WANSEMI
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WX011N04LL

N-channel Enhancement Mode Power MOSFET

TOLL/NMOS/40V/±20V/2.6V/336A/0.95mΩ

Rev0.5

40V, 0.95mΩ, 336A, N-channel MOSFET

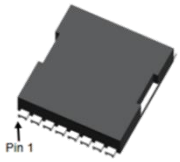
1.Features

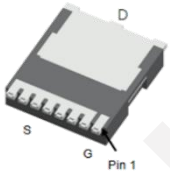
- Ultra-low ON-resistance, RDS(ON)
- Low Gate Charge
- 100% UIS Tested
- 100% ΔVds Tested
- Halogen-free; RoHS-compliant
- AEC-Q101 Qualified

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
40V	0.95mΩ @10V	336A

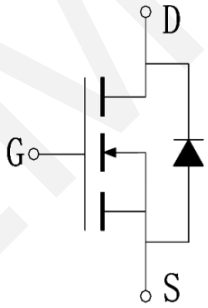
2.Applications

- Load Switch
- PWM Application
- General Automotive Application





TOLL
Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Package	Marking	PCS/Reel	PCS/CTN.
WX011N04LL	TOLL	011N04	2,000	16,000

4.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter		Symbol	Maximum	Units
Drain to Source Voltage		V_{DSS}	40	V
Gate to Source Voltage		V_{GSS}	±20	V
Drain Current (DC)	T C = 25°C	I_D	336	A
	T C = 100°C	I_D	238	A
Drain Current (Pulse), PW≤300μs		I_{DM}	1340	A
Avalanche Energy, Single Pulsed		E_{AS}	317	mJ
Total Dissipation	T C = 25°C	P_D	231	W
	T C = 100°C	P_D	115	W
Junction Temperature		T_j	175	℃

Storage Temperature	T_{stg}	-55 to +175	℃

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

5.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Junction to case	$R_{\theta JC}$	0.5	℃/W
Junction to Ambient	$R_{\theta JA}$	45	℃/W

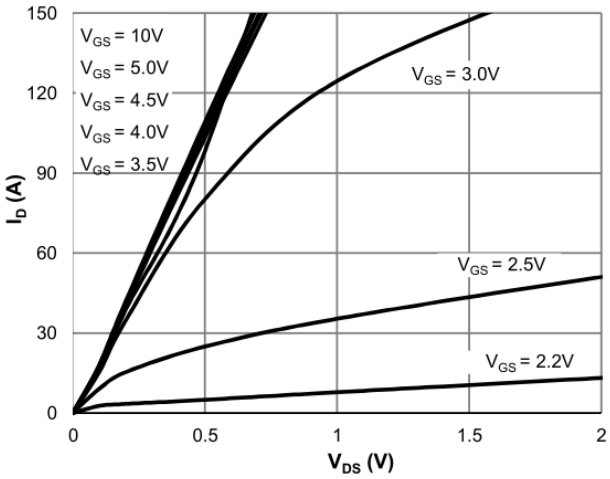
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 3)

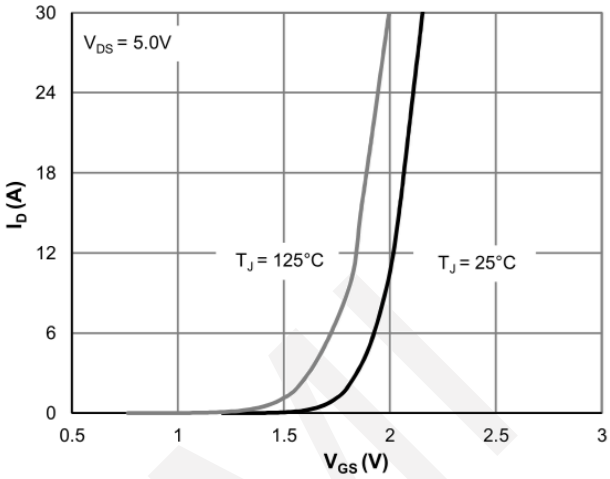
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	40	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40V, V_{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	2.0	2.5	4.0	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D =20A, V_{GS} =10V	-	0.95	1.1	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, Frequency=1.0MHz	-	5978	-	pF
Output Capacitance	C_{oss}		-	3004	-	pF
Reverse Transfer Capacitance	C_{rss}		-	114	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 20V, V_{GS} = 10V, I_D =20A, R_{GEN} = 3Ω	-	24	-	ns
Rise Time	t_r		-	94	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	97	-	ns
Fall Time	t_f		-	101	-	ns
Total Gate Charge	Q_g	V_{DS} = 20V, V_{GS} = 10V, I_D =20A	-	89	-	nC
	Q_{gs}		-	22	-	nC
	Q_{gd}		-	16	-	nC
Diode Forward Voltage	V_{FSD}	I_S = 1A, V_{GS} = 0	-	-	1.2	V

Note 3: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

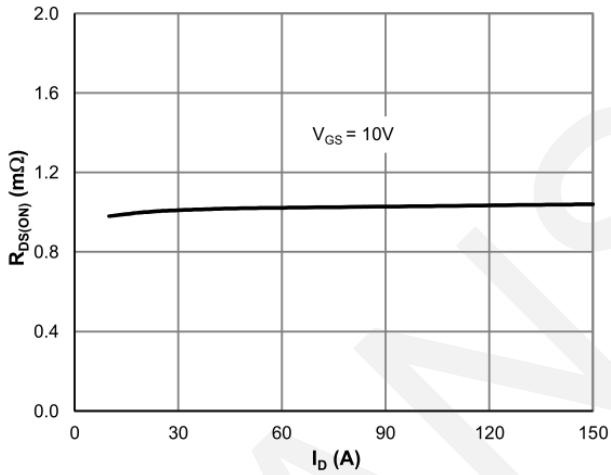
7.Typical electrical and thermal characteristics



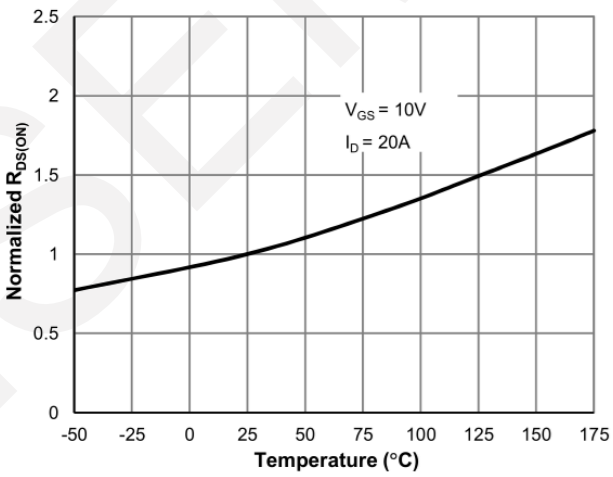
Saturation Characteristics



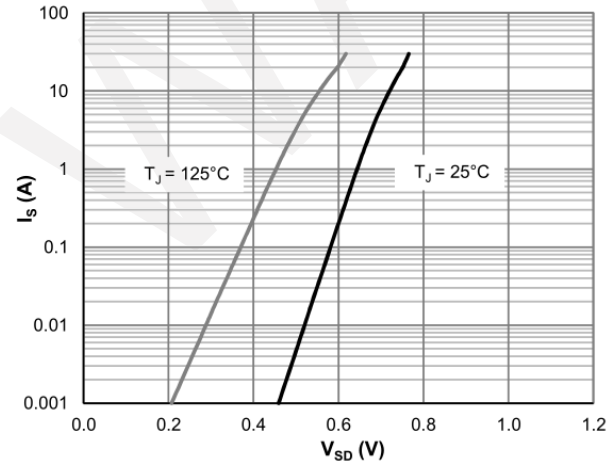
Transfer Characteristics



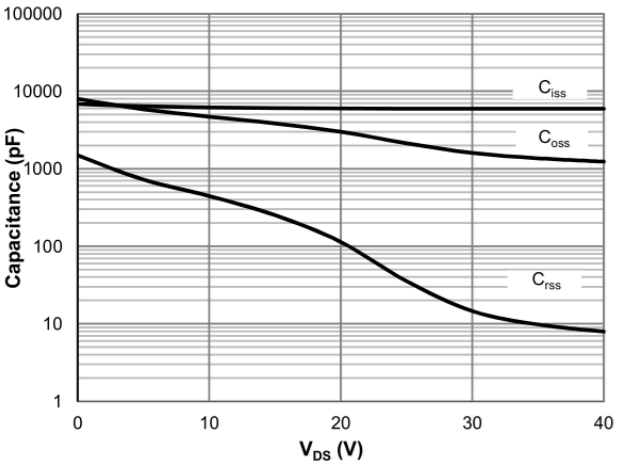
$R_{DS(on)}$vs.Drain Current



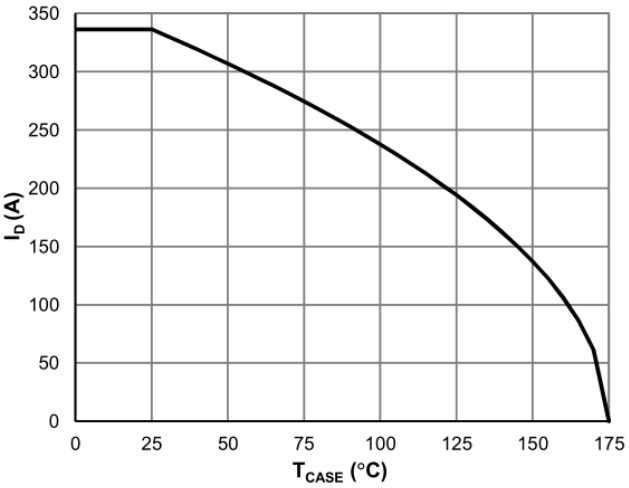
$R_{DS(on)}$vs.Junction Temperature



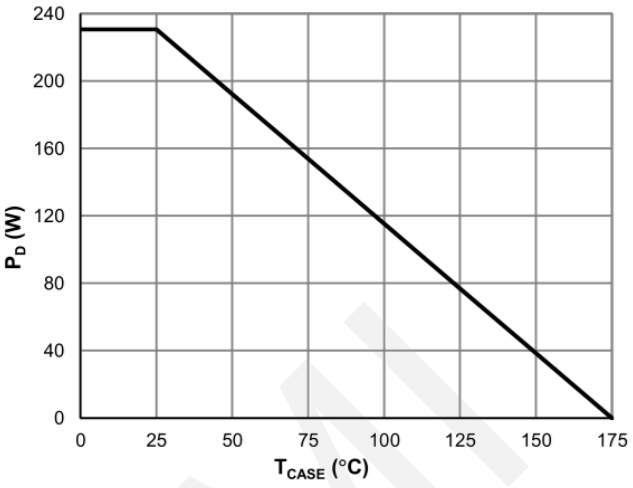
Body-Diode Characteristics



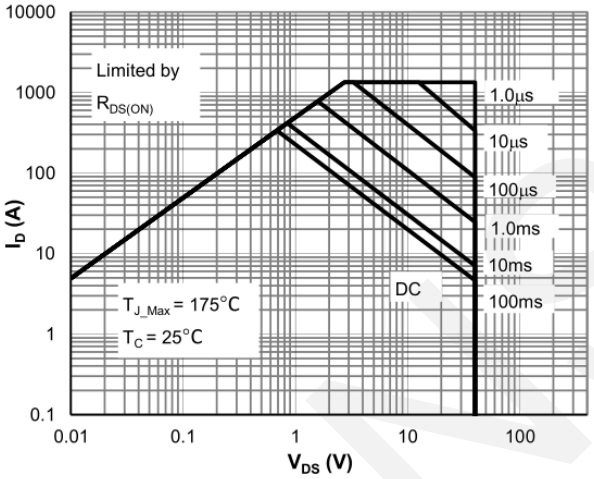
Capacitance Characteristics



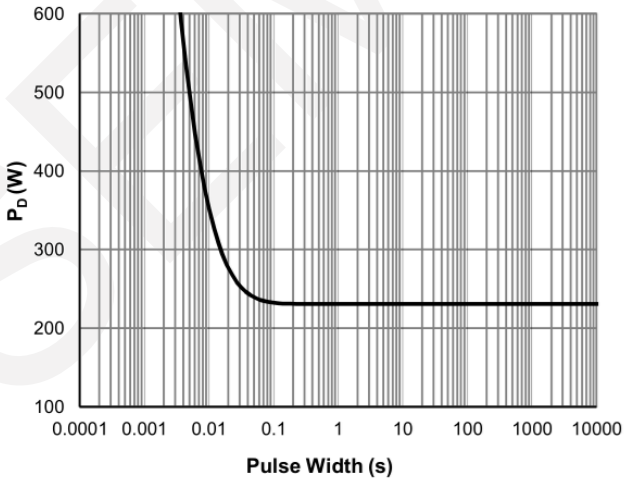
Current De-rating



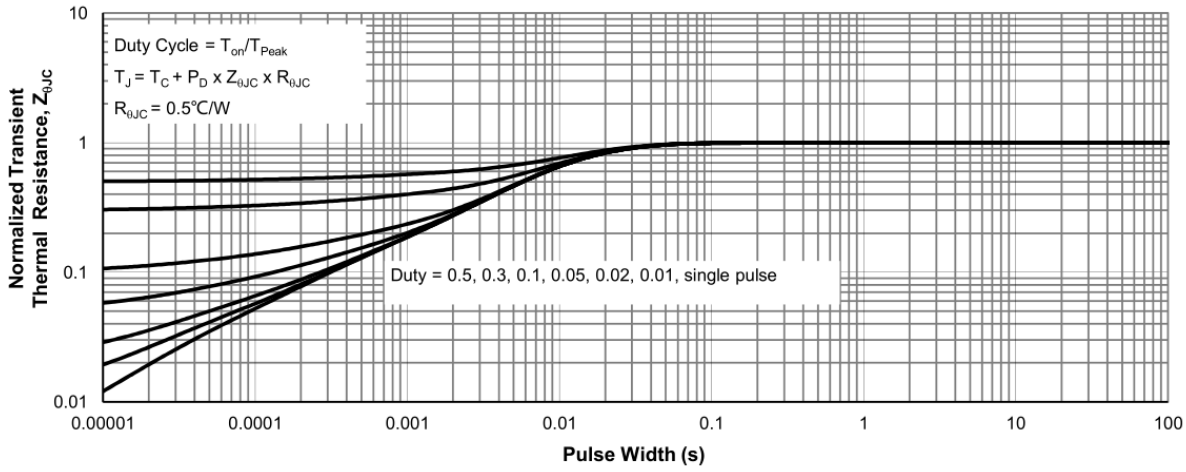
Power De-rating



NMaximum Safe Operating Area

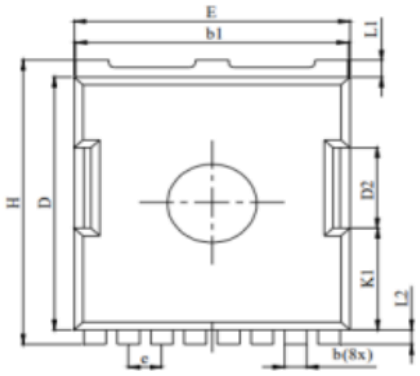


Single Pulse Power Rating, Junction-to-Case

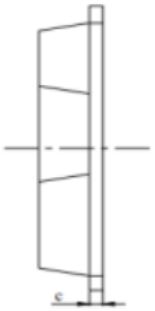


Normalized Maximum Transient Thermal Impedance

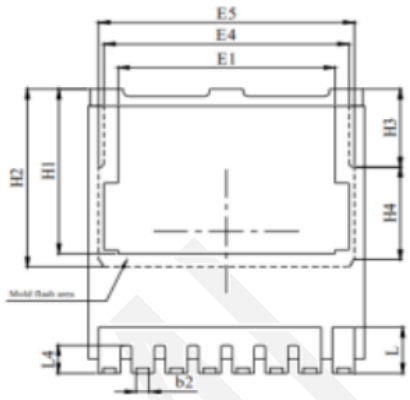
8.Package Dimensions



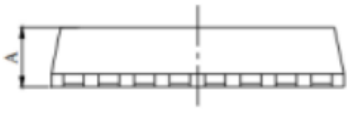
Top View



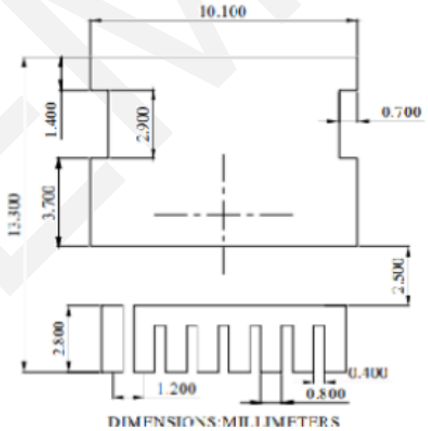
Side View



Bottom View



Front View



DIMENSIONS:MILLIMETERS

DIM.	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.50
b	0.70	0.80	0.90
bl	9.70	9.80	9.90
b2	0.42	0.46	0.50
C	0.40	0.50	0.65
D	10.28	10.38	10.58
D2		3.30	
E	9.70	9.90	10.10
E1		7.80	
E4		8.80	
E5		9.20	
e		1.20(BSC)	
H	11.48	11.68	11.88
HI	6.55	6.75	6.85
H2		7.30	
H3		3.20	
H4		3.80	
K1		4.18	
L	1.70	1.90	2.10
L1		0.70	
L2		0.60	
L4	1.00	1.15	1.30

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