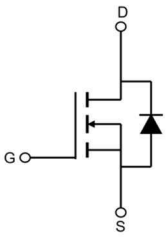
APG009N10T

N-Channel Enhancement Mosfet

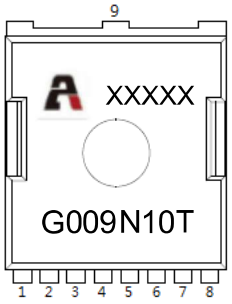
DATA SHEET

Features

- 100V,450A
  $R_{DS(ON)}$ <1.25mΩ @V_{GS}=10V TYP:1.05mΩ
  $R_{DS(ON)}$ <1.85mΩ @V_{GS}=6V TYP:1.55mΩ
- Surface-mounted package
- Super Trench
- Advanced trench cell design
- MSL1



Schematic Diagram



Marking and pin assignment

1	Gate(G)
2,3,4,5,6,7,8	Source(S)
9	Drain(D)

Applications

- Power Tool appliances
- BMS appliances
- High power inverter system

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G009N10T	APG009N10T	TOLL-8L	-	-	2000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_a =25℃) (1)	I_D	450	A
Continuous Drain Current (T_a =100℃) (1)	I_D	285	A
Pulsed Drain Current (1,2,3)	I_{DM}	1800	A
Single Pulsed Avalanche Energy (V_{DD} =50V,L=1.0mH)	E_{AS}	2800	mJ
Drain Power Dissipation	P_D	500	W
Thermal Resistance from Junction to Case(2)	$R_{\theta JC}$	0.25	℃/W
Thermal Resistance- Junction to Ambient(3)	$R_{\theta JA}$	40	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes:

1. Pulse width ≤ 300 μs, duty cycle ≤ 2 %
2. Surface Mounted on minimum footprint pad area.
3. Limited by bonding wire

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

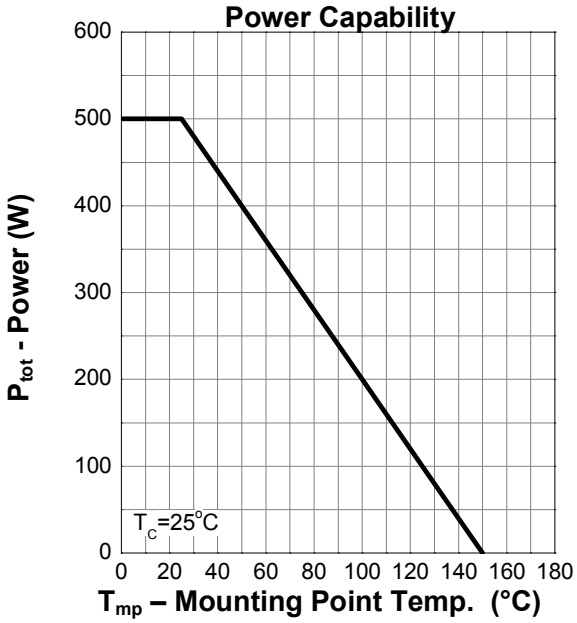
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0	-	4.0	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =10V, I_D =80A	-	1.05	1.25	mΩ
		V_{GS} =6V, I_D =50A		1.55	1.85	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1.0MHz	-	13766	-	pF
Output Capacitance	C_{oss}		-	2155	-	
Reverse Transfer Capacitance	C_{rss}		-	100	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, I_D=30A, R_G=3.9Ω, R_L=1.66Ω,V_G=10V	-	36	-	ns
Turn-on rise time	t_r		-	85	-	
Turn-off delay time	$t_{d(off)}$		-	182	-	
Turn-off fall time	t_f		-	113	-	
Total Gate Charge	Qg	V_{DS}=50V, I_D=10A, V_{GS}=10V	-	284	-	nC
Gate-Source Charge	Qgs		-	73	-	
Gate-Drain Charge	Qgd		-	85	-	
Source-Drain Diode characteristics						
Diode Forward voltage[a]	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=30A	-	-	1.3	V
Diode Forward current	I_S	T_C=25℃	-	-	450	A
Body Diode Reverse Recovery Time	trr	T_J=25℃， IF=30A,di/dt=100A/us		121		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃， IF=30A,di/dt=100A/us		405		uc

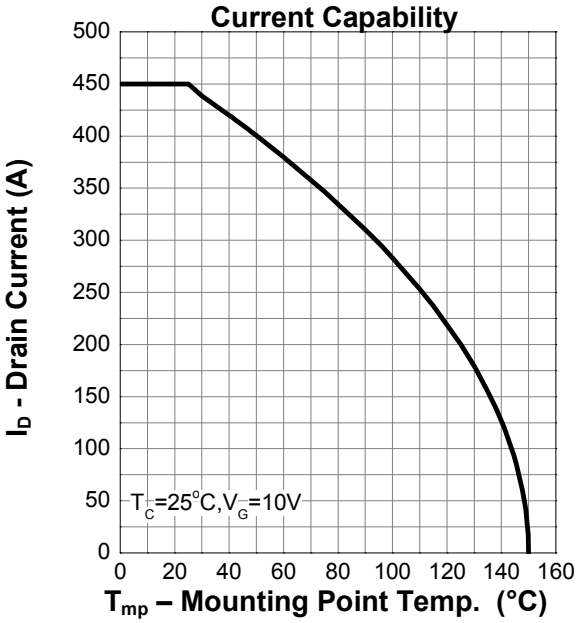
Notes:

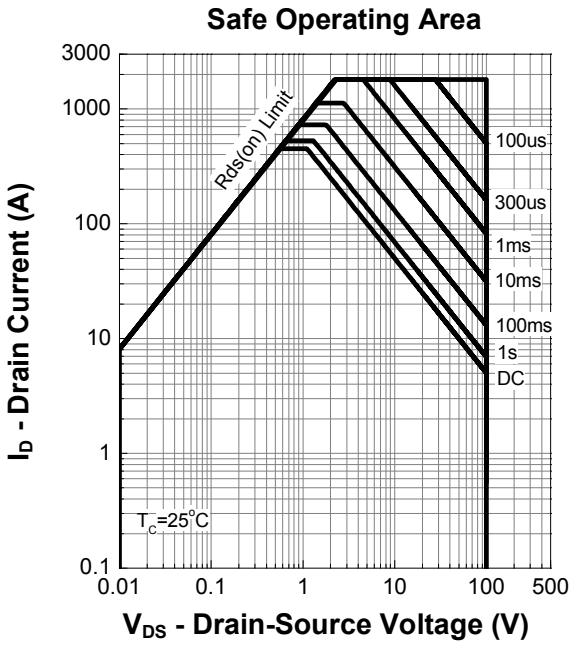
a) Pulse width ≤ 300 μs, duty cycle ≤ 2%

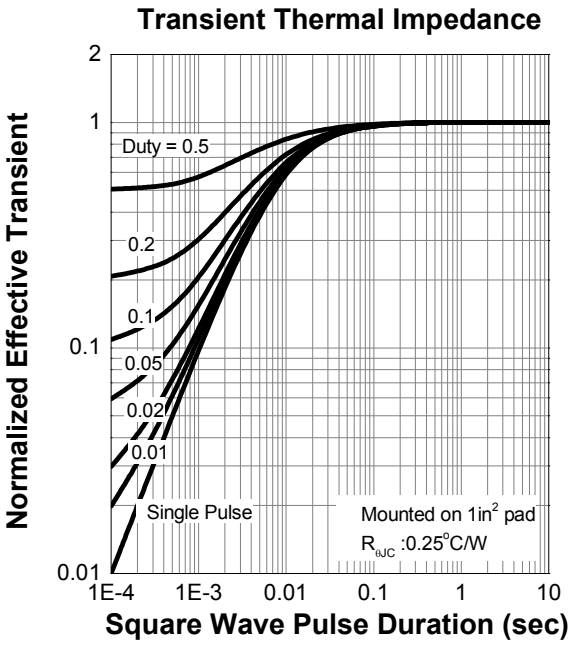
b) Guaranteed by design, not subject to production testing

Typical Characteristics









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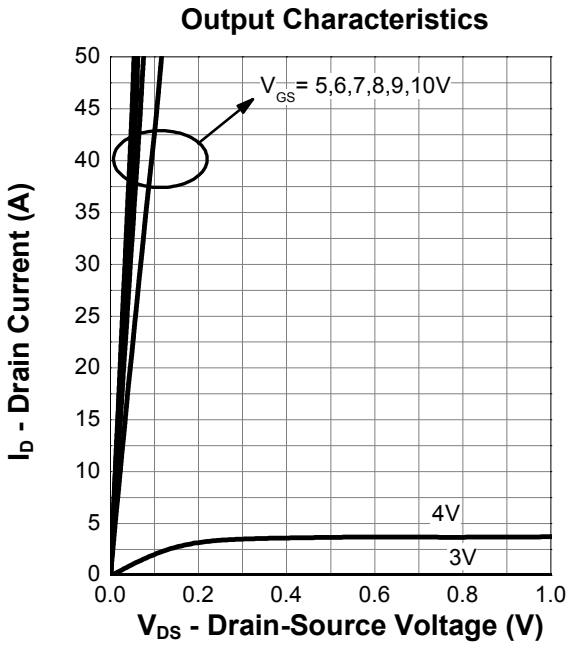

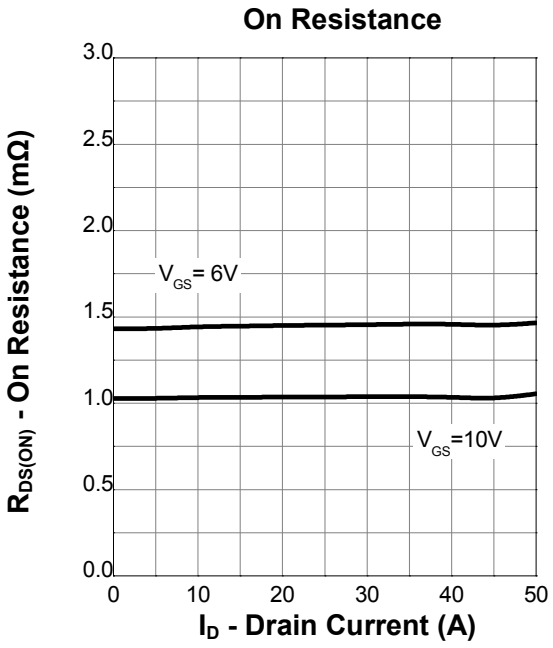

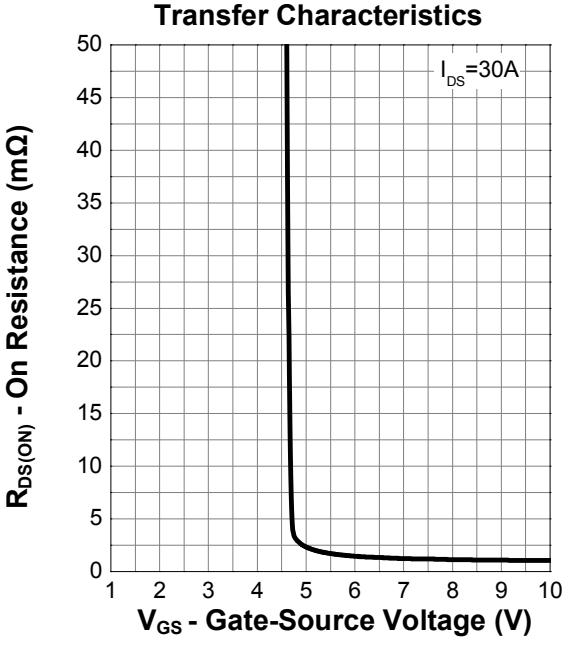

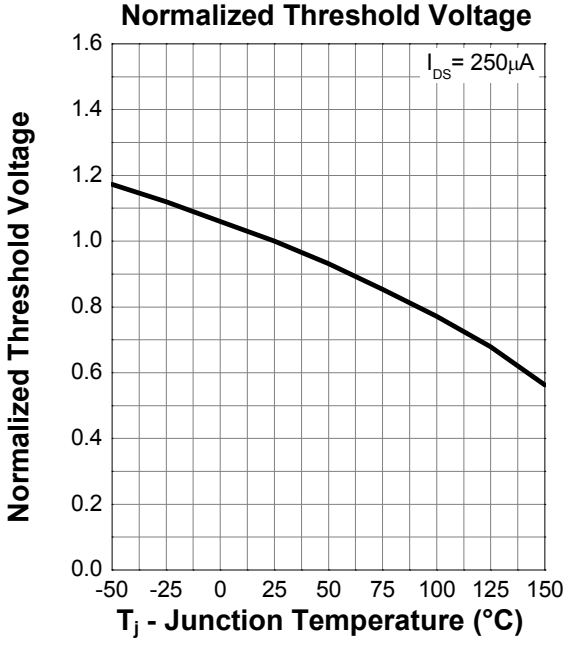

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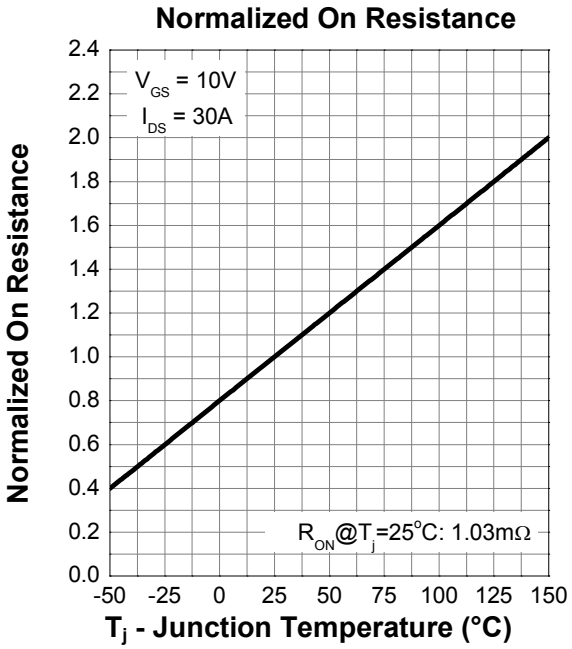
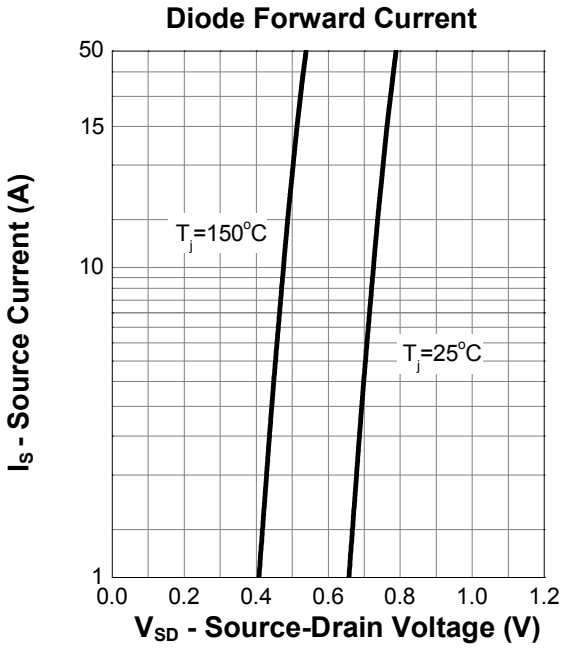
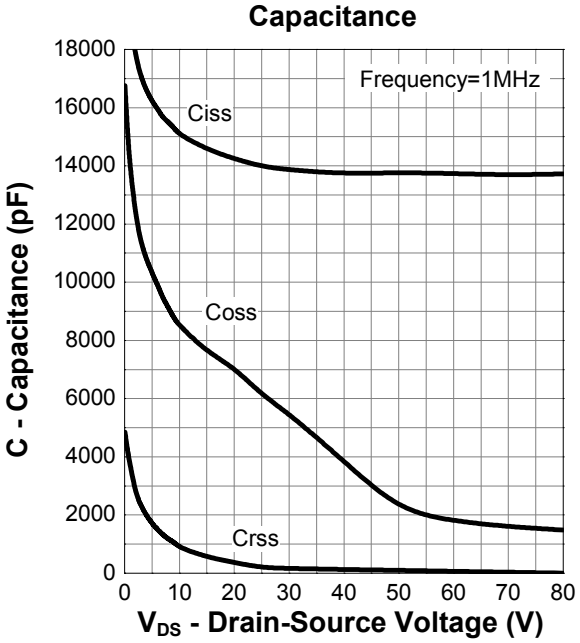
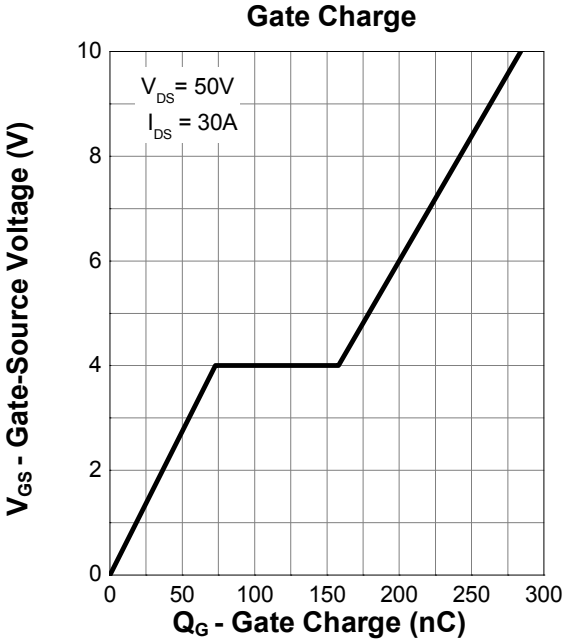


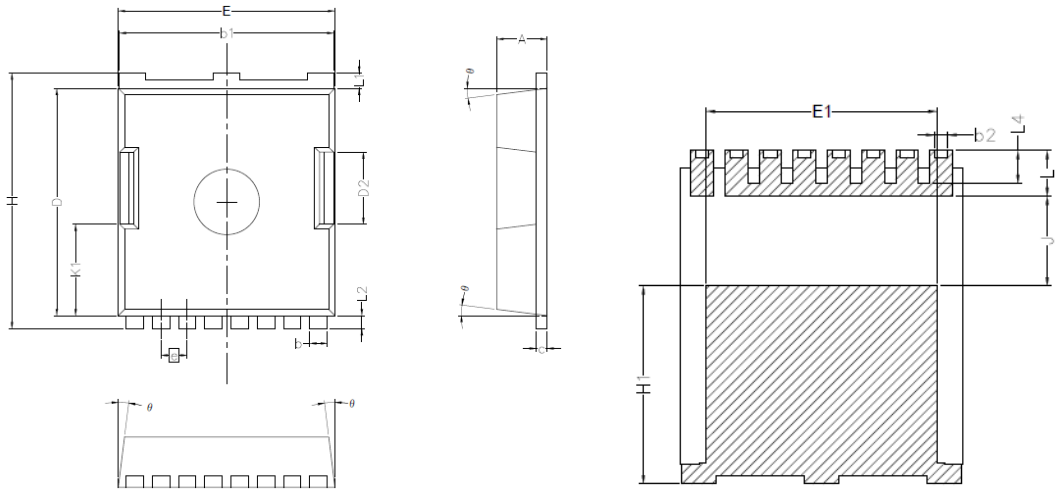






Package Dimensions

TOLL-8L Package



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°