AT06N230KX

60V N-Channel MOSFET

Features

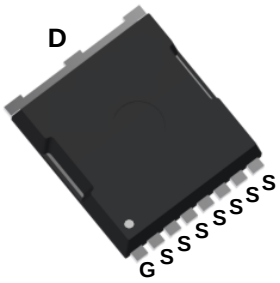
- Advanced Shield Gate Trench technology
- Super Low Gate Charge
- High-Speed Switching
- 100% EAS Guaranteed
- Green Device Available

Product Summary

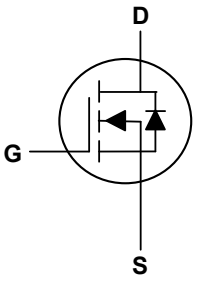
V_{DS}	60	V
I_D	230	A
$R_{DS(ON)}$ (at V_{GS}=10V)	2.2	mΩ
$R_{DS(ON)}$ (at V_{GS}=4.5V)	2.9	mΩ

Applications

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



TOLL 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@T_C=25℃	230	A
Pulsed Drain Current[2]	I_{DM}	640	A
Single Pulse Avalanche Energy[3]	E_{AS}	1500	mJ
Total Power Dissipation[4]	P_D	300	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]	$R_{\theta JA}$	---	42	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	0.5	℃/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	60	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=50A	---	1.8	2.2	mΩ
		V_{GS}=4.5V , I_D=30A	---	2.3	2.9	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	1.0	---	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V , V_{GS}=0V , T_J=25℃	---	---	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=50A	---	250	---	nC
Gate-Source Charge	Q_{gs}		---	58	---	
Gate-Drain Charge	Q_{gd}		---	30	---	
Turn-On Delay Time	$T_{d(on)}$	V_{DS}=30V , V_{GS}=10V , R_G=3.9Ω, I_D=50A	---	25	---	ns
Rise Time	T_r		---	113	---	
Turn-Off Delay Time	$T_{d(off)}$		---	198	---	
Fall Time	T_f		---	122	---	
Input Capacitance	C_{iss}	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	14900	---	pF
Output Capacitance	C_{oss}		---	545	---	
Reverse Transfer Capacitance	C_{rss}		---	96	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=50A , T_J=25℃	---	---	1.3	V
Reverse recovery time	t_{rr}	I_F=50A, diF/dt=100A/μs	---	22	---	ns
Reverse recovery charge	Q_{rr}		---	18	---	nC

Note:

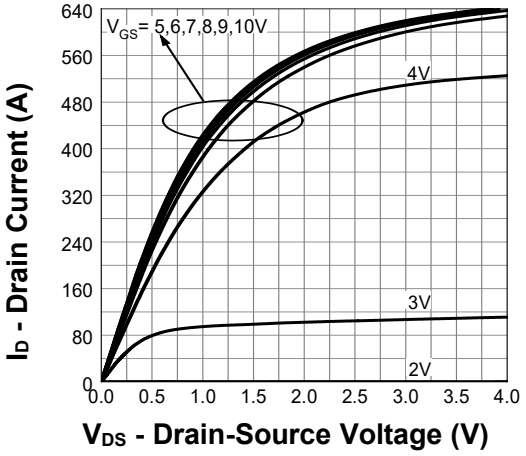
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

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

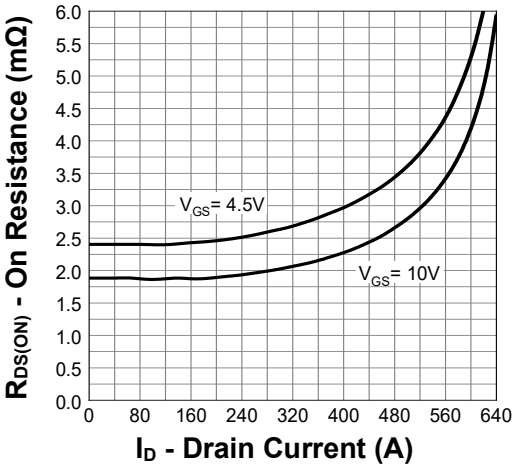
3.The EAS data shows Max. rating . The test condition is V_{DD}=50V,L=0.5mH

Typical Characteristics

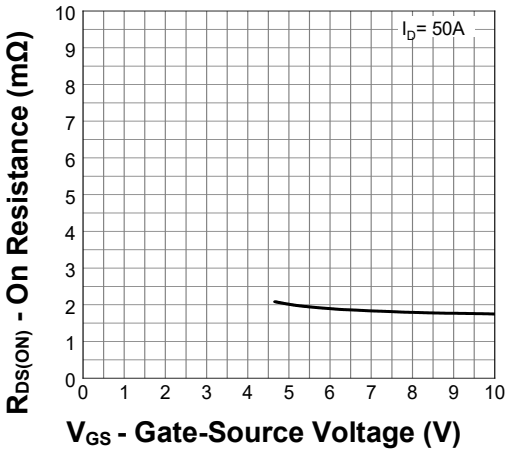
Output Characteristics



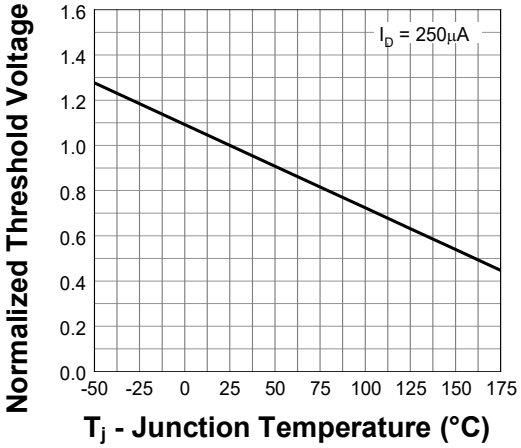
On Resistance



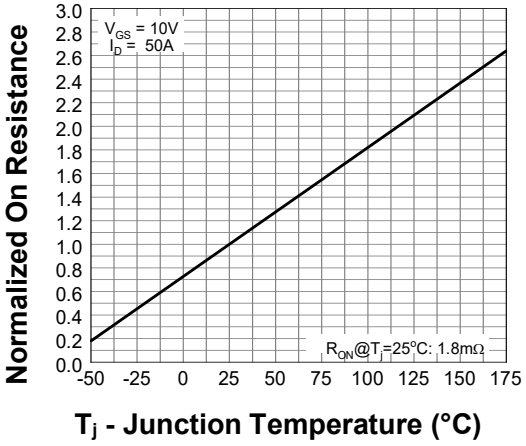
Transfer Characteristics



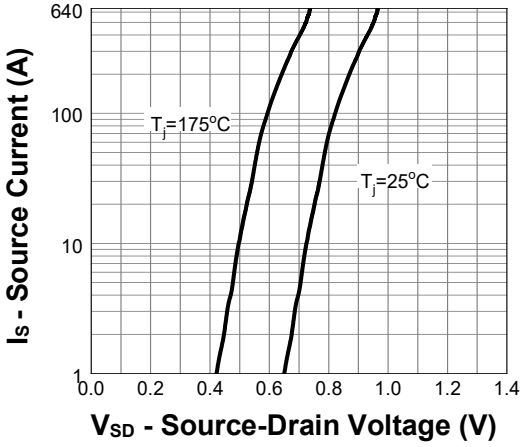
Normalized Threshold Voltage



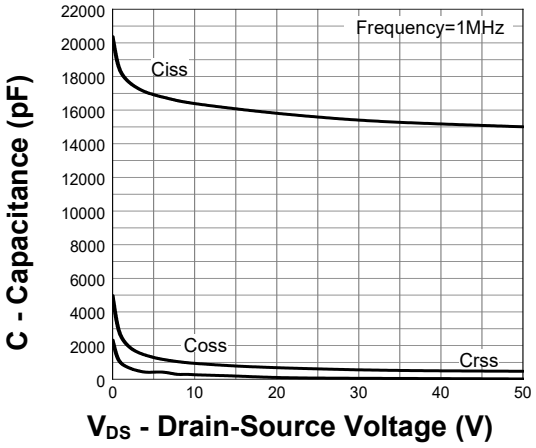
Normalized On Resistance



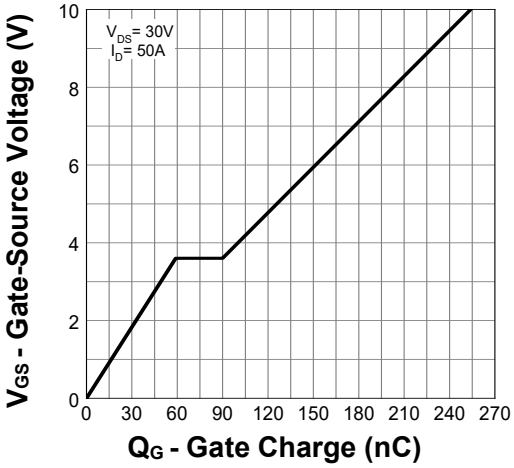
Diode Forward Current



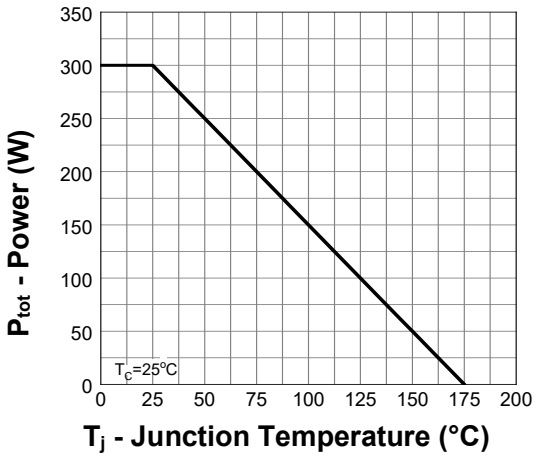
Capacitance



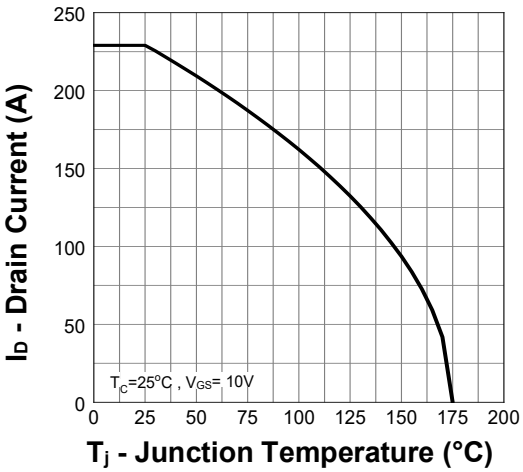
Gate Charge



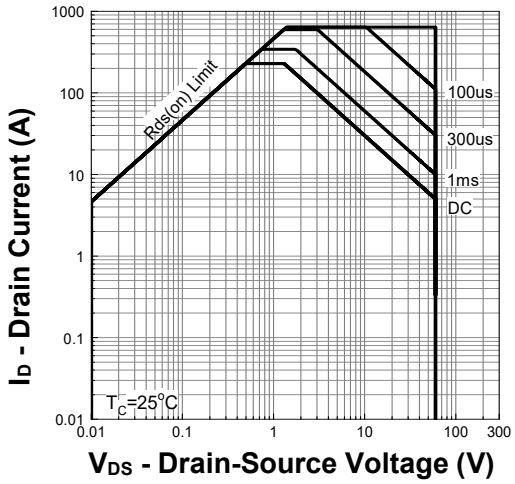
Power Capability



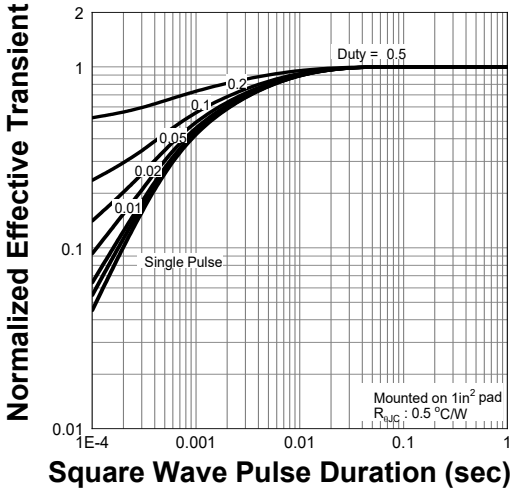
Current Capability



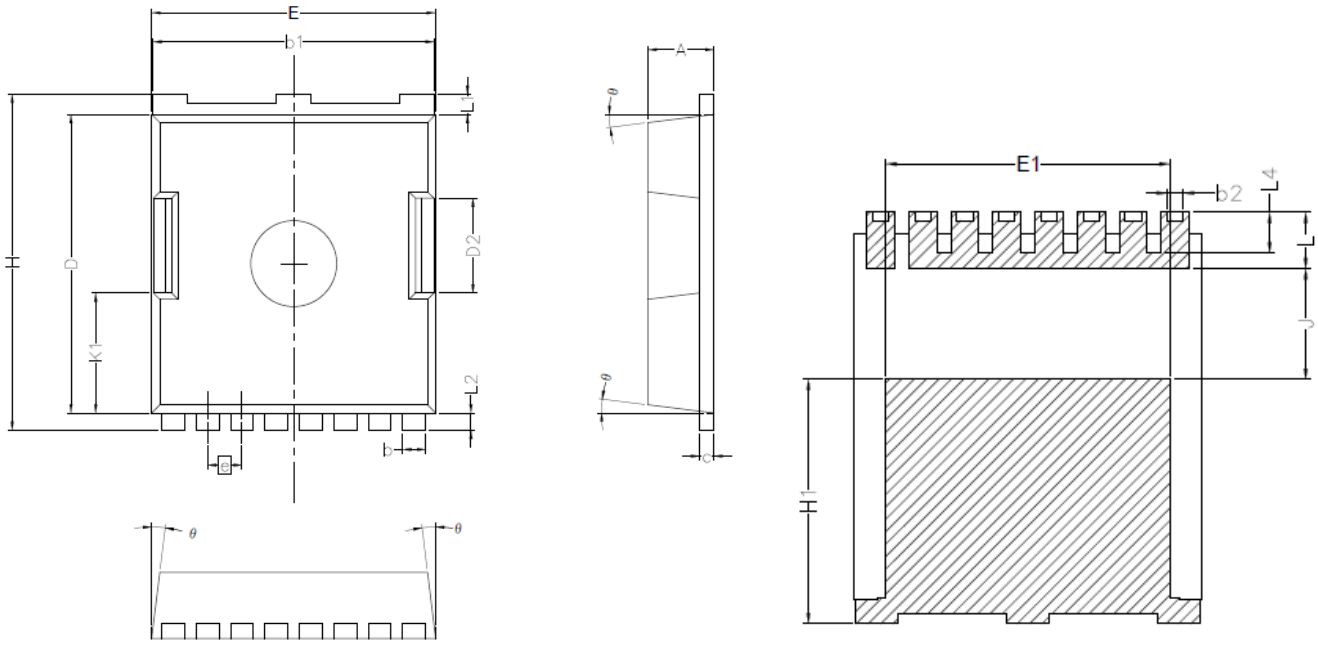
Safe Operating Area



Transient Thermal Impedance



TOLL Package Outline Dimensions



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.90	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°

Printing Information

ATC ====Brand

XXXXXXX ====Material Code

XXYY ====XX Representative Year
YY Representative Weeks