



WANSEMI
万芯半导体

WX012AN06LL

N-channel Enhancement Mode Power MOSFET

TOLL/NMOS/60V/ ± 20 V/1.6V/250A/1.6m Ω

Rev0.1

60V, 1.6mΩ, 250A, N-channel MOSFET

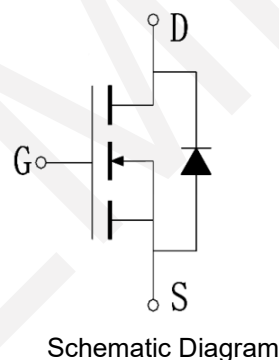
1.Features

- ◆ Excellent RDS(ON) and Low Gate Charge
- ◆ 100% UIS Tested
- ◆ 100% ΔVds Tested
- ◆ 100% RG Tested
- ◆ Halogen-free; RoHS-compliant

V _{DS}	R _{DS(on)} Typ.	I _D Max.
60V	1.6mΩ @10V	250A
	2.1mΩ @4.5V	

2.Applications

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



3.Package Marking and Ordering Information

Part no.	Package	Marking	PCS/Reel	PCS/CTN.
WX012AN06LL	TOLL	Q12N06	2,000	16,000

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

Parameter		Symbol	Maximum	Units
Drain to Source Voltage		V _{DSS}	60	V
Gate to Source Voltage		V _{GSS}	±20	V
Drain Current (DC)	T C = 25°C	I _D	250	A
	T C = 100°C	I _D	159	A
Drain Current (Pulse), PW≤300μs		I _{DM}	1000	A
Avalanche Energy, Single Pulsed		E _{AS}	489	mJ
Total Dissipation	T C = 25°C	P _D	156	W
	T C = 100°C	P _D	63	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	$R_{\theta JA}$	41	$^{\circ}\text{C/W}$
Junction to case	$R_{\theta JC}$	0.8	$^{\circ}\text{C/W}$

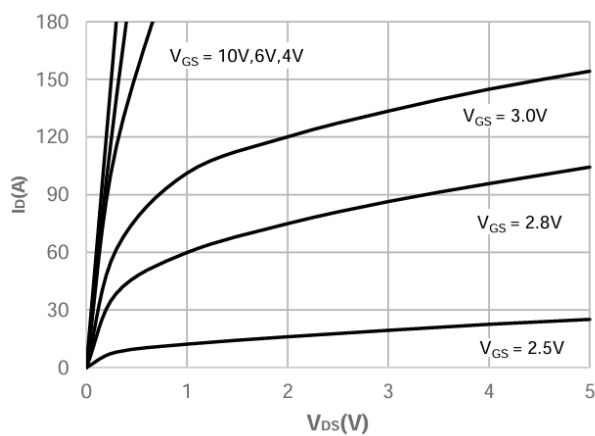
Note 2: When mounted on 1 inch square copper board $t \leq 10\text{sec}$ The value in any given application depends on the user's specific board design.

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

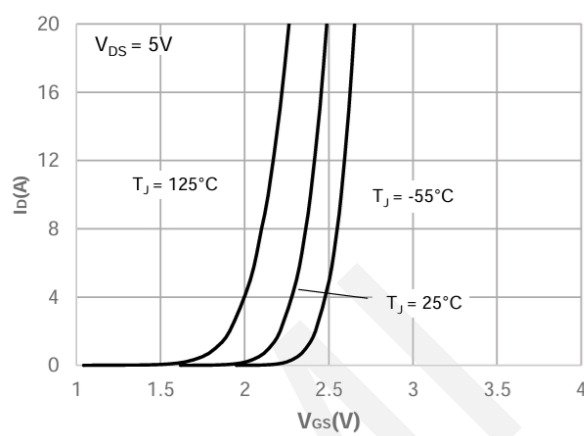
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	60	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{V}$, $V_{GS} = 0\text{V}$	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_{DS} = 250\mu\text{A}$	1.3	1.6	2.0	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D = 15\text{A}$, $V_{GS} = 10\text{V}$	-	1.6	2.1	$\text{m}\Omega$
		$I_D = 10\text{A}$, $V_{GS} = 4.5\text{V}$	-	2.1	3.1	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 30\text{V}$, Frequency = 1.0MHz	-	5584	-	nF
Output Capacitance	C_{oss}		-	2623	-	pF
Reverse Transfer Capacitance	C_{rss}		-	135	-	pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30\text{V}$, $I_D = 20\text{A}$, $V_{GS} = 10\text{V}$, $R_{GEN} = 3\Omega$	-	13	-	ns
Rise Time	t_r		-	30	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	83	-	ns
Fall Time	t_f		-	67	-	ns
Total Gate Charge	Q_g	$V_{DS} = 30\text{V}$, $V_{GS} = 0$ to 10V , $I_D = 20\text{A}$	-	96	-	nC
	Q_{gs}		-	15	-	nC
	Q_{gd}		-	21	-	nC
Diode Forward Voltage	V_{FSD}	$I_S = 15\text{A}$, $V_{GS} = 0$	0.5	-	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.

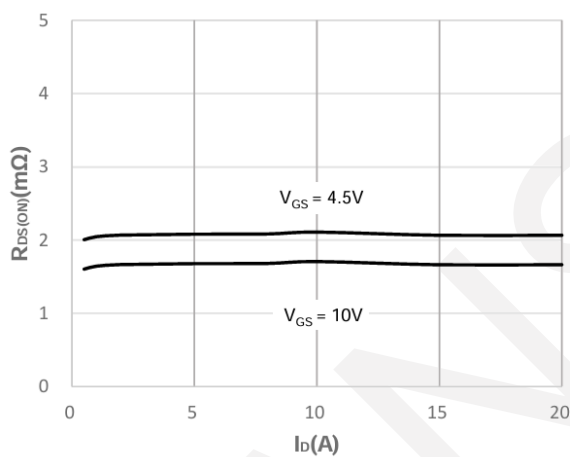
7. Typical electrical and thermal characteristics



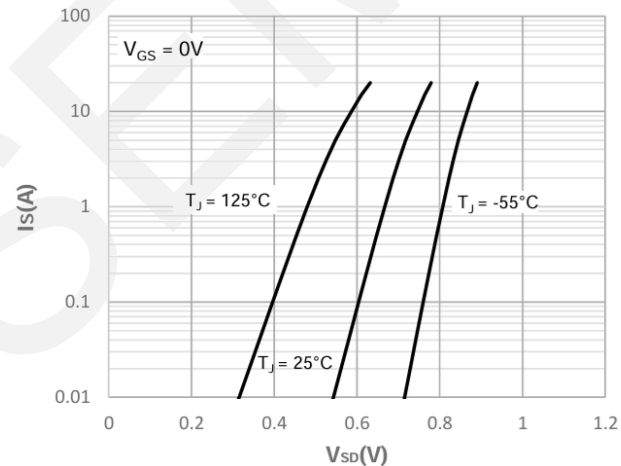
Saturation Characteristics



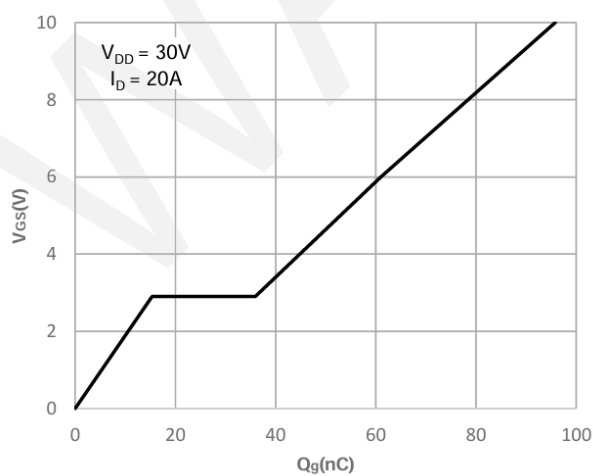
Transfer Characteristics



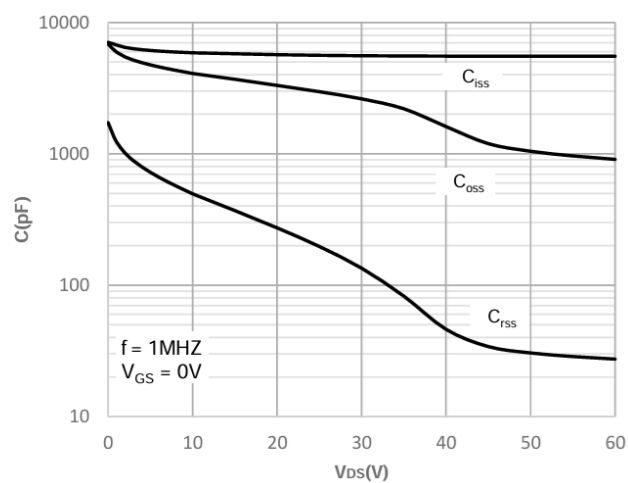
$R_{DS(on)}$ vs. Drain Current



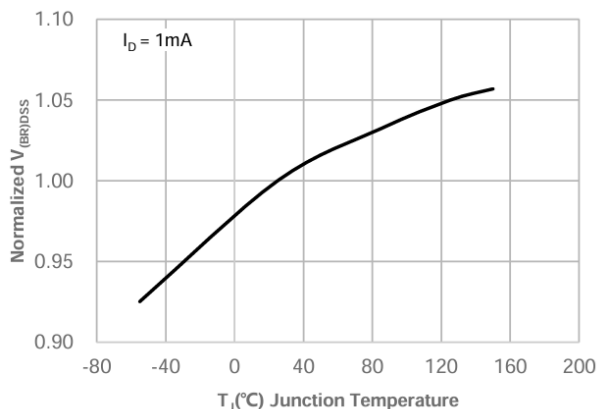
Body-Diode Characteristics



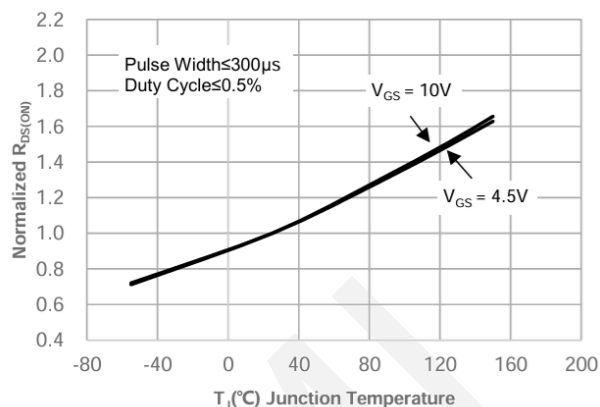
Gate Charge Characteristics



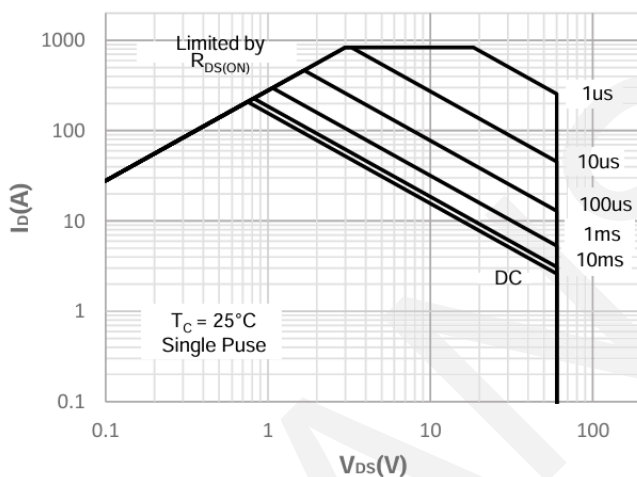
Capacitance Characteristics



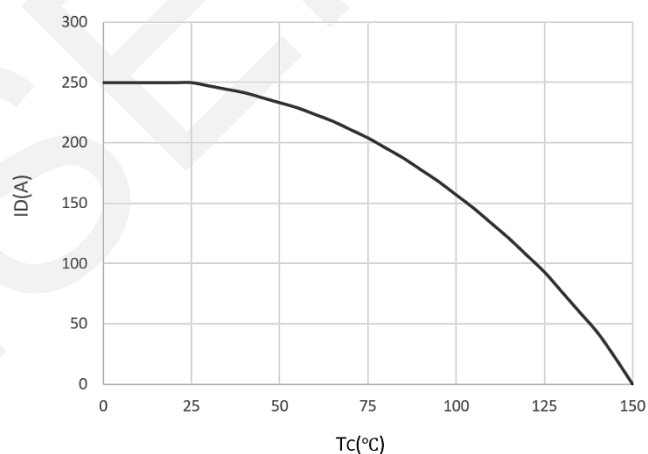
Normalized Breakdown voltage vs. Junction Temperature



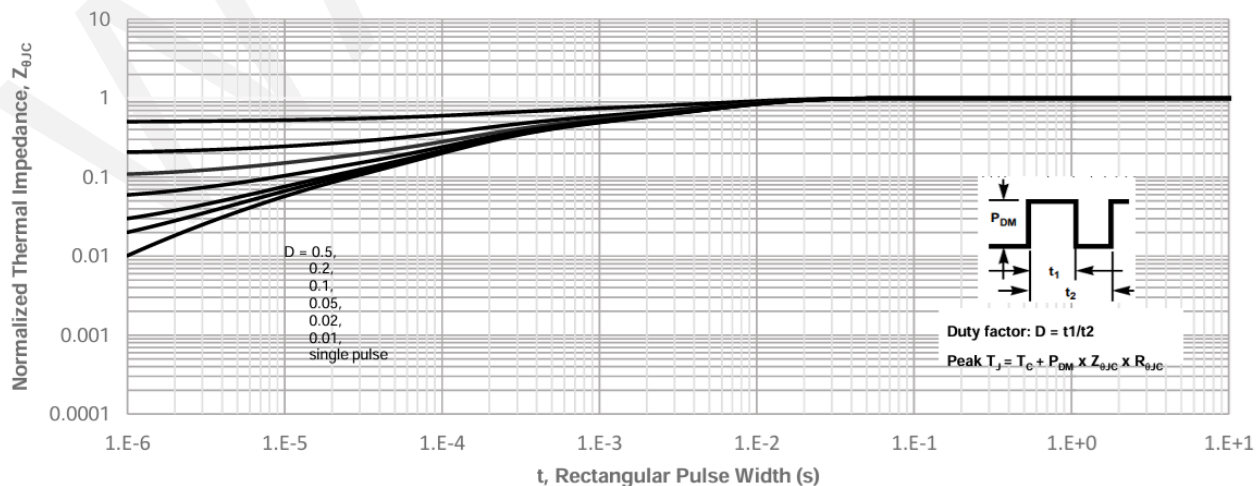
Normalized on Resistance vs. Junction Temperature



Maximum Safe Operating Area

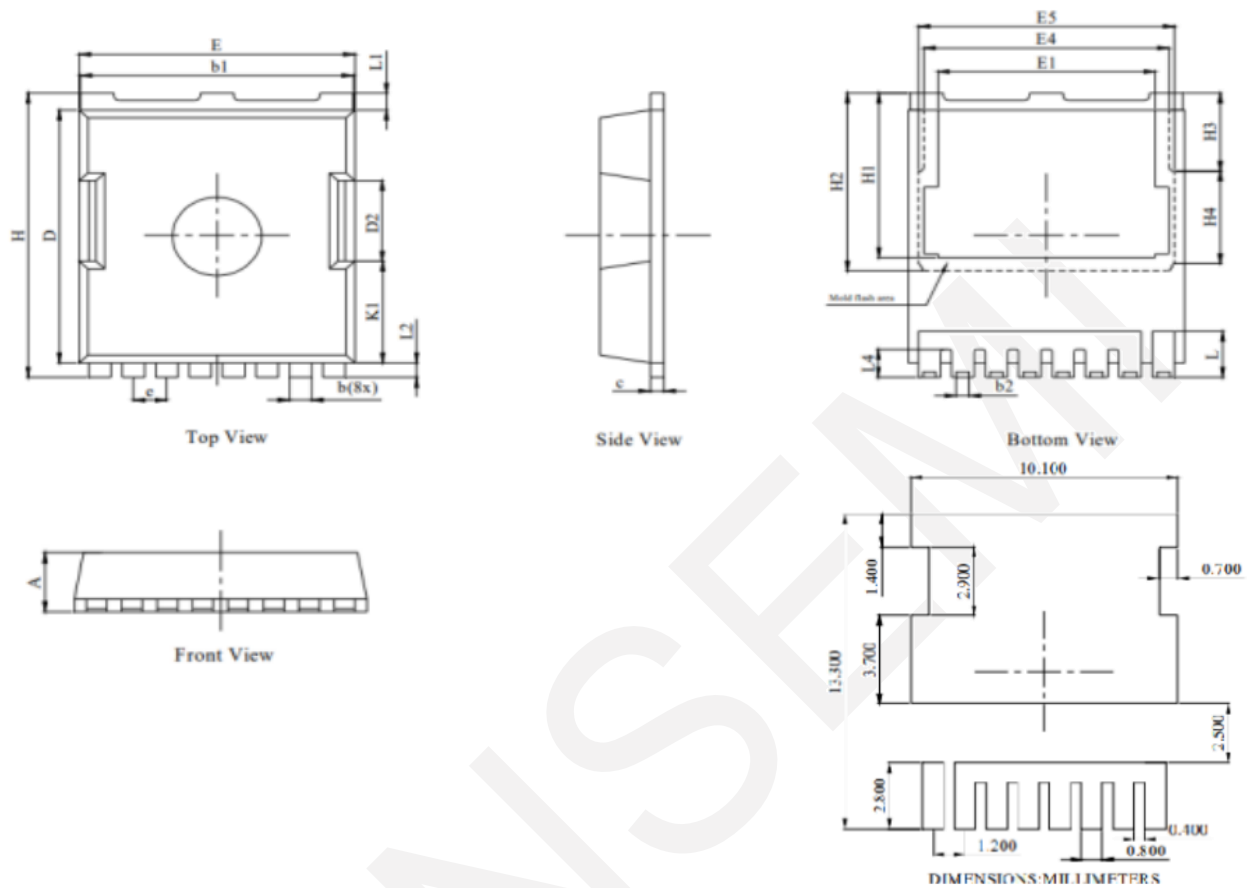


Current De-rating



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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