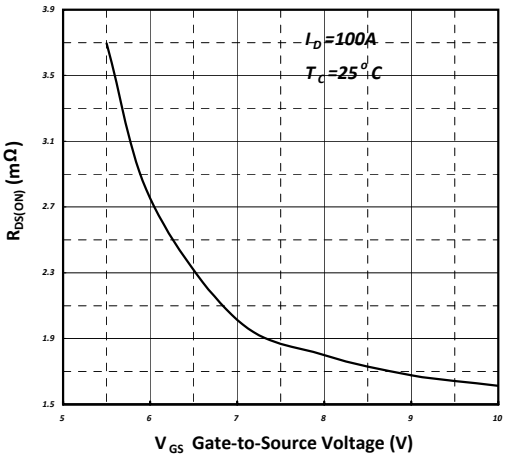


Fig 3. On-Resistance v.s. Gate Voltage

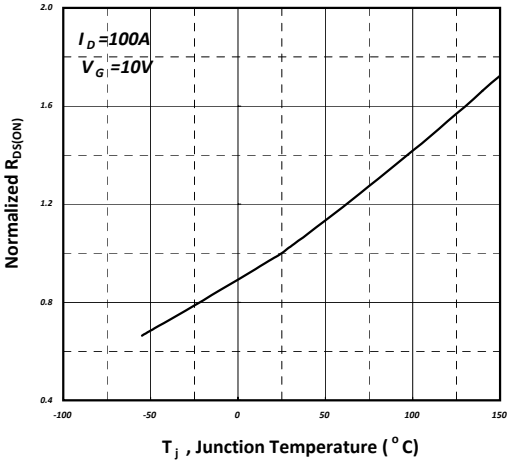


Fig 4. Normalized On-Resistance v.s. Junction Temperature

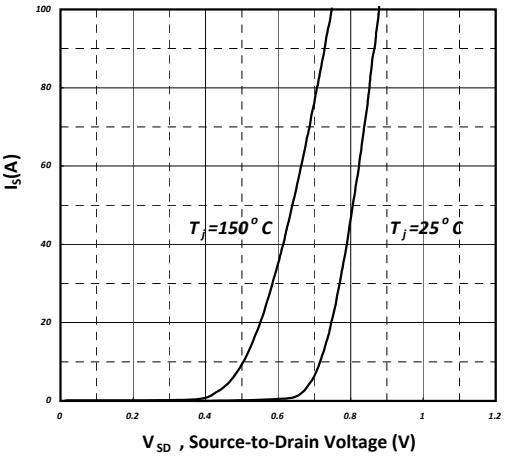


Fig 5. Forward Characteristic of Reverse Diode

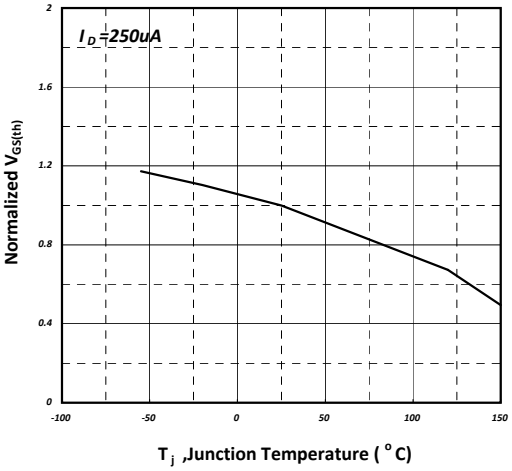


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

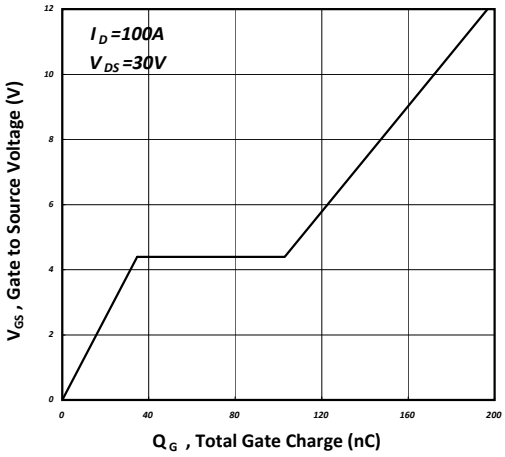


Fig 7. Gate Charge Characteristics

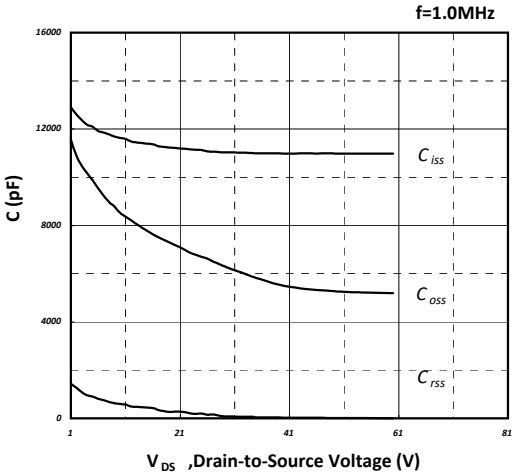


Fig 8. Typical Capacitance Characteristics

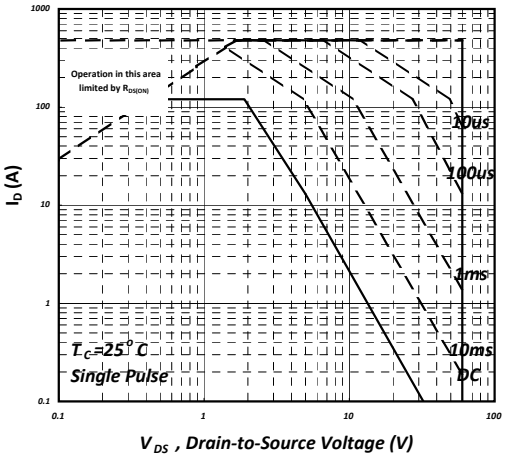


Fig 9. Maximum Safe Operating Area

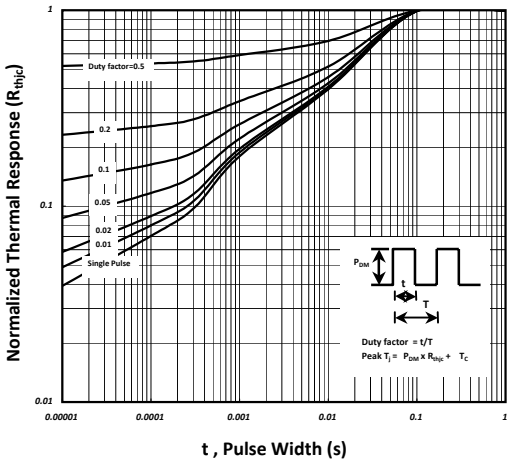
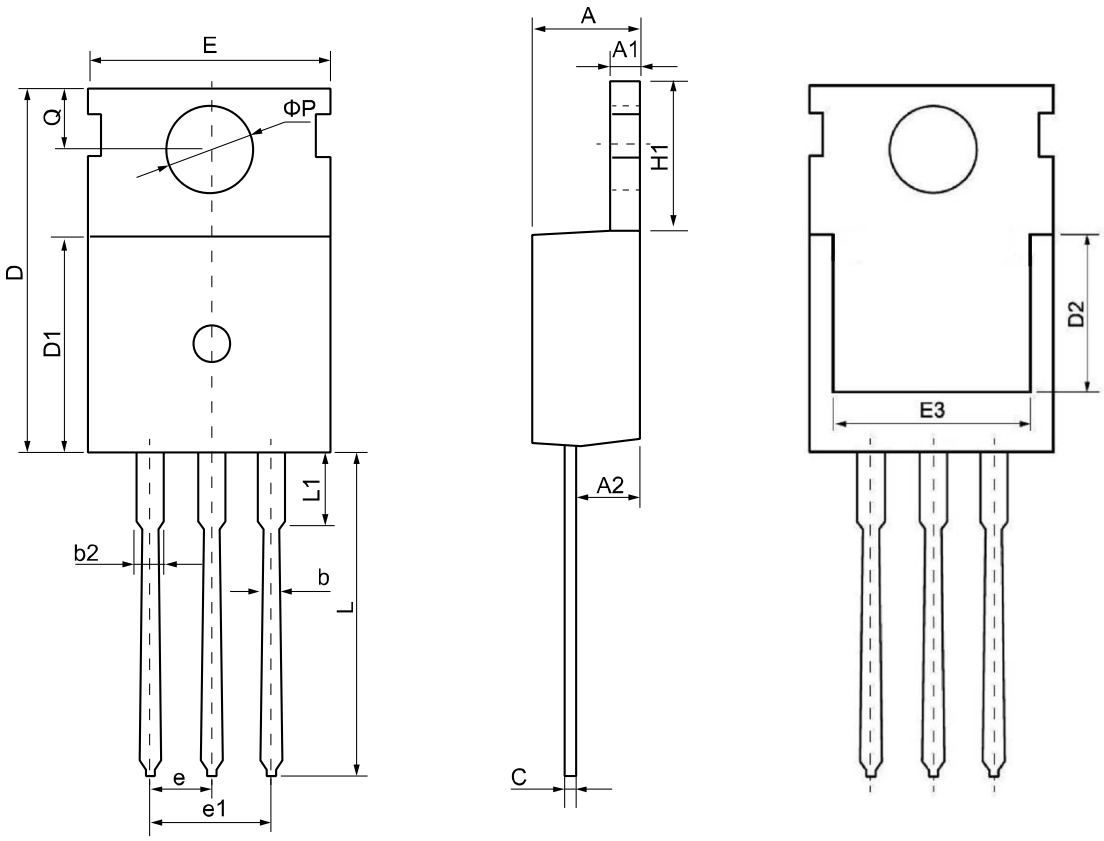


Fig 10. Effective Transient Thermal Impedance

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