



WANSEMI
万尚半导体

WX023N03KD

Enhancement Mode N-Channel Power MOSFET

TO-252/NMOS/30V/±20V/1.8V/150A/2.3mΩ

Rev0.1



30V, 2.3mΩ, 150A, N-Channel Enhancement MOSFET

1. Features

- ◆ 30V MOSFET technology
- ◆ Low on-state resistance
- ◆ Fast switching
- ◆ $V_{GS} \pm 20V$
- ◆ 100% RG Tested
- ◆ 100% UIS Tested

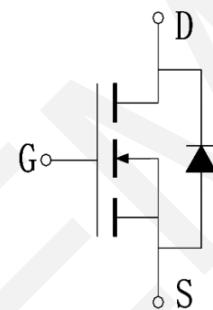
V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
30V	2.3mΩ @ 10V	150A
	3.6mΩ @ 4.5V	

2. Applications

- ◆ Power Switching Application
- ◆ Load Switching



TO-252
Pin Description



Schematic Diagram

3. Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WX023N03KD	023N03	TO-252	2,500	25,000

4. Absolute Max Ratings at $T_a=25^\circ C$ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	30	V
Gate to Source Voltage	V_{GSS}	± 20	V
Drain Current (DC)	I_D	150	A
Drain Current (Pulse), $PW \leq 300\mu s$	I_{DP}	600	A
Total Dissipation	P_D	104	W
Avalanche Energy, Single Pulsed	E_{AS}	177	mJ
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

Parameter	Symbol	Value	Unit
Junction to Case	R _{AJC}	1.2	°C/W

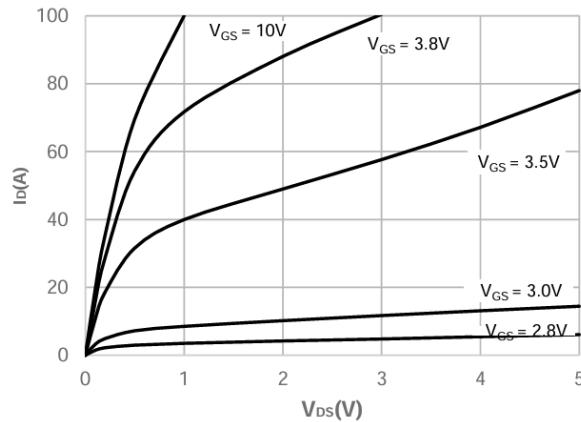
Note 2: When mounted on 1 inch square copper board $t \leq 10\text{sec}$ The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at $T_a=25^\circ\text{C}$ (Note 3)

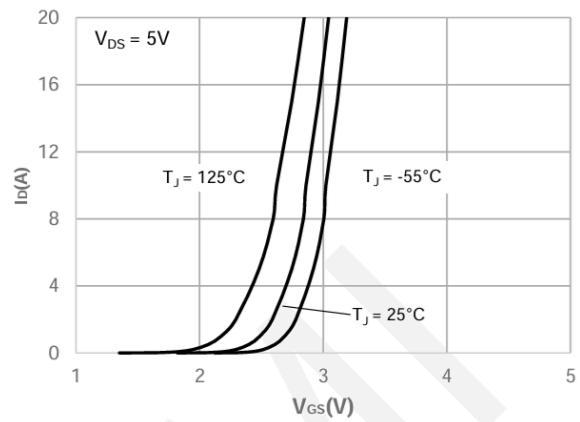
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	V _{(BR)DSS}	I _D = 250μA, V _{GS} = 0V	30	-	-	V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{SS} = 0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.8	2.5	V
Static Drain to Source On-State Resistance	R _{DS(on)}	I _D = 30A, V _{GS} = 10V	-	2.3	2.9	mΩ
		I _D = 20A, V _{GS} = 4.5V		3.6	5.1	mΩ
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	3650	-	pF
Output Capacitance	C _{oss}		-	494	-	pF
Reverse Transfer Capacitance	C _{rss}		-	366	-	pF
Turn-ON Delay Time	t _{d(on)}	V _{DD} = 15V, I _D = 30A, V _{GS} = 10V, R _G = 3Ω	-	10	-	ns
Rise Time	t _r		-	19	-	ns
Turn-OFF Delay Time	t _{d(off)}		-	50	-	ns
Fall Time	t _f		-	20	-	ns
Total Gate Charge	Q _g	V _{DS} = 30V, V _{GS} = 0 to 10V, I _D = 15A	-	67	-	nC
	Q _{gs}		-	11	-	nC
	Q _{gd}		-	19	-	nC
Diode Forward Voltage	V _{FSD}	I _S = 30A, V _{GS} = 0	0.5	-	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.

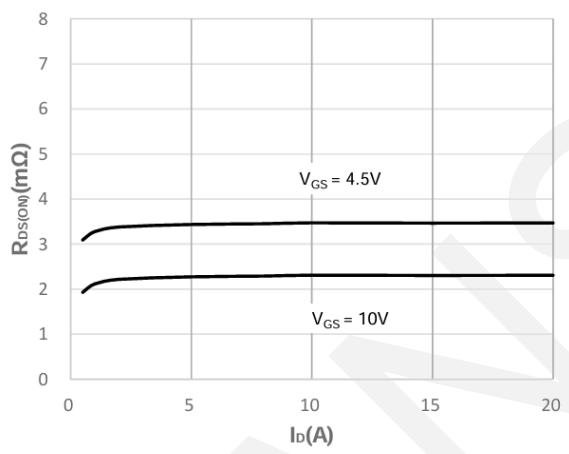
7.Typical electrical and thermal characteristics



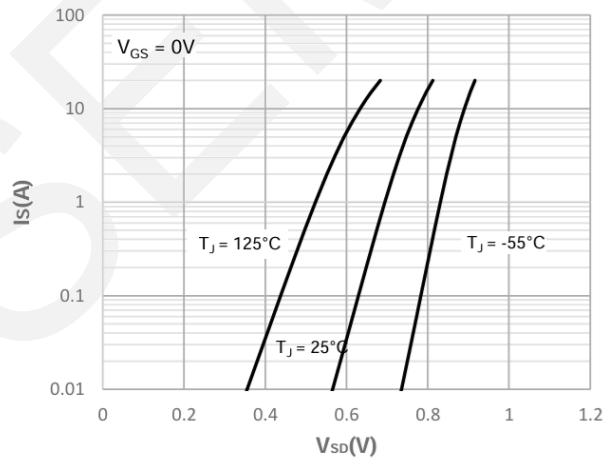
Output Characteristics



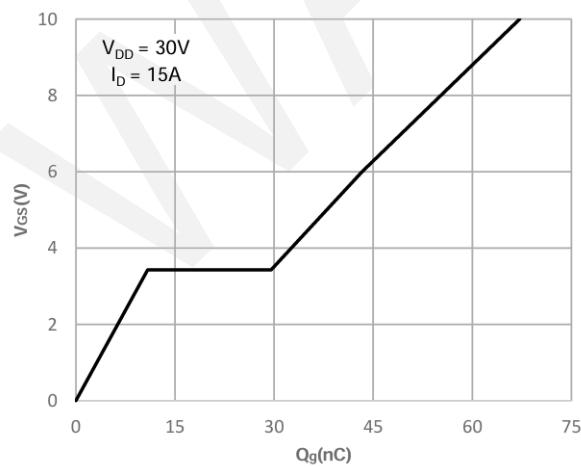
Typical Transfer Characteristics



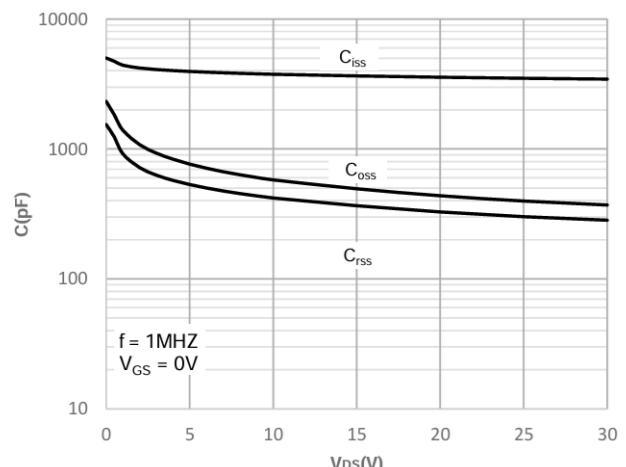
On-resistance vs. Drain Current



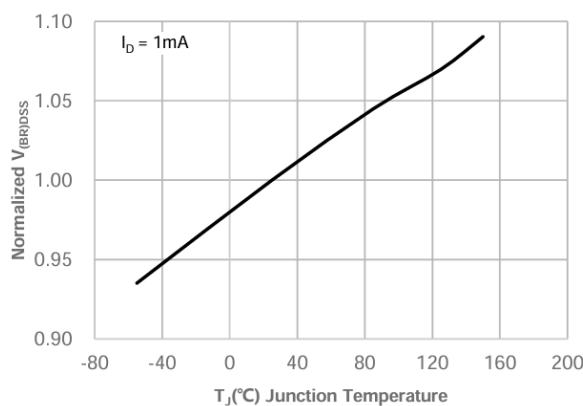
Body Diode Characteristics



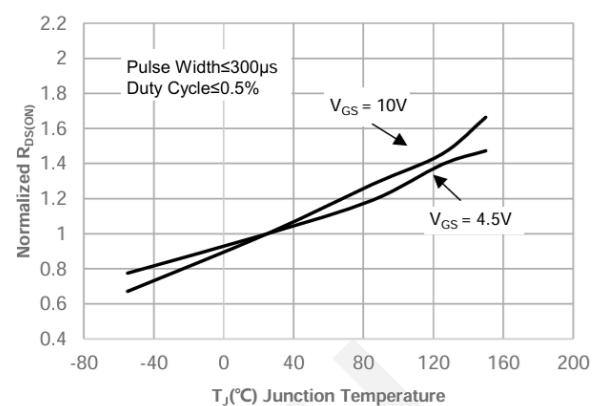
Gate Charge Characteristics



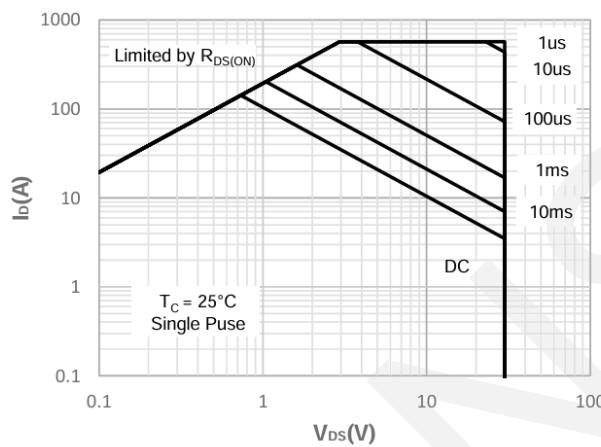
Capacitance Characteristics



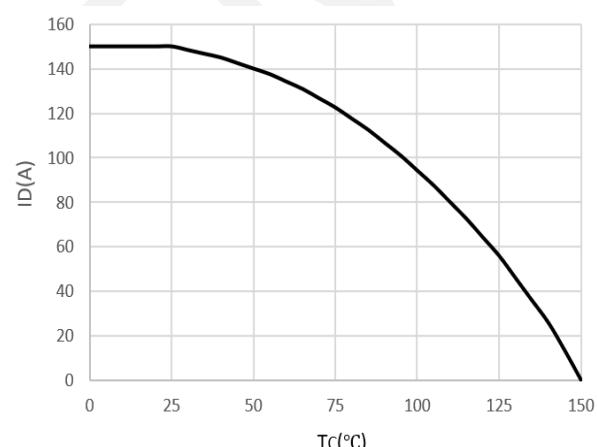
Normalized Breakdown Voltage
vs.Junction Temperature



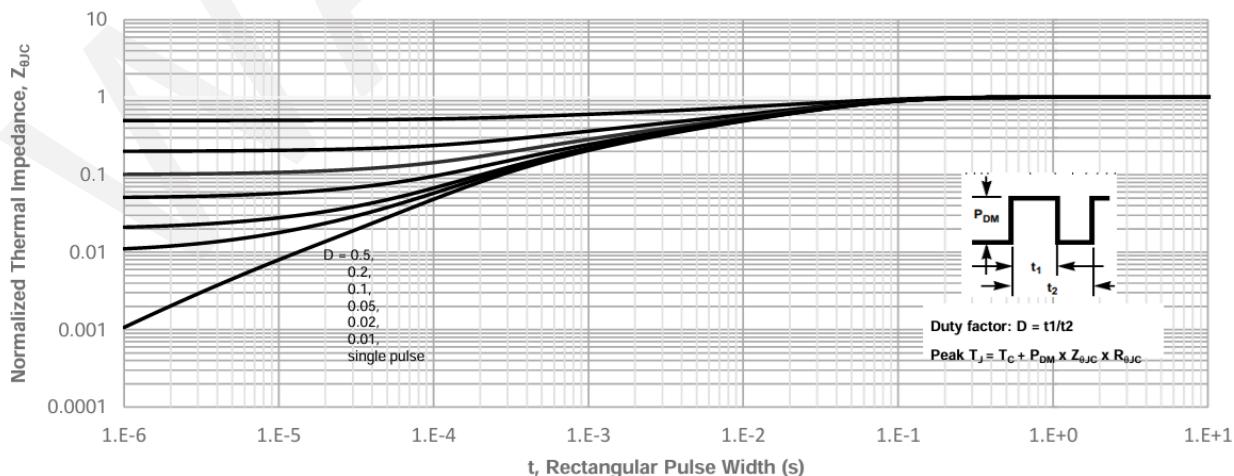
Normalized on Resistance vs.
Junction Temperature



Maximum Safe Operating Area



Maximum Continuous Drain Current vs.
Case Temperature

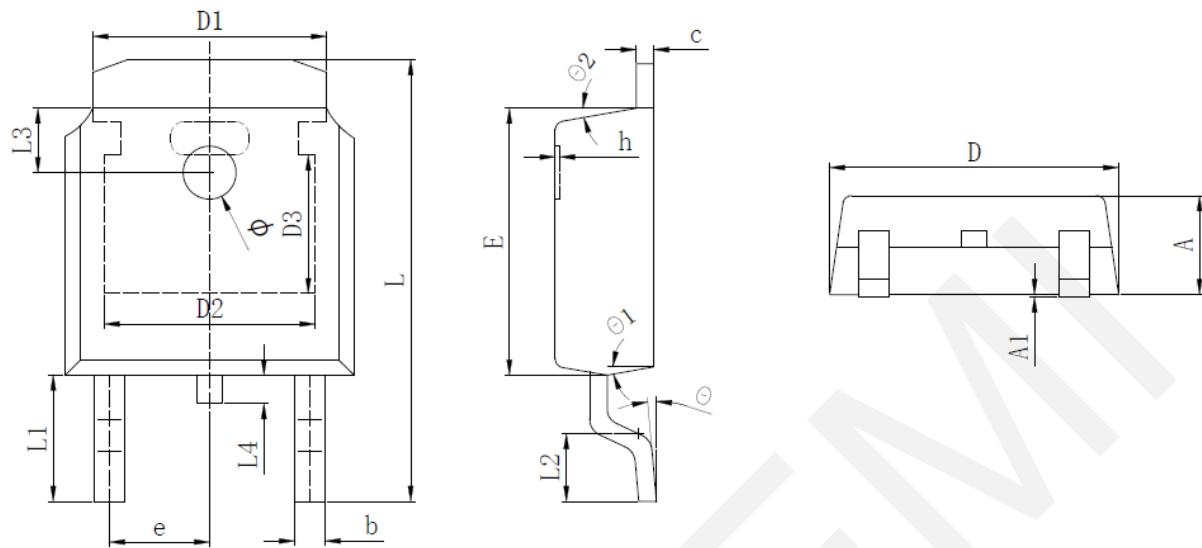


Maximum Effective Transient

Thermal Impedance, Junction-to-Case



8.Package Dimensions



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

9. Important Notice

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