AT04150L

40V N-Channel MOSFET

Features

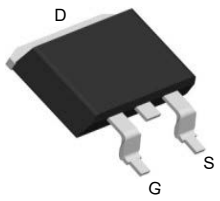
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

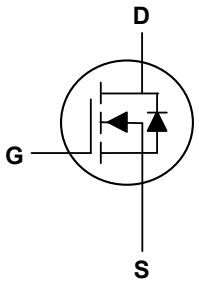
V_{DS}	40	V
I_D	150	A
$R_{DS(ON)}$ (at V_{GS}=10V)	2.7	mΩ

Applications

- High Frequency Point-of-Load Synchronous Buck Converter
- Networking DC-DC Power System
- Power Tool Application



TO-263 Top View



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1]	I_D	150	A
Continuous Drain Current[1]	I_D@T_C=100℃	60	A
Pulsed Drain Current[2]	I_{DM}	450	A
Single Pulse Avalanche Energy[3]	EAS	720	mJ
Total Power Dissipation[4]	P_D	100	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-Ambient[1]	$R_{\theta JA}$	---	75	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	1.5	℃/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	40	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=25A	---	2.0	2.7	mΩ
		V_{GS}=4.5V , I_D=20A	---	2.5	3.5	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1	---	2	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=32V , 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=20A	---	50	---	S
Total Gate Charge	Q_g	V_{DS}=20V , V_{GS}=10V , I_D=20A	---	235	---	nC
Gate-Source Charge	Q_{gs}		---	24	---	
Gate-Drain Charge	Q_{gd}		---	51	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=30V ,R_G=2.5Ω, V_{GS}=10V ,I_D=1A	---	40	---	ns
Rise Time	T_r		---	38	---	
Turn-Off Delay Time	$T_{d(off)}$		---	140	---	
Fall Time	T_f		---	60	---	
Input Capacitance	C_{iss}	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	10400	---	pF
Output Capacitance	C_{oss}		---	1100	---	
Reverse Transfer Capacitance	C_{rss}		---	1040	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[2]	I_S		---	---	150	A
Diode Forward Voltage[1]	V_{SD}	V_{GS}=0V ,I_S=20A , T_J=25℃	---	---	1.1	V
Reverse Recovery Time	t_{rr}	Is=5A ,di/dt=100A/μs, T_J=25℃	---	38	---	nS
Reverse Recovery Charge	Q_{rr}		---	35	---	nC

Note:

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

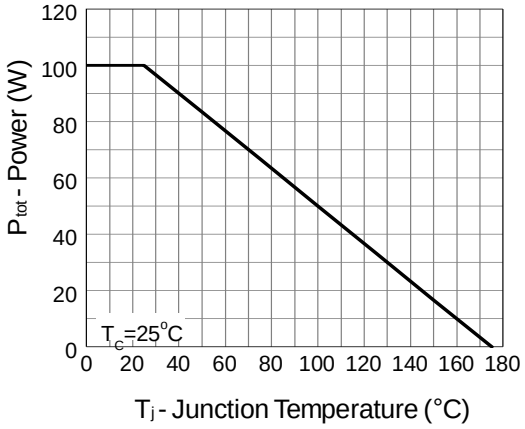
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=20V,V_{GS}=10V,L=0.1mH

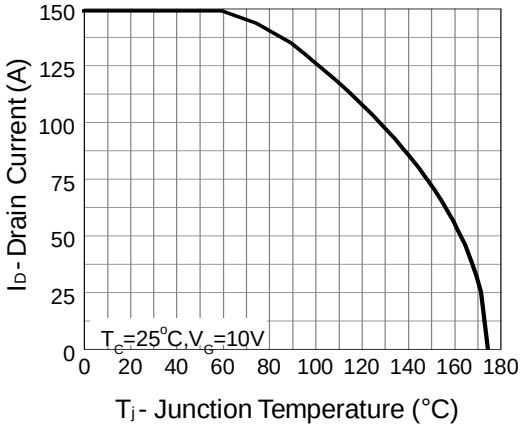
4.The power dissipation is limited by 150℃ junction temperature

Typical Characteristics

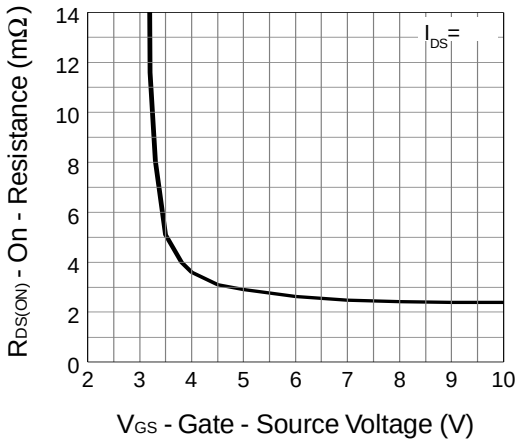
Power Dissipation



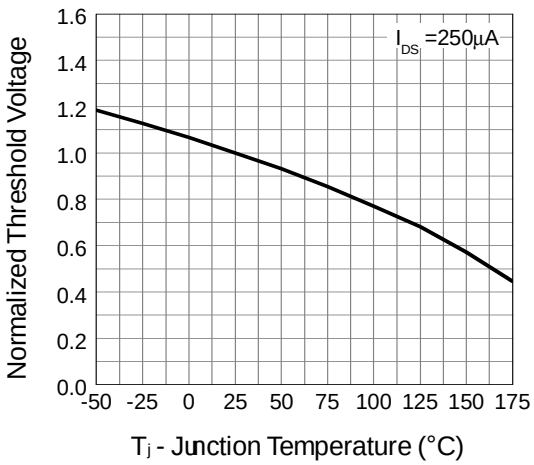
Drain Current



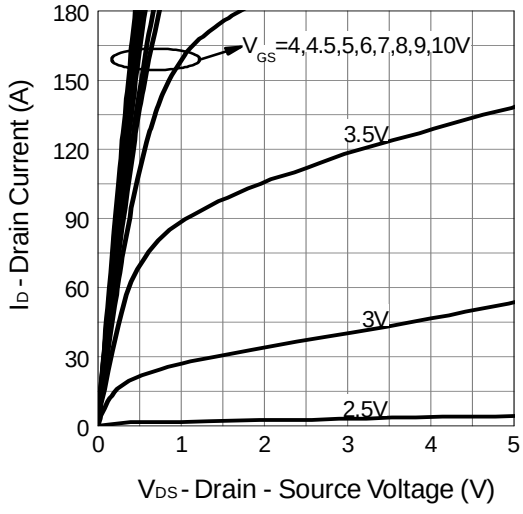
Gate-Source On Resistance



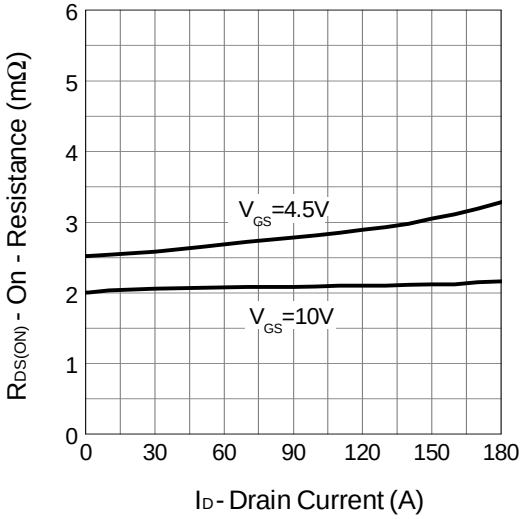
Gate Threshold Voltage



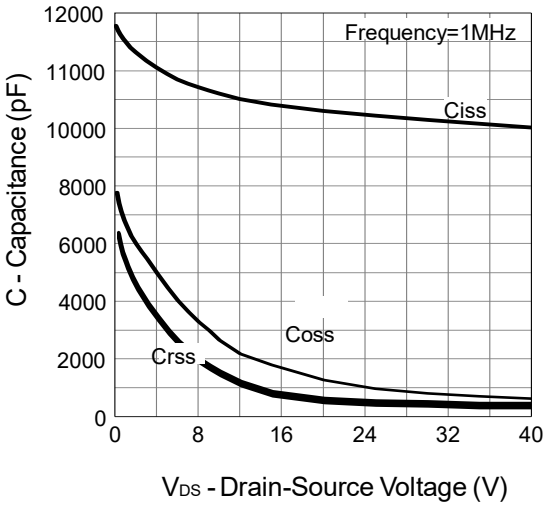
Output Characteristics



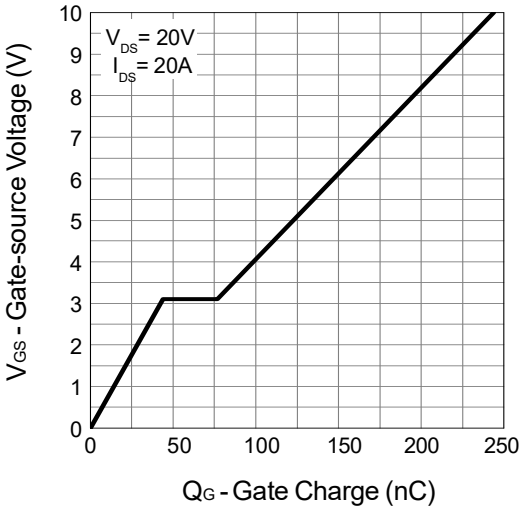
Drain-Source On Resistance



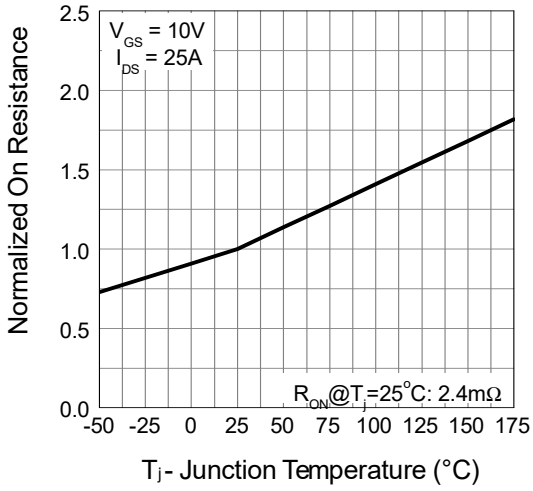
Capacitance



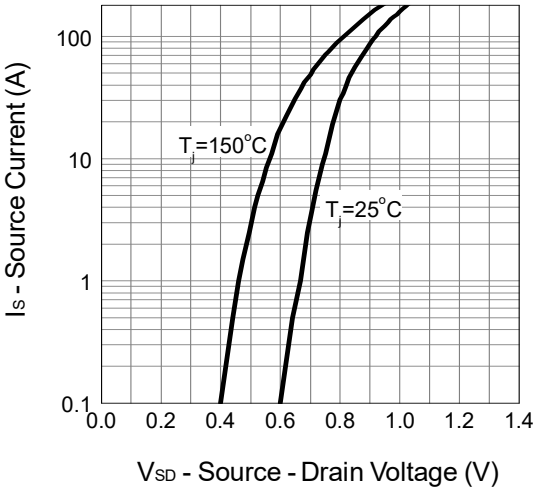
Gate Charge



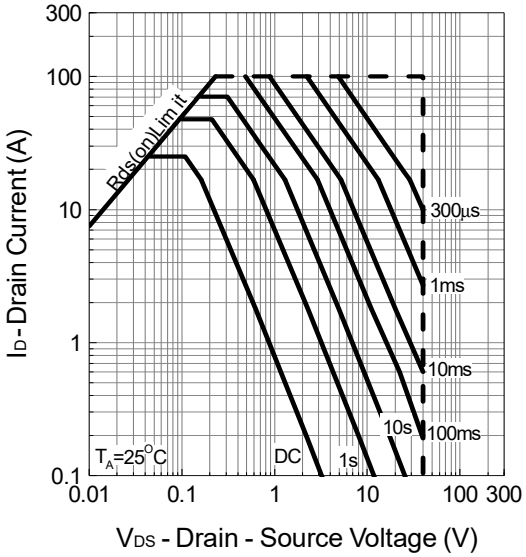
Drain-Source On Resistance



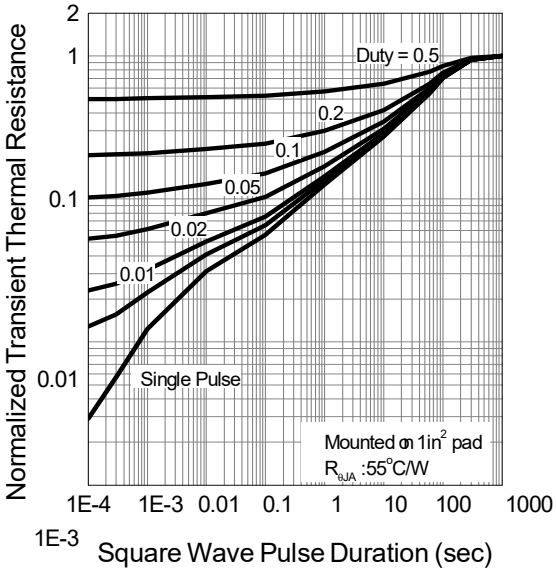
Source-Drain Diode Forward



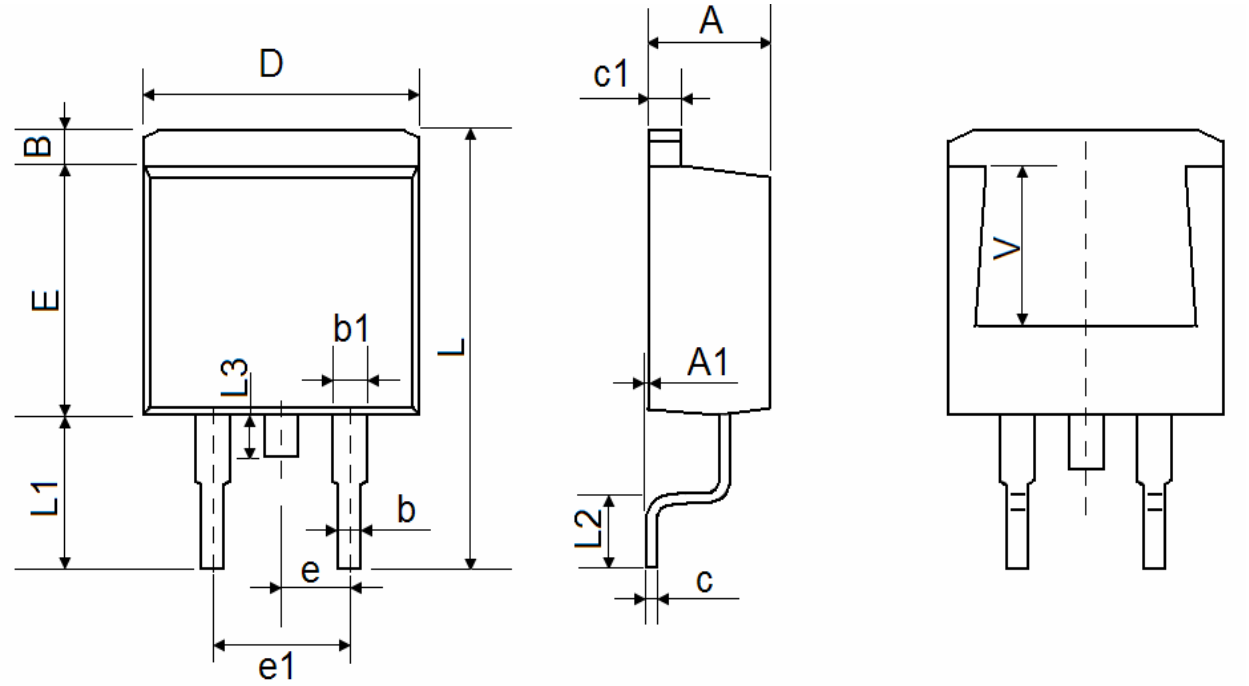
Safe Operation Area



Thermal Transient Impedance



TO-263 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	4.40	4.55	4.70	**A1**	0.00	0.07	0.15
B	1.00	1.20	1.40	**b**	0.65	0.80	0.95
b1	1.10	1.15	1.37	**c**	0.30	0.40	0.53
c1	1.10	1.25	1.37	**D**	9.80	10.00	10.40
E	8.50	8.80	9.20	**e**	2.54 REF		
e1	4.90	5.10	5.40	**L**	14.80	15.20	15.70
L1	5.00	5.25	5.60	**L2**	2.05	2.45	2.80
L3	1.20	1.50	1.80	**V**	5.60 REF		