



WANSEMI
万芯半导体

WX012AN10LL

N-channel Enhancement Mode Power MOSFET

TOLL/100V/±20V/3.0V/367A/1.1mΩ

Rev1.0

100V, 1.1mΩ, 367A, N-channel MOSFET

1.Features

- ◆ Excellent R_{DS(ON)} and Low Gate Charge
- ◆ 100% UIS Tested
- ◆ 100% ΔV_{ds} Tested
- ◆ 100% R_G Tested
- ◆ 100% DV_{DS} Tested
- ◆ Halogen-free; RoHS-compliant

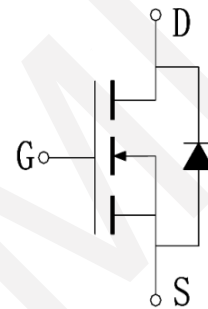
V _{DS}	R _{DS(on)} Typ.	I _D Max.
100V	1.1mΩ @10V	367A

2.Applications

- ◆ Load Switch
- ◆ PWM Application
- ◆ Power Management



TOLL
Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Package	Marking	PCS/Reel	PCS/CTN.
WX012AN10LL	TOLL	Q12N10	2,000	16,000

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

Parameter		Symbol	Maximum	Units
Drain to Source Voltage		V _{DSS}	100	V
Gate to Source Voltage		V _{GSS}	±20	V
Drain Current (DC)	T C = 25°C	I _D	367	A
	T C = 100°C	I _D	232	A
Drain Current (Pulse), PW≤300μs		I _{DM}	1468	A
Avalanche Energy, Single Pulsed		E _{AS}	3784.5	mJ
Total Dissipation	T C = 25°C	P _D	357	W
	T C = 100°C	P _D	143	W
Junction Temperature		T _j	150	°C
Storage Temperature		T _{stg}	-55 to +150	°C

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 Ambient	$R_{\theta JA}$	34	$^{\circ}\text{C/W}$
Junction to case	$R_{\theta JC}$	0.35	$^{\circ}\text{C/W}$

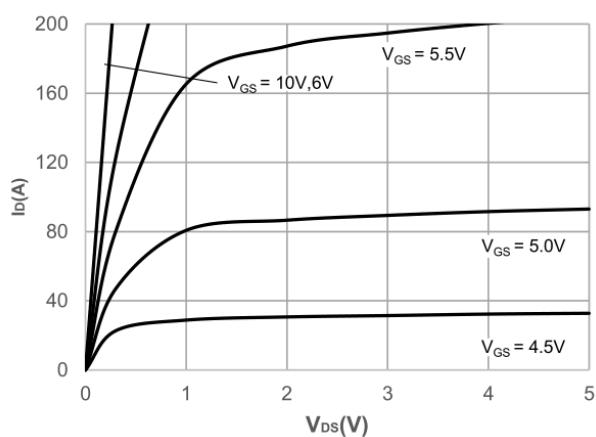
Note 2: When mounted on 1 inch square copper board $t \leq 10\text{sec}$ The value in any given application depends on the user's specific board design.

6. Electrical Characteristics at $T_a=25^{\circ}\text{C}$ (Note 2)

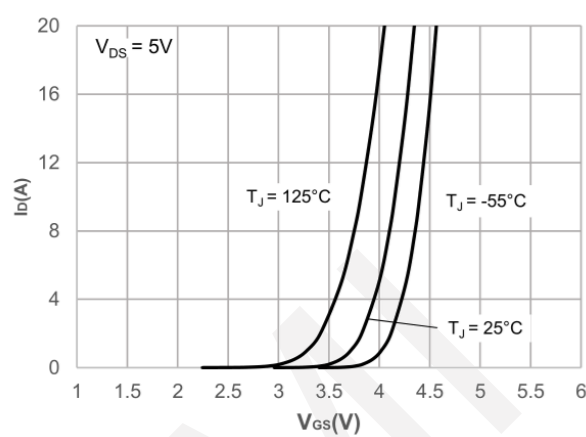
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	100	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 100\text{V}$, $V_{GS} = 0\text{V}$	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_{DS}=250\mu\text{A}$	2.0	3.0	4.0	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 20\text{A}$, $V_{GS} = 10\text{V}$	-	1.1	1.3	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=50\text{V}$, Frequency=1.0MHz	9048	12667	17100	pF
Output Capacitance	C_{oss}		3120	4368	5897	pF
Reverse Transfer Capacitance	C_{rss}		55	76	103	pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 50\text{V}$, $I_D = 20\text{A}$ $V_{GS} = 10\text{V}$, $R_{GEN} = 3\Omega$	-	37	-	ns
Rise Time	t_r		-	44	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	115	-	ns
Fall Time	t_f		-	59	-	ns
Total Gate Charge	Q_g	$V_{DS} = 50\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 20\text{A}$	127	178	240	nC
	Q_{gs}		43	61	82	nC
	Q_{gd}		22	31	42	nC
Diode Forward Voltage	V_{FSD}	$I_S = 20\text{A}$, $V_{GS} = 0$	0.4	-	1.2	V

Note 2: 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.

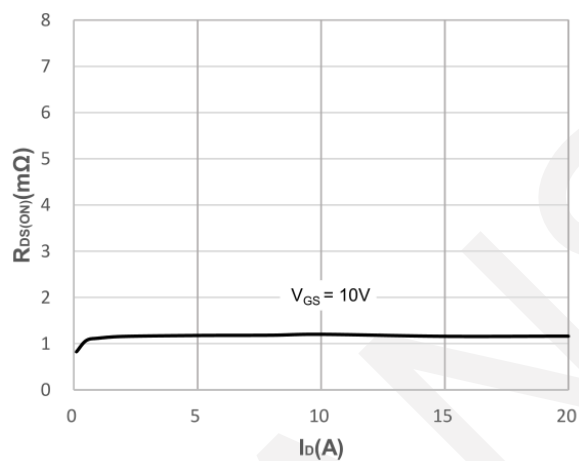
7. Typical electrical and thermal characteristics



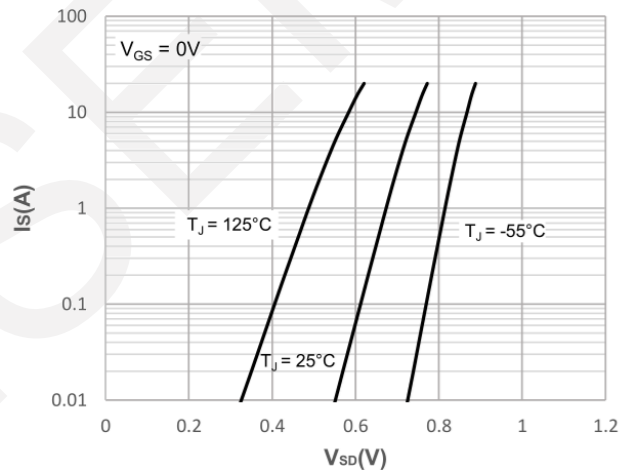
Saturation Characteristics



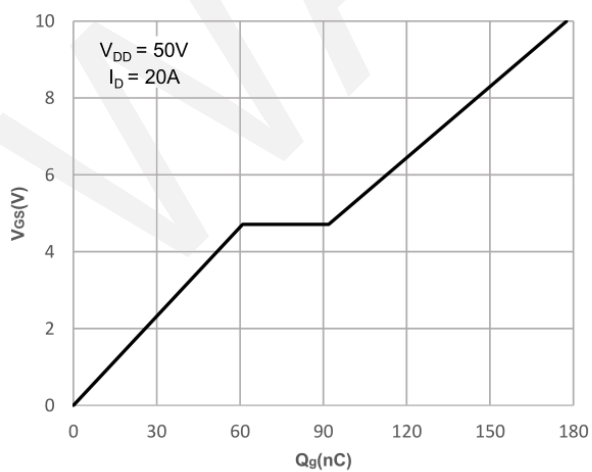
Transfer Characteristics



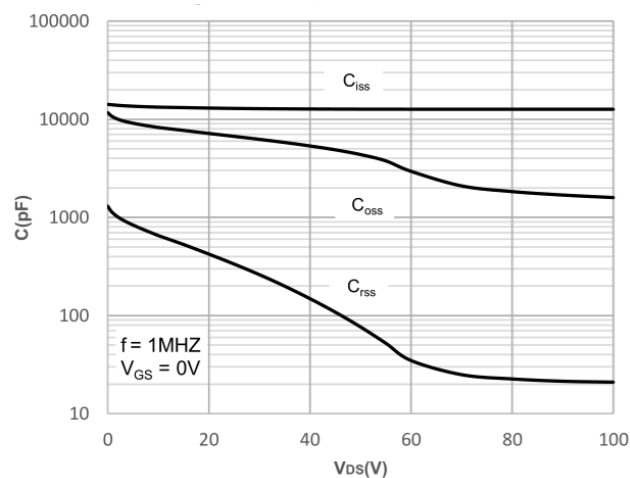
$R_{DS(on)}$ vs. Drain Current



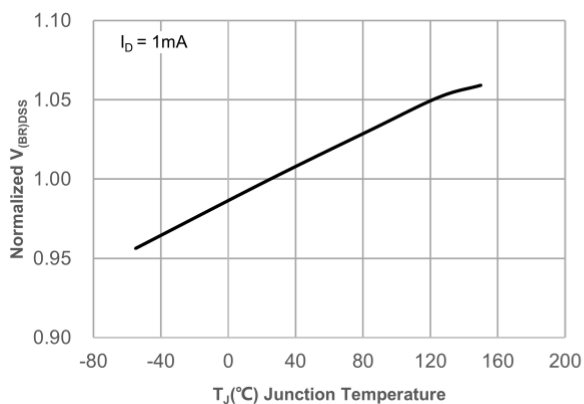
Body-Diode Characteristics



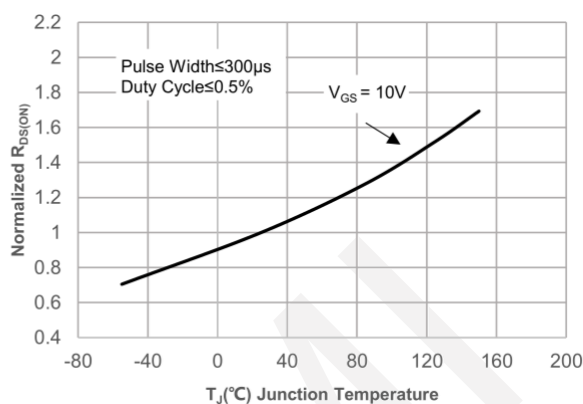
Gate Charge Characteristics



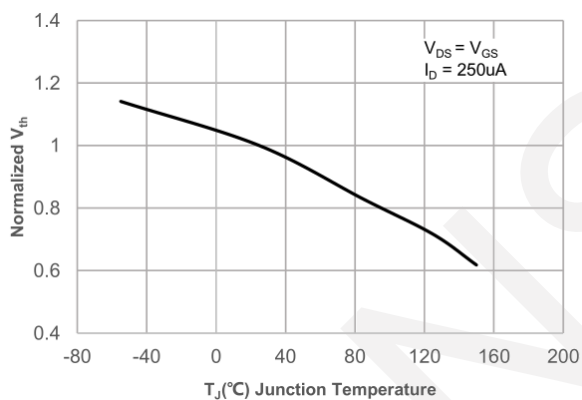
Capacitance Characteristics



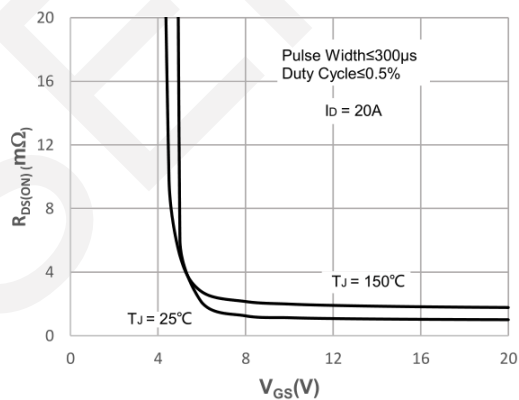
Normalized Breakdown voltage vs.
Junction Temperature



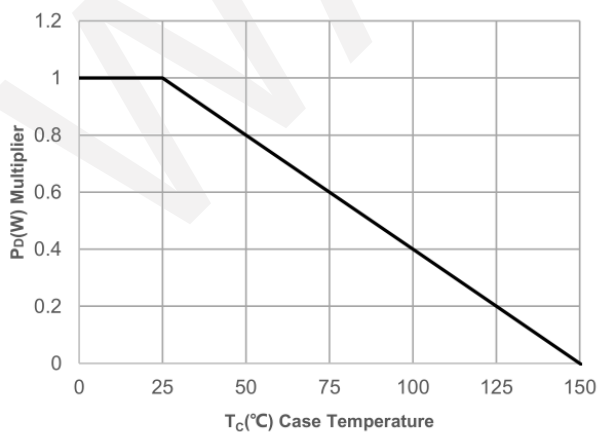
Normalized on Resistance vs.
Junction Temperature



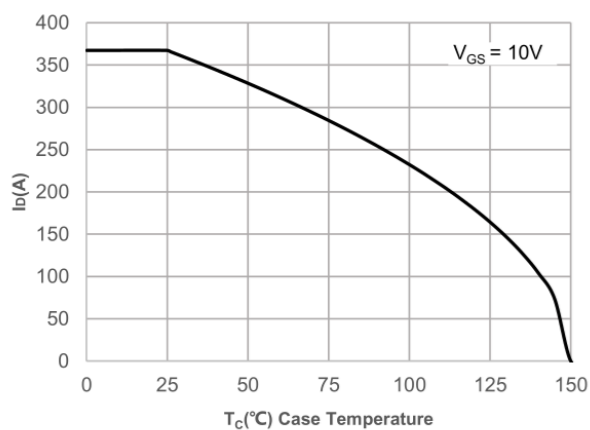
Normalized Threshold Voltage vs.
Junction Temperature



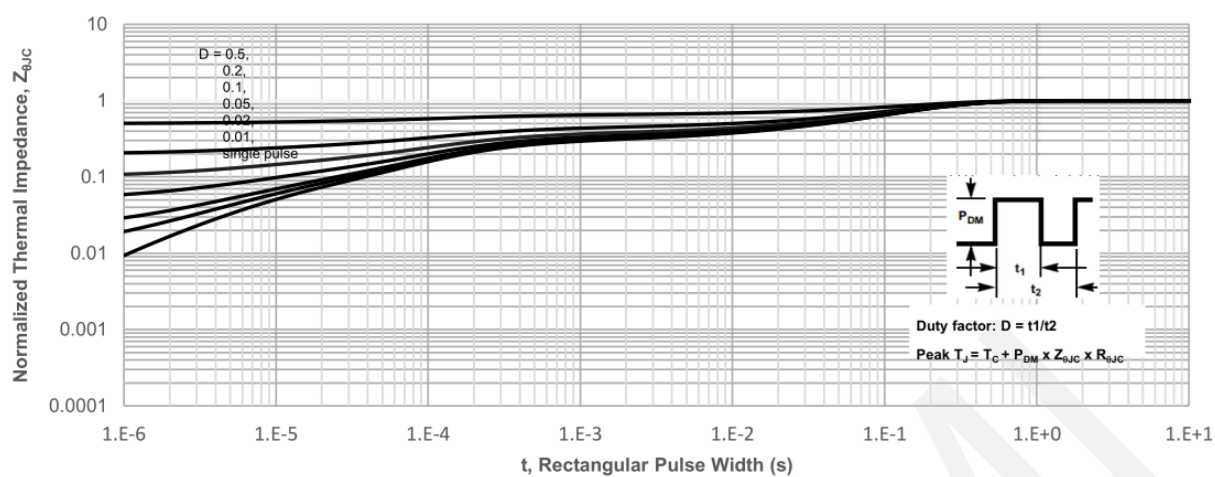
$R_{DS(ON)}$ vs. V_{GS}



Power De-rating

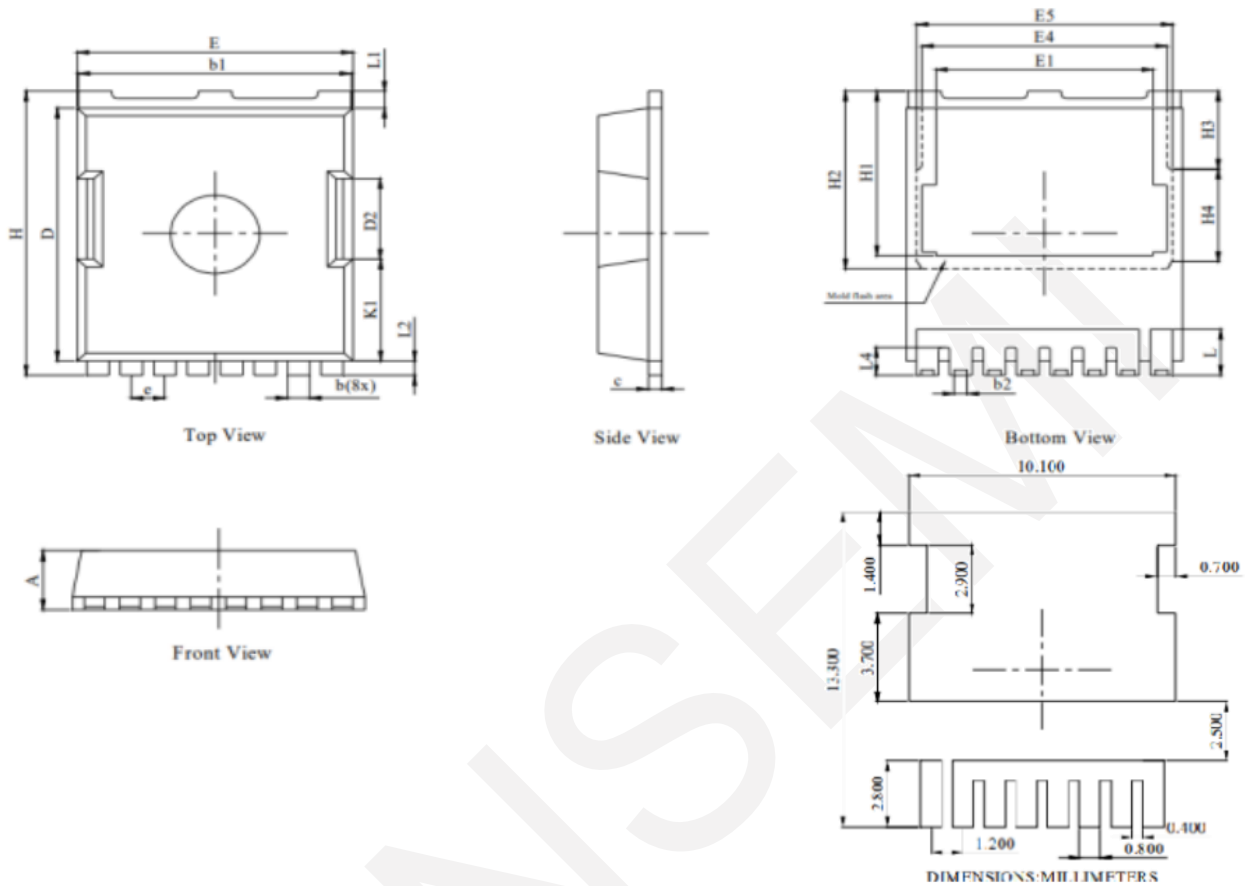


Current De-rating



Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



DIM.	MILLIMETER		
	MIN	NOM	MAX
A	2.20	2.30	2.50
b	0.70	0.80	0.90
b1	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
H1	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

9. Important Notice

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