WANSEMI
万芯半导体

WX025BN03KD

Enhancement Mode N-Channel Power MOSFET

TO-252/NMOS/30V/±20V/1.7V/90A/3.2mΩ

Rev0.5

30V, 3.2mΩ, 90A, Single N-Channel

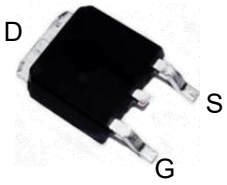
1.Features

- Super Low Gate Charge
- Green Device Available
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology
- 100% RG Tested
- 100% UIS Tested

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
30V	3.2mΩ @ 10V	90A
	4.6mΩ @ 4.5V	

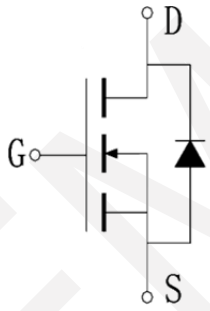
2.Applications

- Primary Side Switch
- Load Switch



TO-252

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WX025BN03KD	025N03	TO-252	2,500	25,000

4.Absolute Max Ratings at Ta=25℃ (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	90	A
Drain Current (Pulse), PW≤300μs	I_{DP}	360	A
Total Dissipation	P_D	74	W
Avalanche Energy, Single Pulsed	E_{AS}	56.25	mJ
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

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	$R_{\theta JC}$	42	℃/W
Junction to ambient	$R_{\theta JA}$	1.7	℃/W

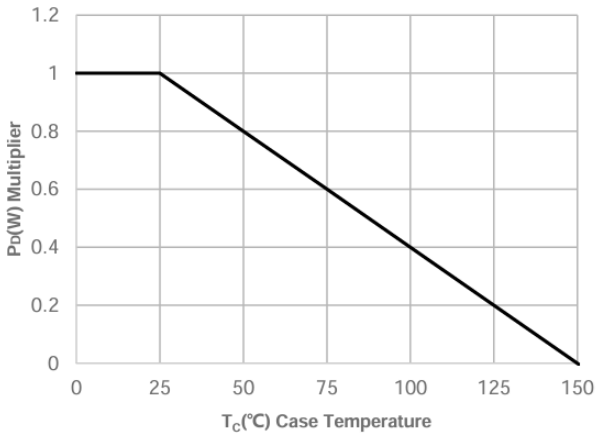
Note 2: When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

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

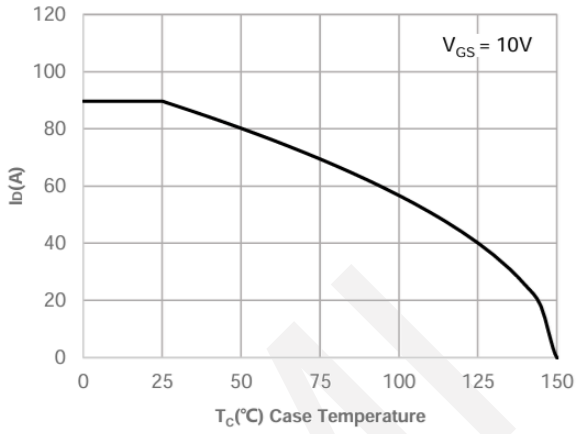
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	30	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{SS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	1.7	2.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 30A, V_{GS} = 10V	-	3.2	3.6	mΩ
		I_D = 20A, V_{GS} = 4.5V	-	4.6	7.0	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	2264	-	pF
Output Capacitance	C_{oss}		-	302	-	pF
Reverse Transfer Capacitance	C_{rss}		-	246	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD} = 15V, R_{GEN}= 3Ω V_{GS} = 10V, I_D=30A	-	9	-	ns
Rise Time	t_r		-	19	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	37	-	ns
Fall Time	t_f		-	13	-	ns
Total Gate Charge	Q_g	V_{DS} = 15V, V_{GS} = 0 to 10V, I_D = 30A	-	44	-	nC
	Q_{gs}		-	9	-	nC
	Q_{gd}		-	11	-	nC
Diode Forward Voltage	V_{FSD}	I_S =10A, 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.

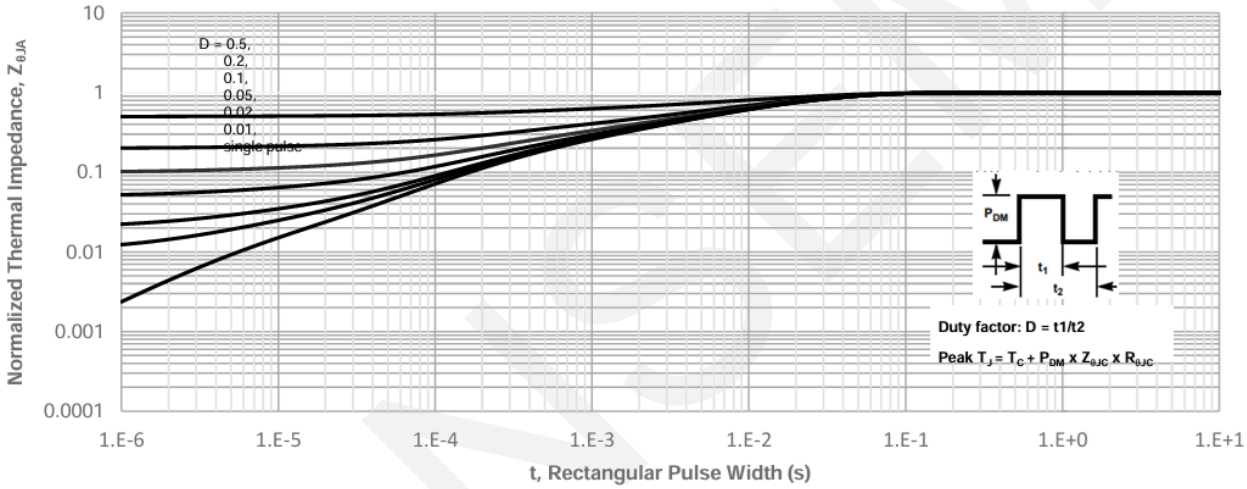
7.Typical electrical and thermal characteristics



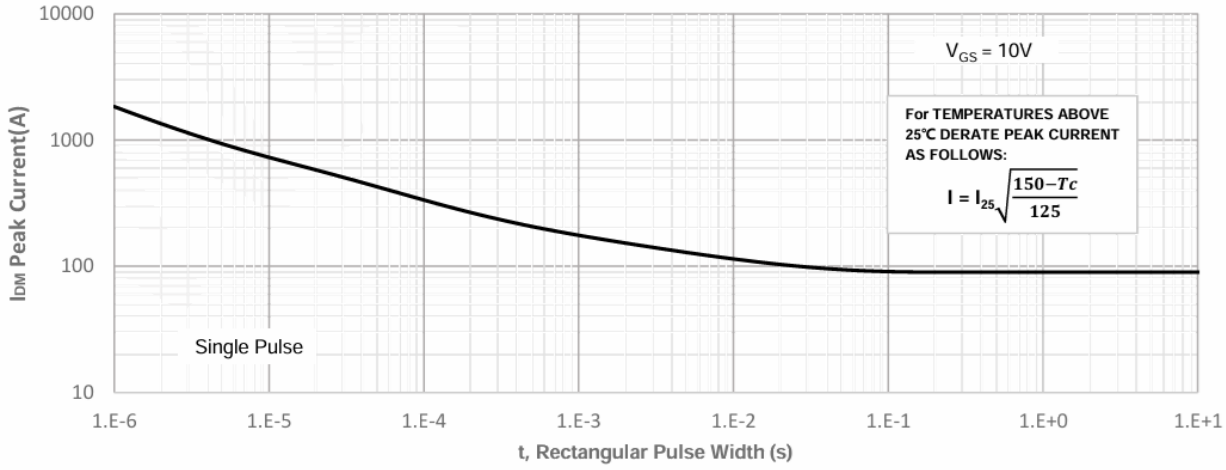
Power De-rating



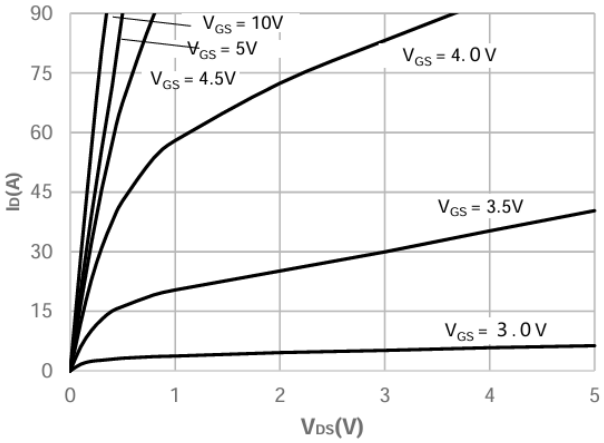
Current De-rating



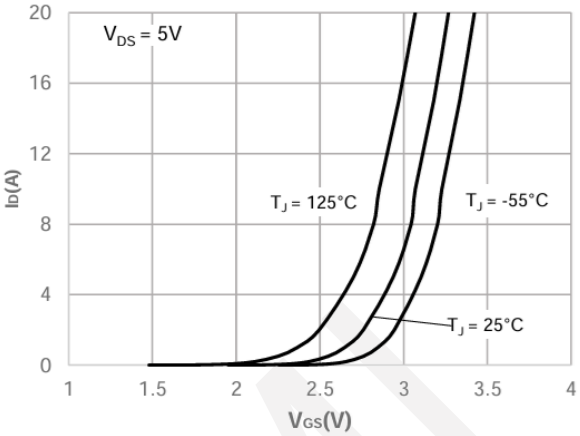
Normalized Maximum Transient Thermal Impedance



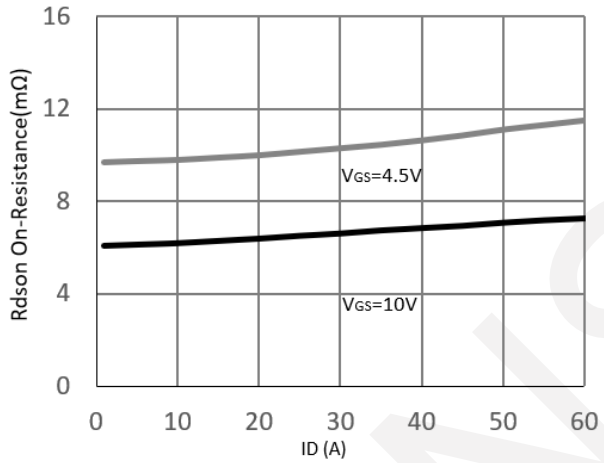
Peak Current Capacity



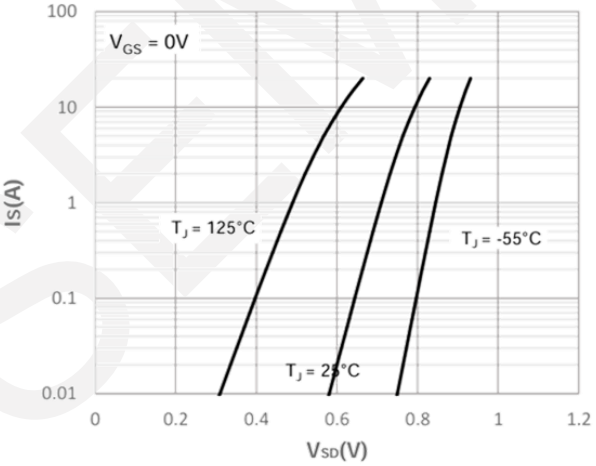
Output Characteristics



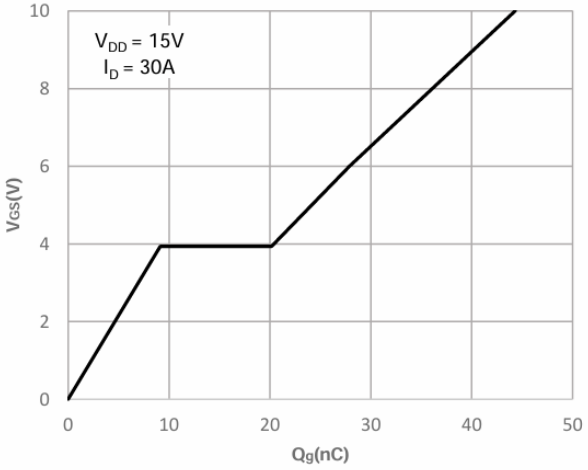
Typical Transfer Characteristics



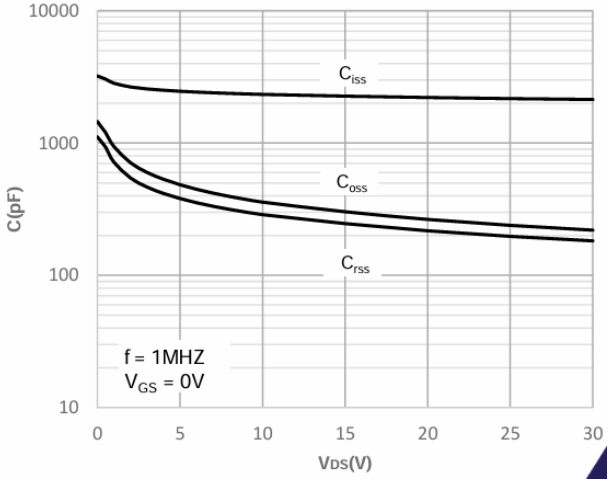
On-resistance vs. Drain Current



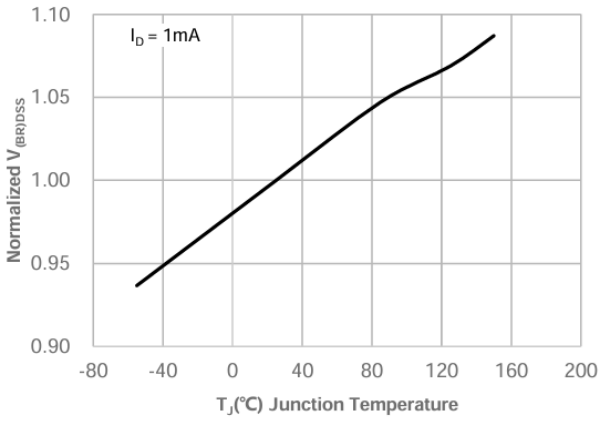
Body Diode Characteristics



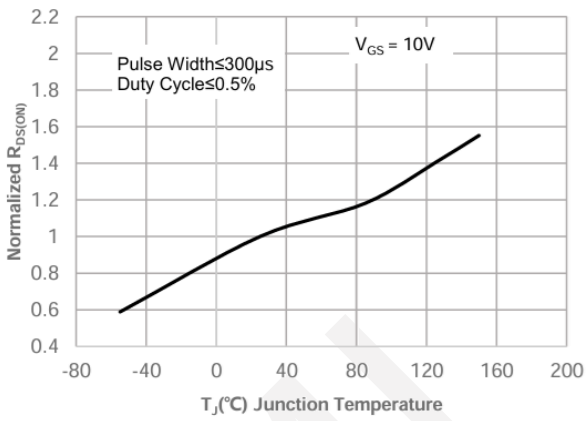
Gate Charge Characteristics



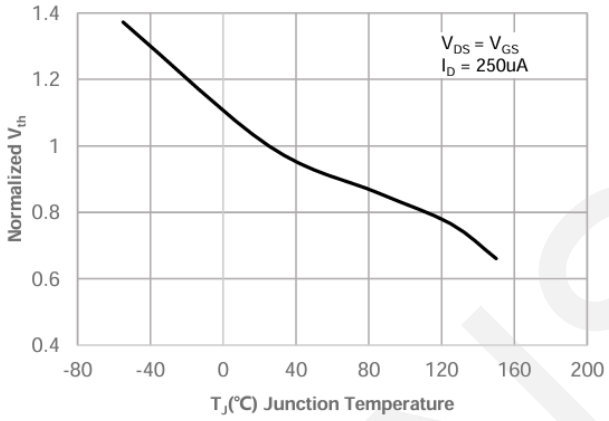
Capacitance Characteristics



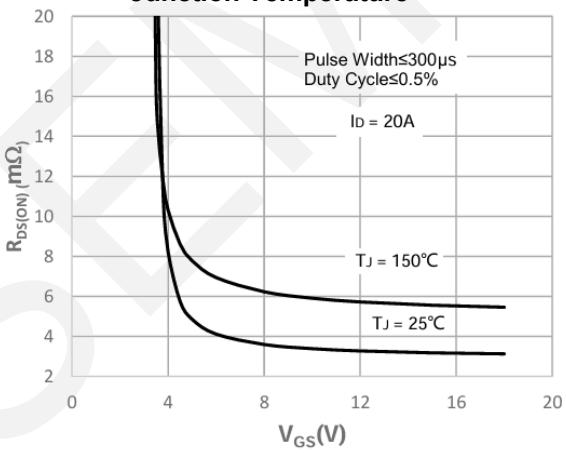
Normalized Breakdown voltage vs. Junction Temperature



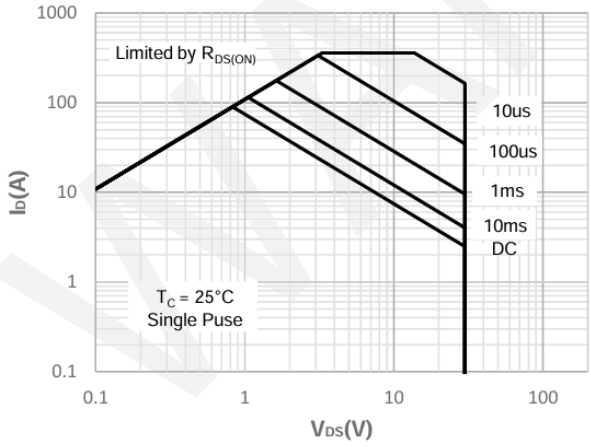
Normalized on Resistance vs. Junction Temperature



Normalized Threshold Voltage vs. Junction Temperature

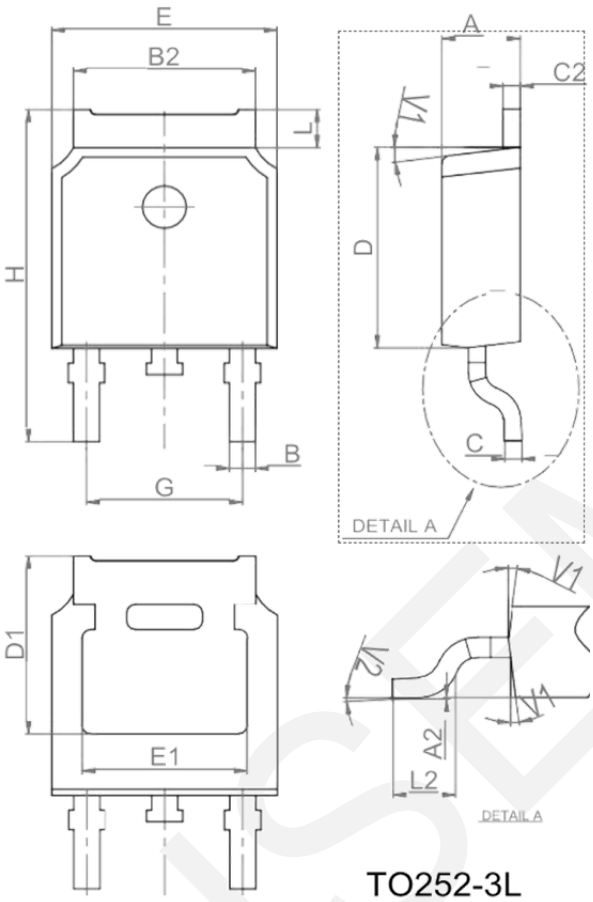


RDS(ON) vs. VGS



Maximum Safe Operating Area

8.Package Dimensions



TO252-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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