AT15135AP

150V N-Channel MOSFET

Features

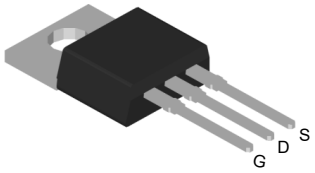
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

Product Summary

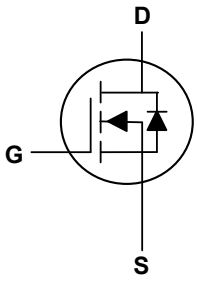
V_{DS}	150	V
I_D	135	A
$R_{DS(ON)}$(at V_{GS}=10V)	7.2	mΩ

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}	150	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	135	A
Continuous Drain Current	I_D@T_C=100℃	96	A
Pulsed Drain Current	I_{DM}	500	A
Single Pulse Avalanche Energy[3]	EAS	506	mJ
Total Power Dissipation	P_D	210	W
Storage Temperature Range	T_{STG}	-55 to 175	℃
Operating Junction Temperature Range	T_J	-55 to 175	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	0.50	℃/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	150	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=20A	---	6.2	7.2	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	2.0	3.0	4.0	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=150V , 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=20A	---	90	---	S
Total Gate Charge	Q_g	V_{DS}=75V , V_{GS}=10V , I_D=20A	---	72	---	nC
Gate-Source Charge	Q_{gs}		---	18	---	
Gate-Drain Charge	Q_{gd}		---	10	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=75V ,I_D=20A, V_{GS}=10V , R_G=4.7Ω	---	26	---	ns
Rise Time	T_r		---	36	---	
Turn-Off Delay Time	$T_{d(off)}$		---	47	---	
Fall Time	T_f		---	15	---	
Input Capacitance	C_{iss}	V_{DS}=75V , V_{GS}=0V , f=1MHz	---	5300	---	pF
Output Capacitance	C_{oss}		---	410	---	
Reverse Transfer Capacitance	C_{rss}		---	9	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[2]	I_S		---	---	135	A
Diode Forward Voltage[1]	V_{SD}	V_{GS}=0V ,I_F=I_S , T_J=25℃	---	---	1.3	V
Reverse Recovery Time	t_{rr}	I_F=I_S ,di/dt=100A/μs, T_J=25℃	---	45	---	nS
Reverse Recovery Charge	Q_{rr}		---	12	---	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.ESD condition:T_j=25℃,V_{DD}=50V,V_{GS}=10V,L=0.5mH,R_g=25Ω

Typical Characteristics

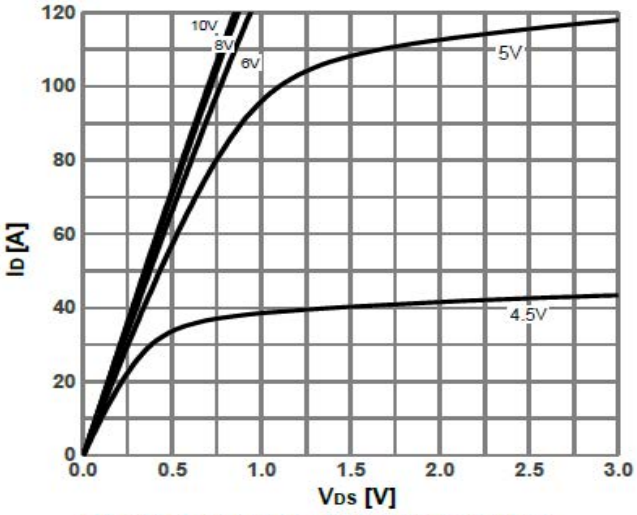


Fig 1: Typ. output characteristics

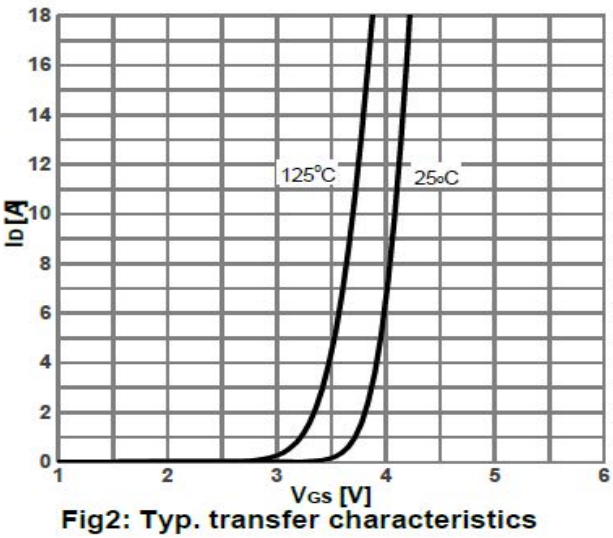


Fig2: Typ. transfer characteristics

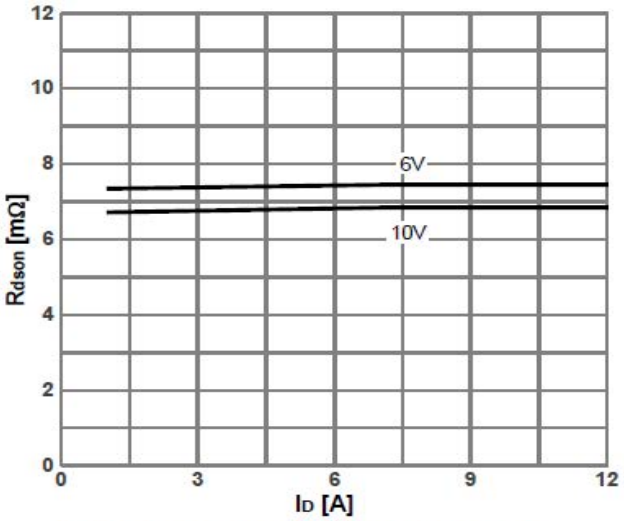


Fig3: On-state resistance vs. Drain current

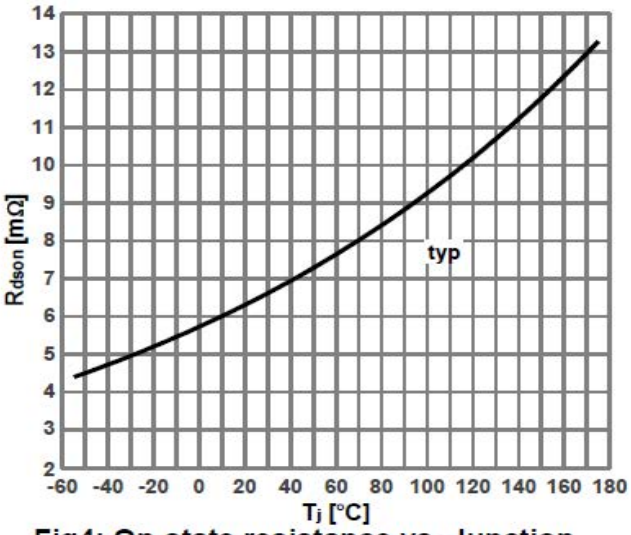


Fig4: On-state resistance vs. Junction temperature

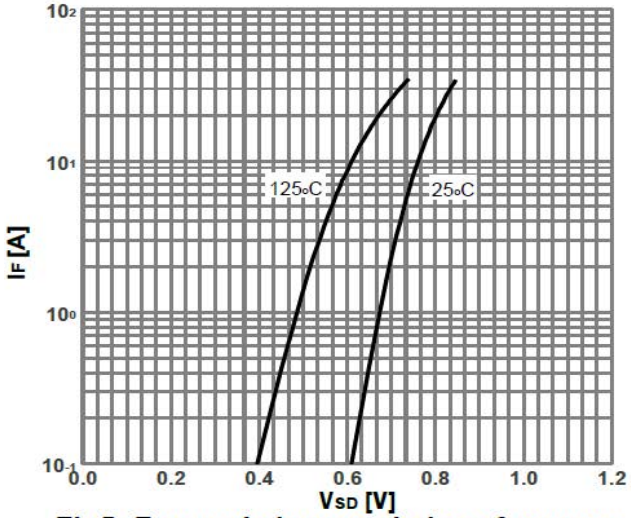


Fig5: Forward characteristics of reverse diode

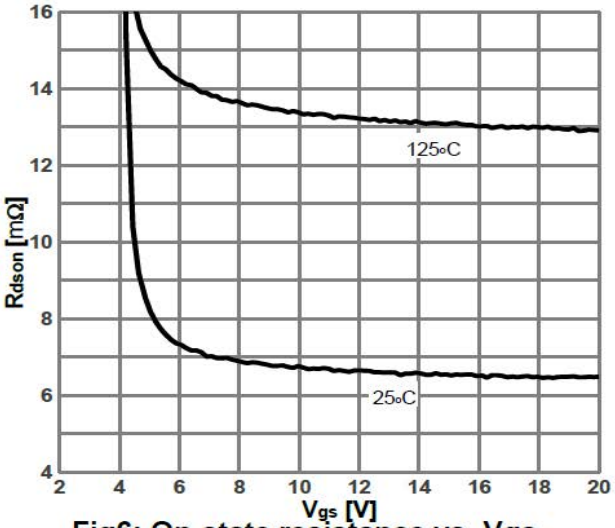


Fig6: On-state resistance vs. Vgs characteristics

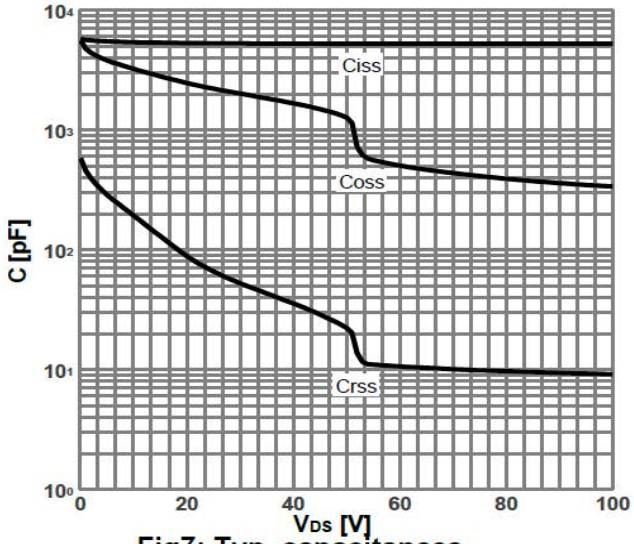


Fig7: Typ. capacitances

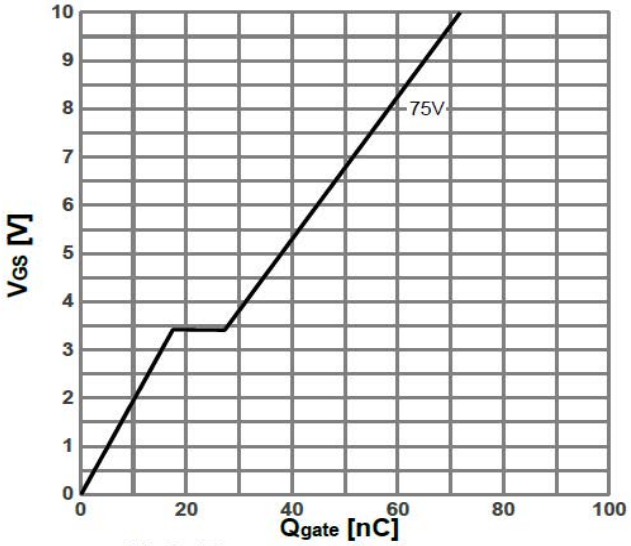


Fig8: Typ. gate charge

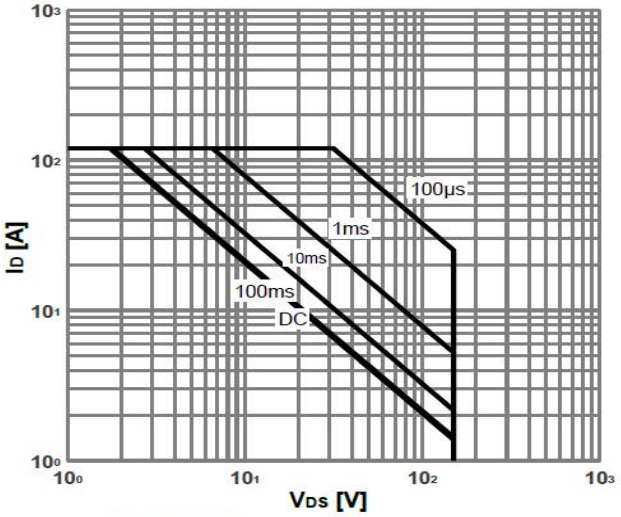


Fig9: Safe operating area

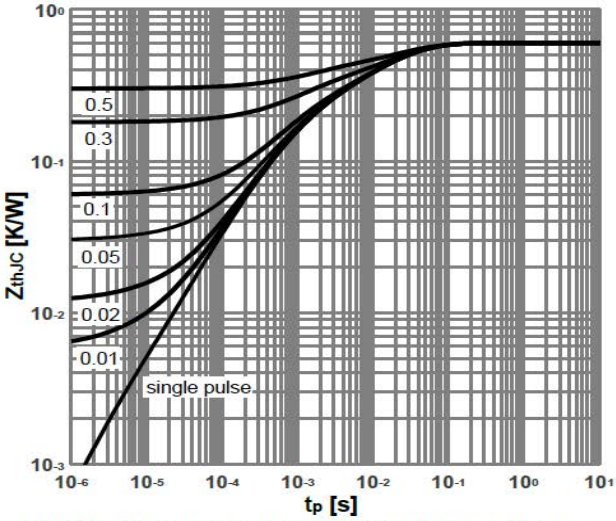
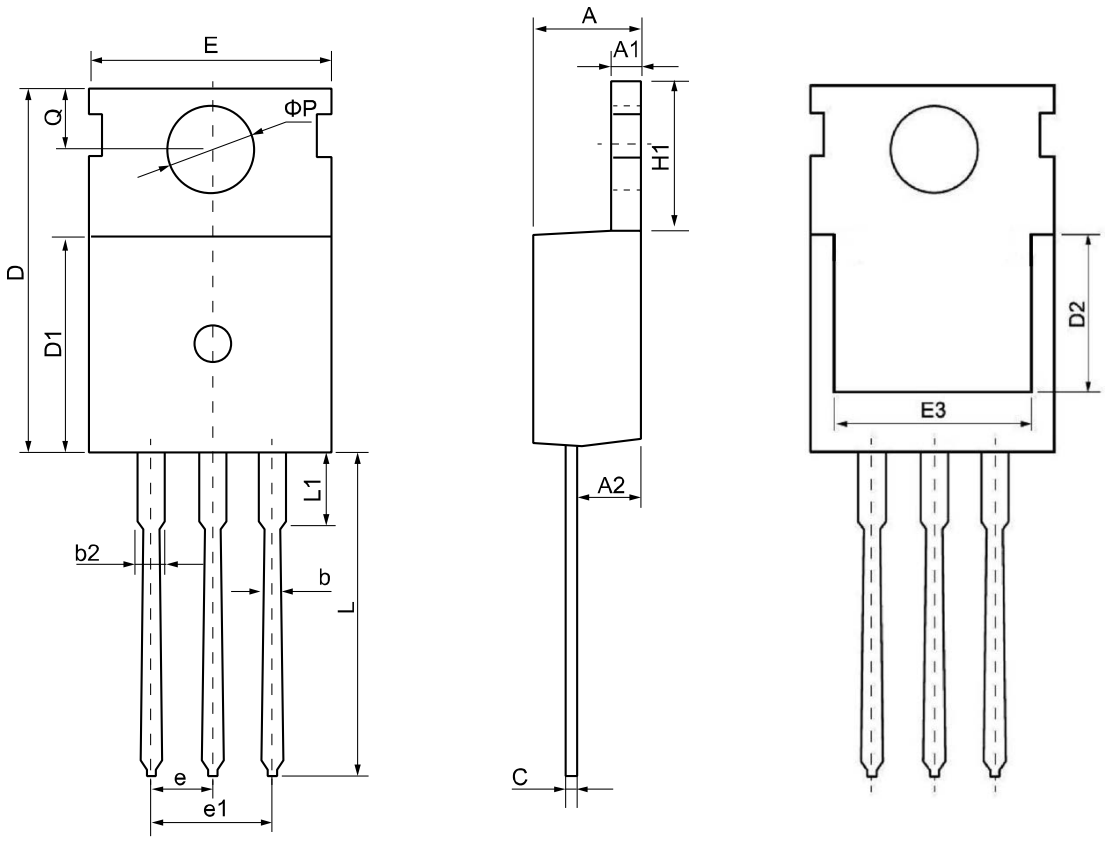


Fig10: Max. transient thermal impedance

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