WANSEMI
万芯半导体

WX091N20KF

Enhancement Mode N-Channel Power MOSFET

TO-263/NMOS/200V/±20V/3.1V/109A/9.1mΩ

Rev0.1

200V, 9.1mΩ, 109A, N-Channel Enhancement MOSFET

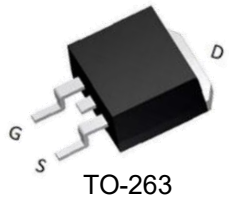
1.Features

- 200V MOSFET technology
- Low on-state resistance
- Fast switching
- Vgs±20V
- 100% RG Tested
- 100% UIS Tested

V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
200V	9.1mΩ @ 10V	109A

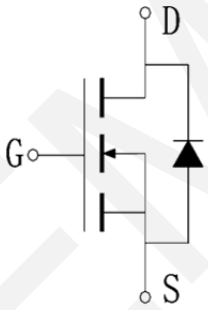
2.Applications

- Power Switching Application
- Load Switching



TO-263

Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WX091N20KF	091N20	TO-263	800	4,000

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

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	200	V
Gate to Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	109	A
Drain Current (Pulse), PW≤300μs	I_{DP}	436	A
Total Dissipation	P_D	313	W
Avalanche Energy, Single Pulsed	E_{AS}	1006	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

Parameter	Symbol	Value	Unit
Junction to Case	$R_{\theta JC}$	0.4	℃/W

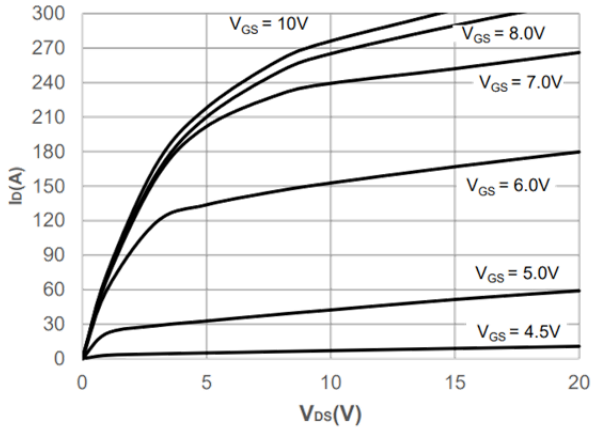
Note 2：When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

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

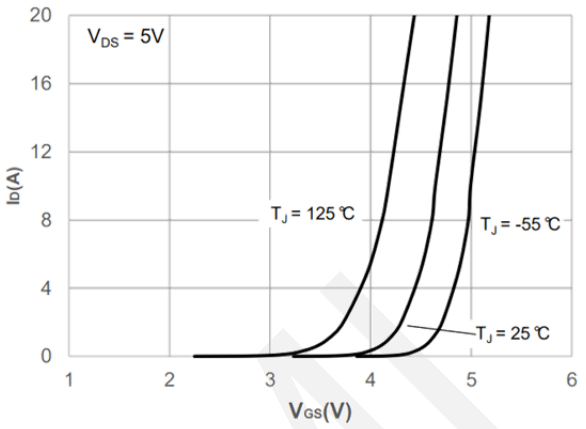
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	200	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 160V, V_{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{SS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	2.2	3.1	3.5	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 20A, V_{GS} = 10V	-	9.1	10.7	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=100V, Frequency=1.0MHz	-	4089	-	nF
Output Capacitance	C_{oss}		-	429	-	pF
Reverse Transfer Capacitance	C_{rss}		-	11	-	pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DD}= 100V, V_{GS} = 10V, R_{GEN} = 2.7Ω, I_D =20A	-	14	-	ns
Rise Time	t_r		-	37	-	ns
Turn-OFF Delay Time	$t_{d(off)}$		-	67	-	ns
Fall Time	t_f		-	30	-	ns
Total Gate Charge	Q_g	V_{DS} = 100V, V_{GS} =0 to 10V, I_D = 20A	-	60	-	nC
	Q_{gs}		-	22	-	nC
	Q_{gd}		-	15	-	nC
Diode Forward Voltage	V_{FSD}	I_S = 20A, 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.

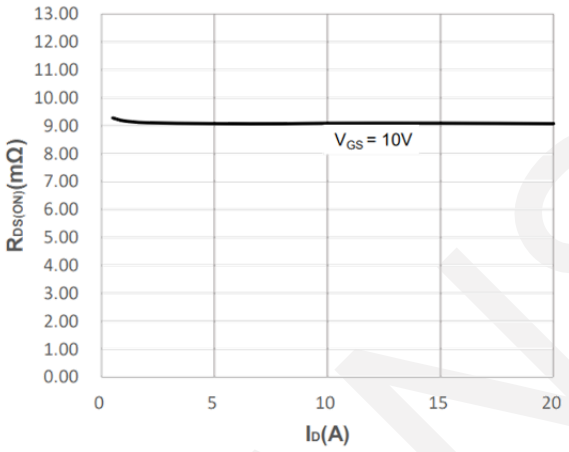
7.Typical electrical and thermal characteristics



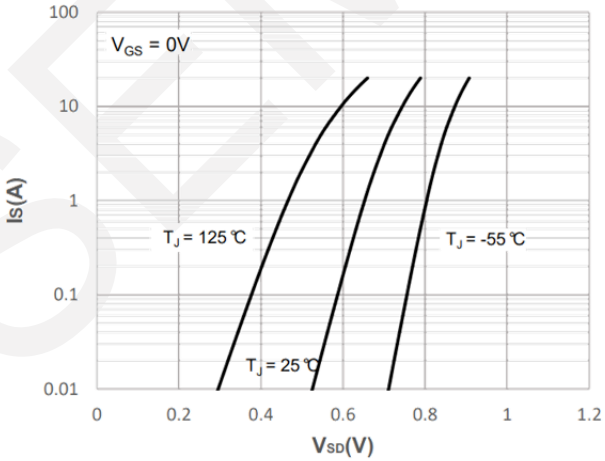
Output Characteristics



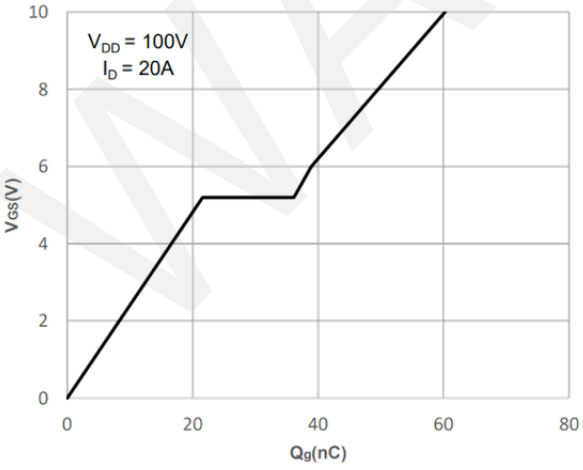
Typical Transfer Characteristics



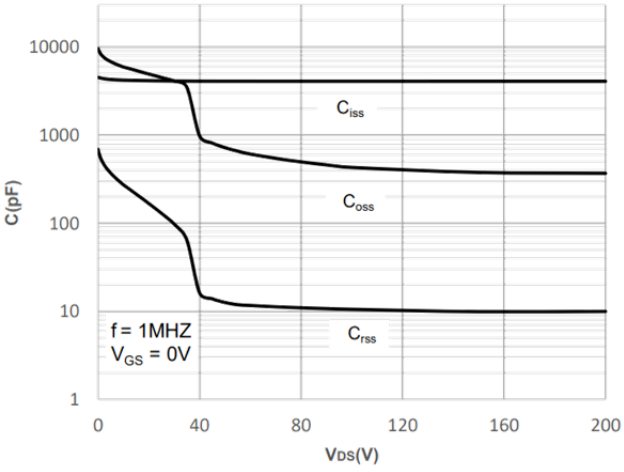
On-resistance vs. Drain Current



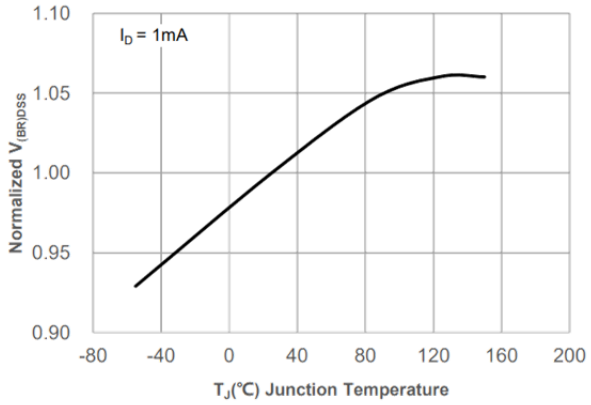
Body Diode Characteristics



Gate Charge Characteristics

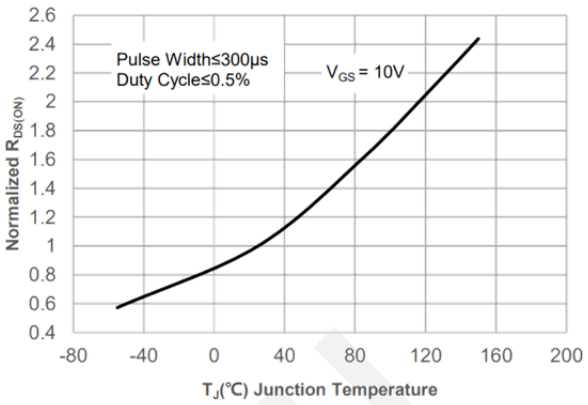


Capacitance Characteristics



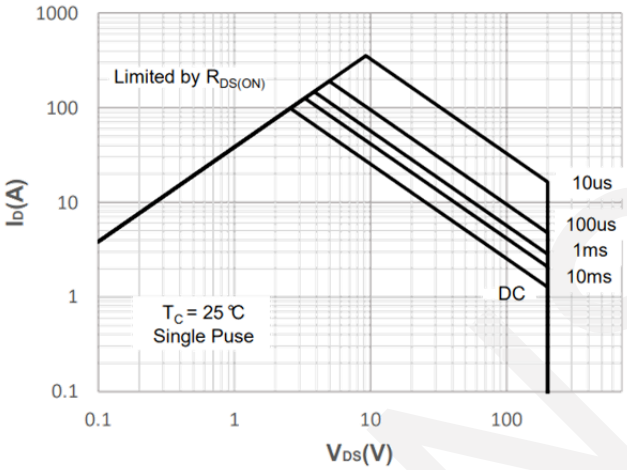
Normalized Breakdown Voltage vs.

Junction Temperature

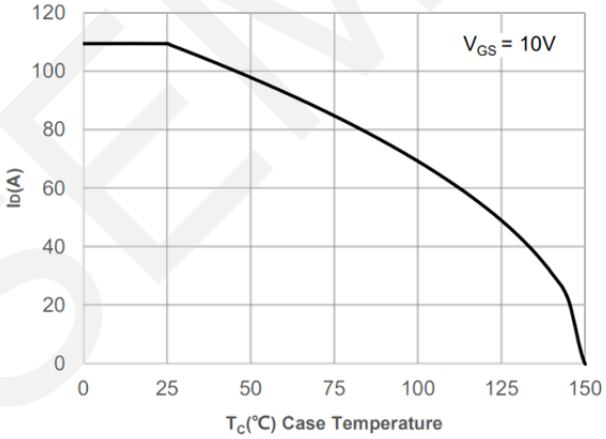


Normalized on Resistance vs.

Junction Temperature

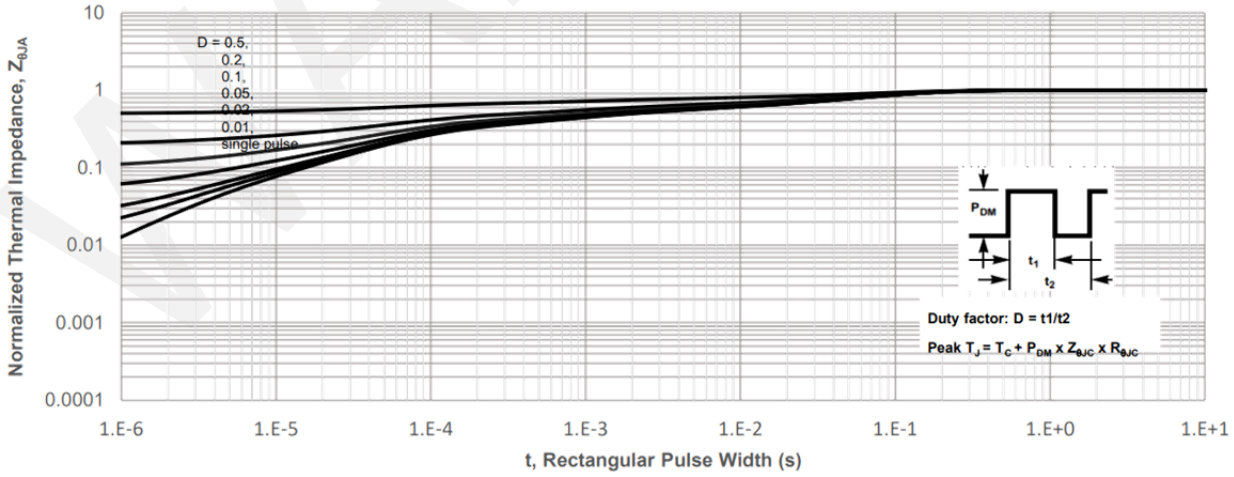


Maximum Safe Operating Area



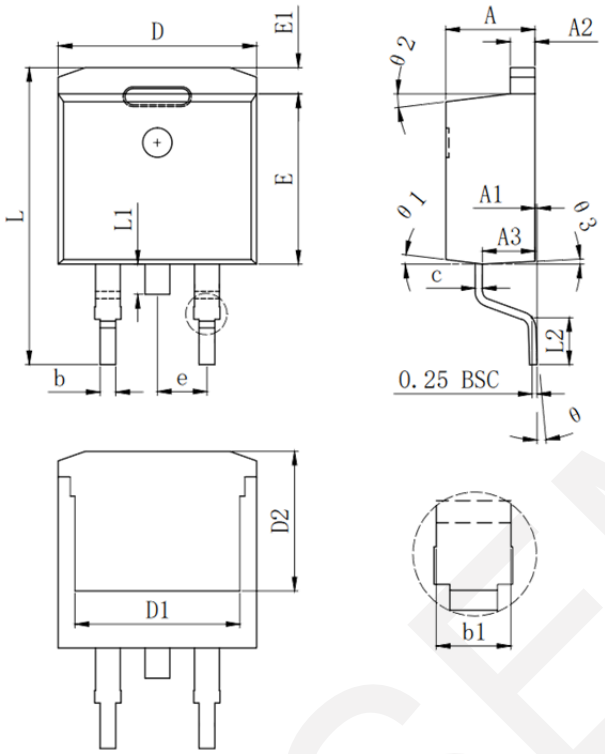
Maximum Continuous Drain Current vs.

Case Temperature



Maximum Effective Transient
Thermal Impedance, Junction-to-Case

8.Package Dimensions



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		

9. Important Notice

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