

General Description

The WSM300N04G is the highest performance trench N-Ch MOSFET with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSM300N04G meet the RoHS and Green Product requirement , 100% EAS guaranteed with full function reliability approved.

Features

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

Product Summary

BVDSS	RDSON	ID
40V	1.0mΩ	300A

Applications

- Switching application
- Power Management for Inverter Systems.

TOLLA-8L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		40	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	190	A
Mounted on Large Heat Sink				
I _{DM}	Pulsed Drain Current ¹	T _C =25°C	1015	A
I _D	Continuous Drain Current	T _C =25°C	300	A
		T _C =100°C	210	
P _D	Maximum Power Dissipation	T _C =25°C	230	W
		T _C =100°C	115	
R _{θJC}	Thermal Resistance-Junction to Case		0.65	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		50	
Avalanche Ratings				
E _{AS}	Avalanche Energy, Single Pulsed	L=0.5mH	1400	mJ

NOTE:

1,Pulse width limited by maximum junction temperature.

2,UIS tested and pulse width limited by maximum junction temperature (initial temperature T_J=25°C).

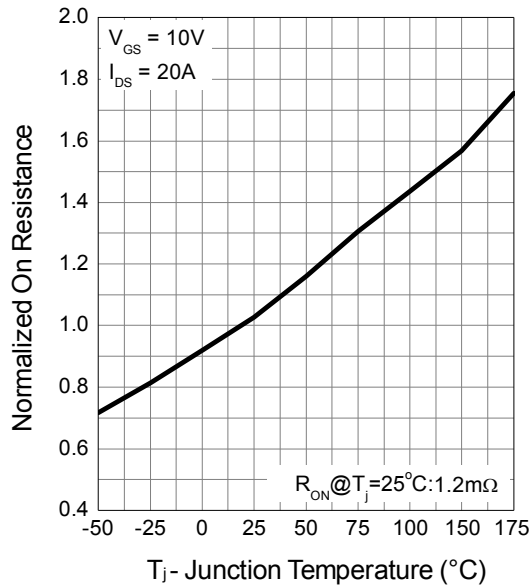
Electrical Characteristics ($T_J=25\text{ }^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V T _J =85°C	-	-	1 10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} *	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =30A	-	1.0	1.5	mΩ
R _{DS(ON)} *	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =20A	-	1.5	2.5	mΩ
Diode Characteristics						
V _{SD} *	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.8	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =104A, dI _{SD} /	-	45	-	ns
Q _{rr}	Reverse Recovery Charge	dt=100A/μs	-	98	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1.0	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	-	8102	-	pF
C _{oss}	Output Capacitance		-	945	-	
C _{rss}	Reverse Transfer Capacitance		-	410	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _G =6 Ω, I _{DS} =20A, V _{GS} =10V .,	-	29	-	ns
T _r	Turn-on Rise Time		-	17	-	
t _{d(OFF)}	Turn-off Delay Time		-	150	-	
T _f	Turn-off Fall Time		-	65	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =20A	-	142	-	nC
Q _{gs}	Gate-Source Charge		-	34	-	
Q _{gd}	Gate-Drain Charge		-	25	-	

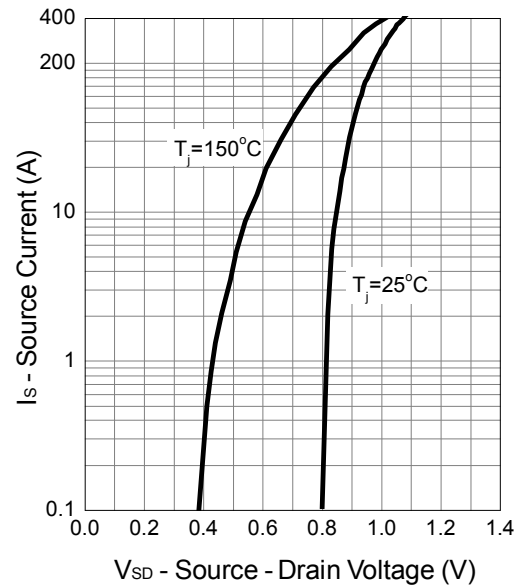
Note * : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Characteristics

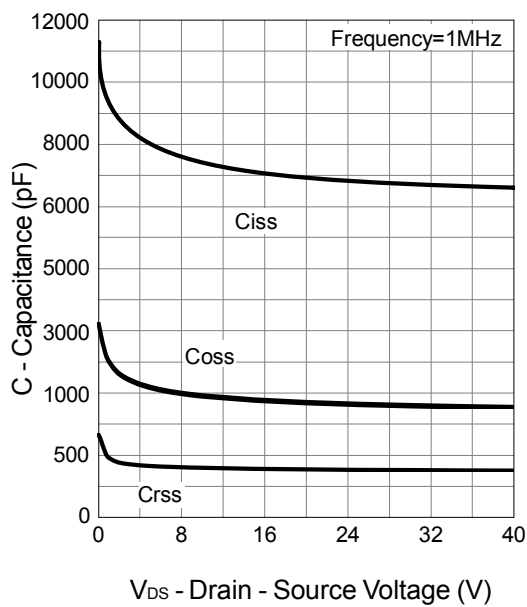
Drain-Source On Resistance



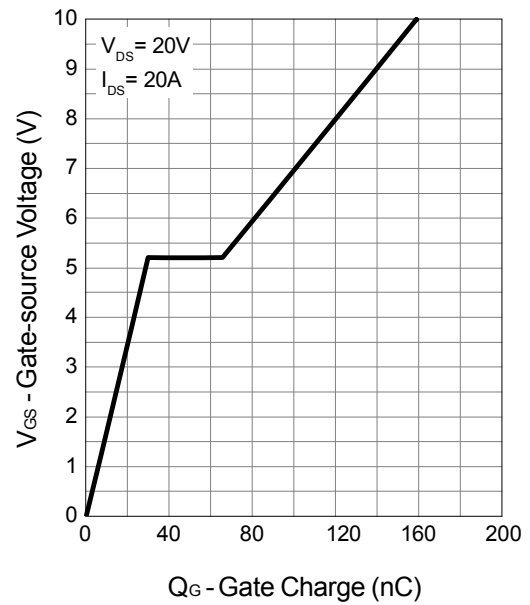
Source-Drain Diode Forward



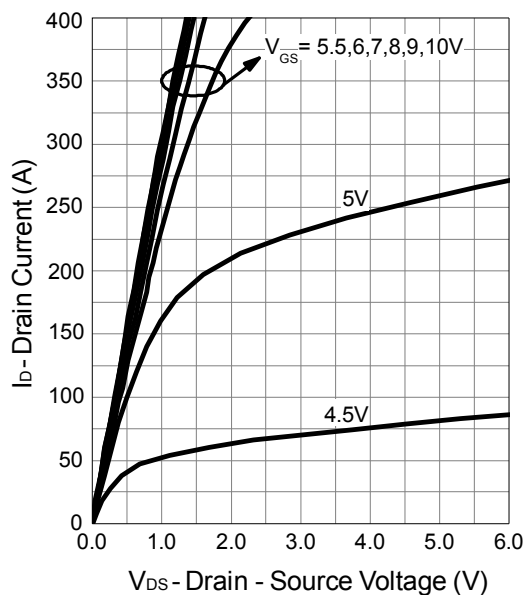
Capacitance



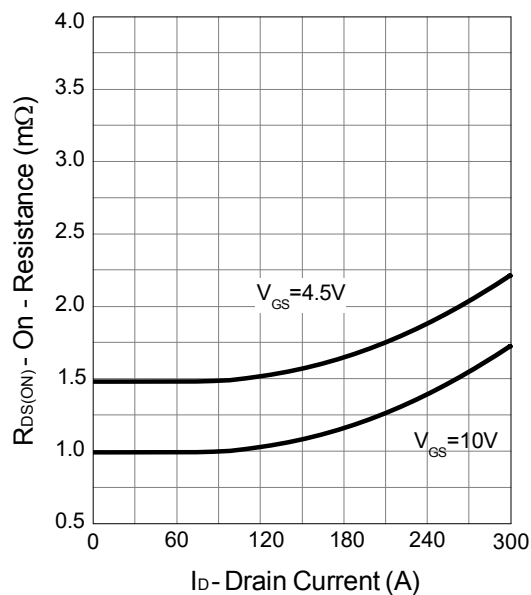
Gate Charge



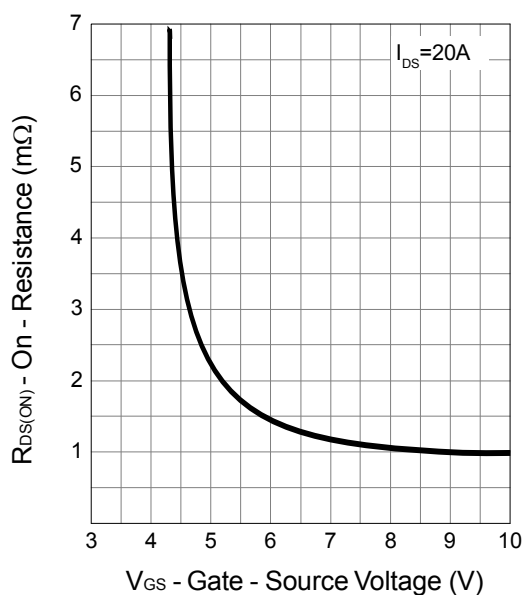
Output Characteristics



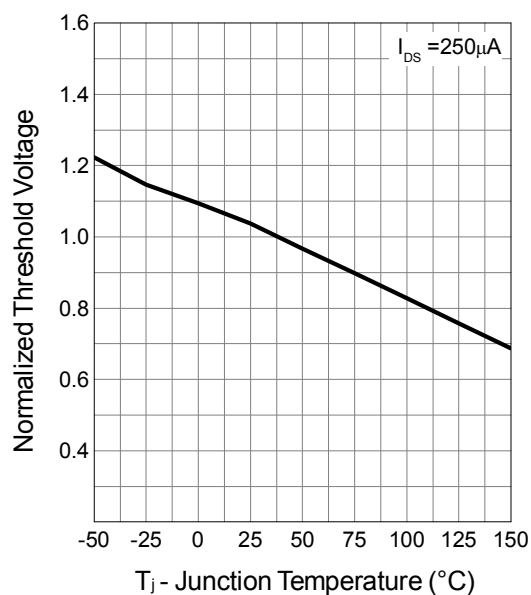
Drain-Source On Resistance

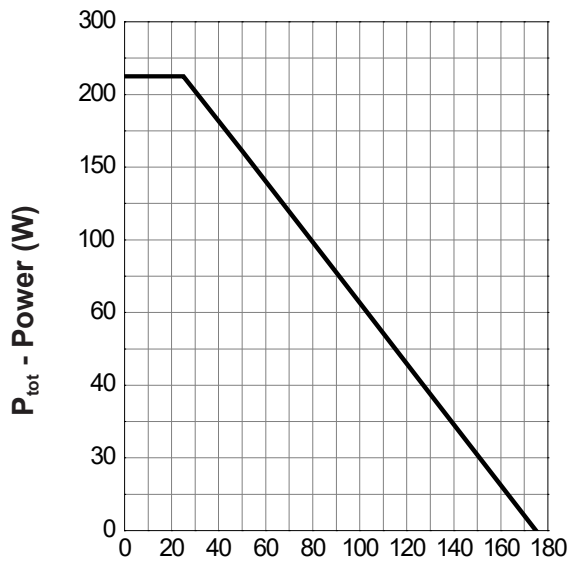


Gate-Source On Resistance

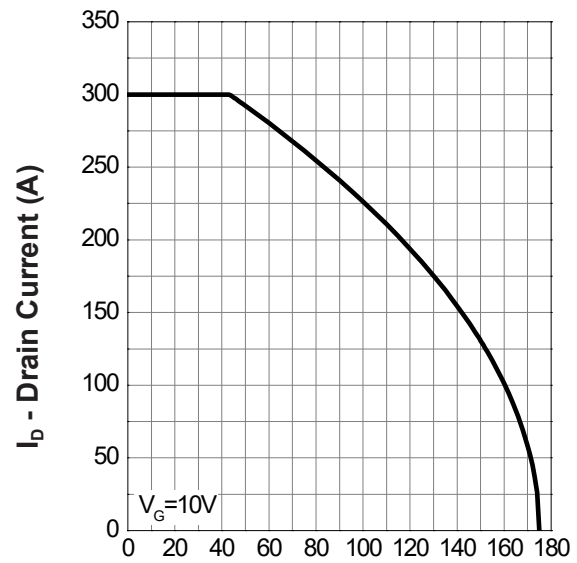


Gate Threshold Voltage

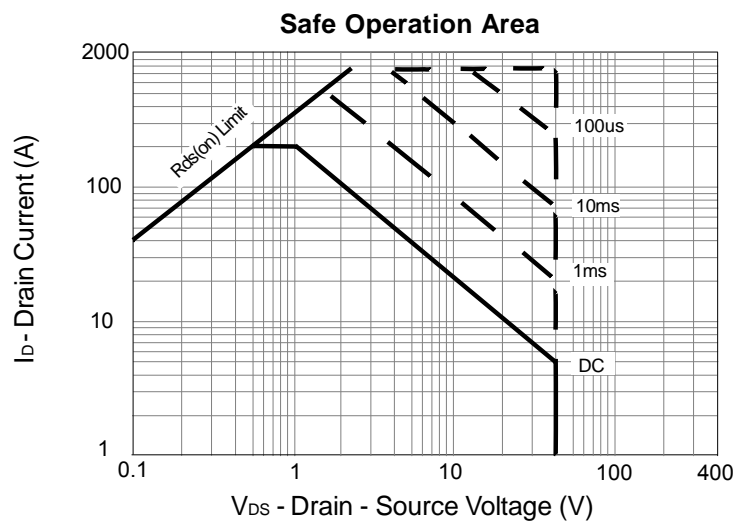




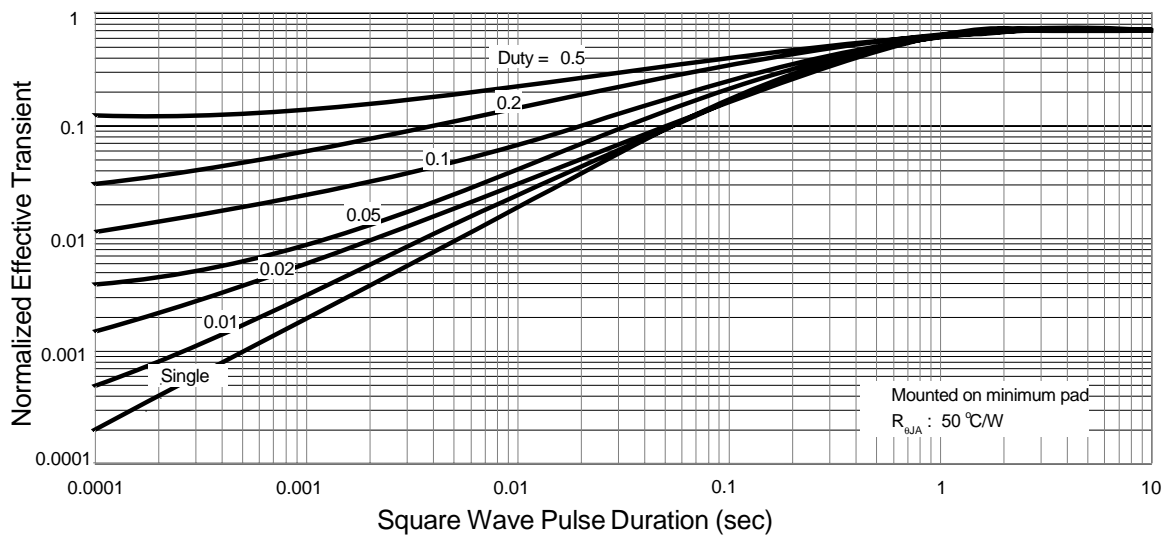
T_c - Case Temperature ($^{\circ}\text{C}$)

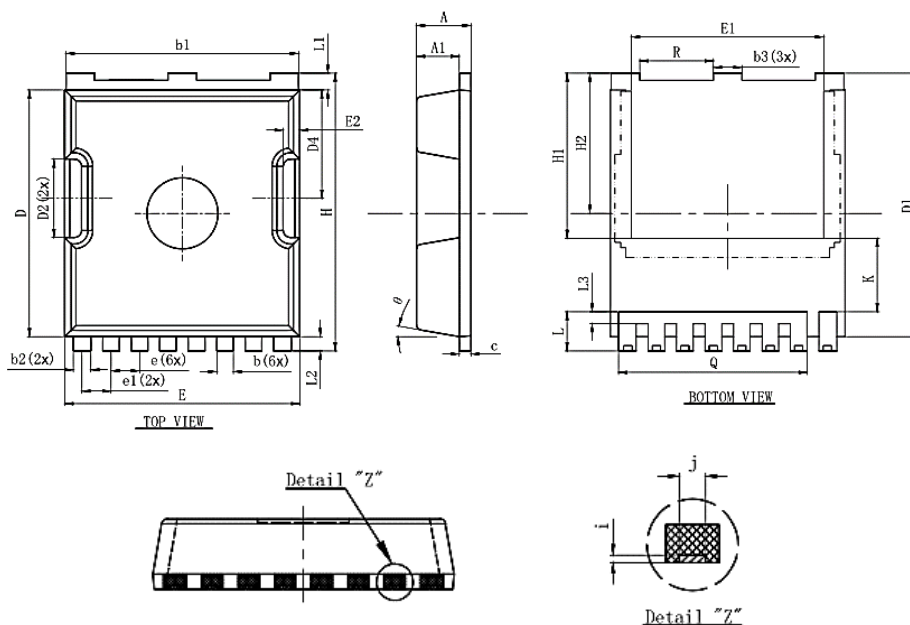


T_c - Case Temperature ($^{\circ}\text{C}$)



Thermal Transient Impedance



Packaging information


Symbol	Dimensions In Millimeters		
	Min.	Nom	Max.
A	2.2	2.3	2.4
A1	1.7	1.8	1.9
b	0.6	0.7	0.8
b1	9.7	9.8	9.9
b2	0.65	0.75	0.85
b3	1.1	1.2	1.3
C	0.4	0.5	0.6
D	10.3	10.4	10.5
D1	11.0	11.1	11.2
D2	3.2	3.3	3.4
D4	4.47	4.57	4.67
E	9.8	9.9	10.0
E1	8.0	8.1	8.2
E2	0.5	0.6	0.7
e	1.200 (BSC)		
e1	1.225 (BSC)		
H	11.6	11.7	11.8
H1	6.95BSC		
H2	5.9BSC		
i	0.1REF		
j	0.350REF		
K	3.100REF		
L	1.55	1.65	1.75
L1	0.6	0.7	0.8
L2	0.5	0.6	0.7
L3	0.4	0.5	0.6
Q	7.95REF		
R	3.0	3.1	3.2
θ	10°REG		

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