WANSEMI
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WX044N10KF

N-channel Enhancement Mode Power MOSFET

TO-263/NMOS/100V/±20V/3.0V/130A/4.4mΩ

Rev0.1

100V, 4.4mΩ, 130A, N-channel MOSFET

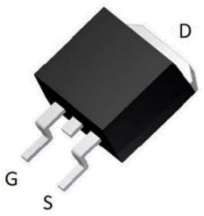
1.Features

- Low Gate Charge
- Ultra-low $R_{DS(on}$
- Halogen-free and RoHS-compliant
- 100% A UIS&Rg Tested

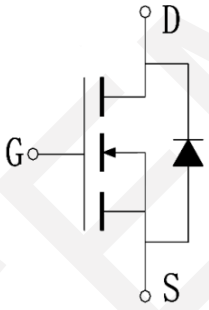
V_{DS}	$R_{DS(on)}$ Typ.	I_D Max.
100V	4.4mΩ @10V	130A

2.Applications

- Current Switching in DC/DC & AC/DC (SR) Sub-syste
- Motor Driving in Power Tool, E-vehicle, Robotics



TO-263
Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Package	Marking	PCS/Reel	PCS/CTN.
WX044N10KF	TO-263	044N10	800	4,800

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

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	100	V
Gate to Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	130	A
Drain Current (Pulse), PW≤300μs	I_{DP}	520	A
Total Dissipation	P_D	250	W
Avalanche Energy, Single Pulsed	E_{AS}	480	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 Ambient	$R_{\theta JA}$	60	℃/W
Junction to case	$R_{\theta JC}$	0.5	℃/W

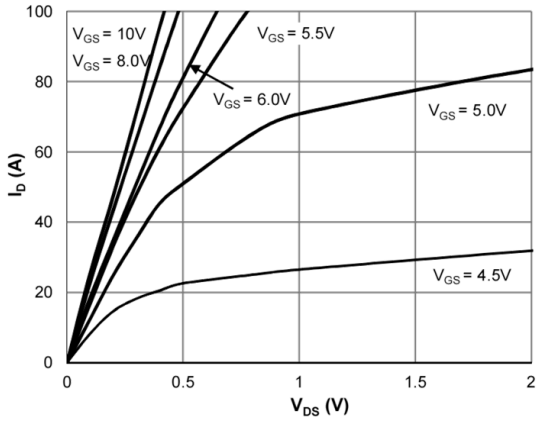
Note 2：When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

6.Electrical Characteristics at Ta=25℃ (Note 2)

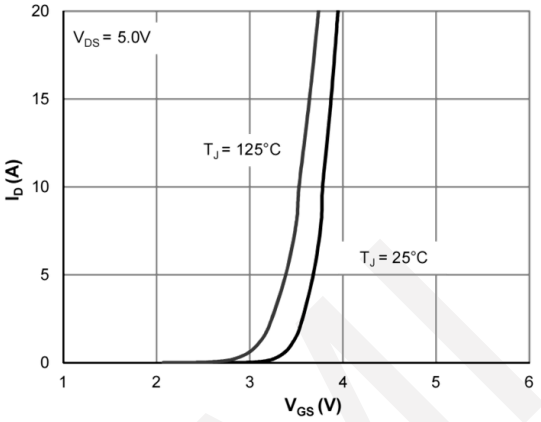
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	100	-	-	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0V	-	-	1	μA
Gate to Source Leakage Current	I_{GSS1}	V_{GS} = ±20V, V_{SS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	2.2	3.0	3.8	V
Static Drain to Source On-State Resistance	$R_{DS(on)}$	I_D =20A, V_{GS} =10V	-	4.4	5.3	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, Frequency=1.0MHz	-	4040	-	pF
Output Capacitance	C_{oss}		-	807	-	pF
Reverse Transfer Capacitance	C_{rss}		-	14	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 45V, R_L = 2.3Ω V_{GS} = 10V, R_{GEN} =3Ω	-	17	-	ns
Rise Time	t_r		-	29	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	45	-	ns
Fall Time	t_f		-	16	-	ns
Total Gate Charge	Q_g	V_{DS} = 45V, V_{GS} =10V, I_D =20A	-	63	-	nC
	Q_{gs}		-	25	-	nC
	Q_{gd}		-	11.4	-	nC
Diode Forward Voltage	V_{FSD}	I_S = 20A, V_{GS} = 0	0.4	0.85	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.

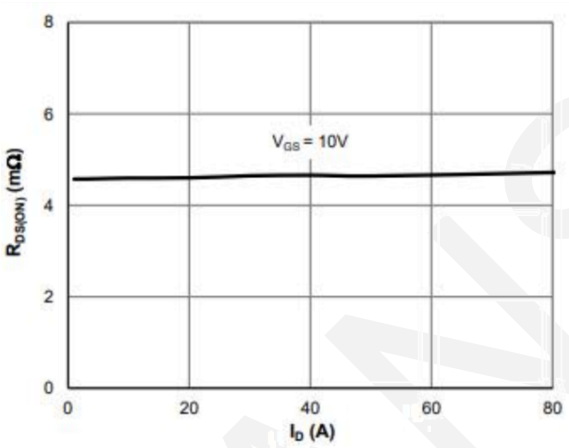
7.Typical electrical and thermal characteristics



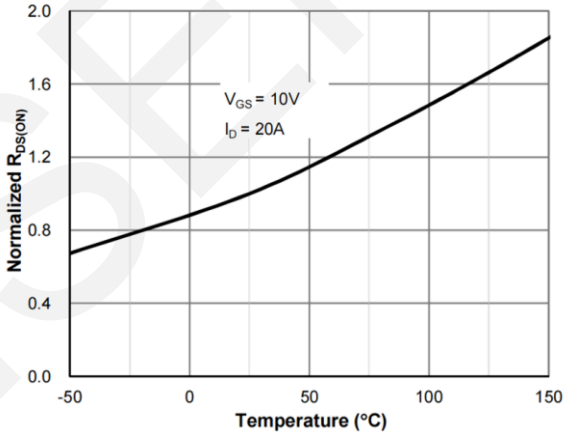
Saturation Characteristics



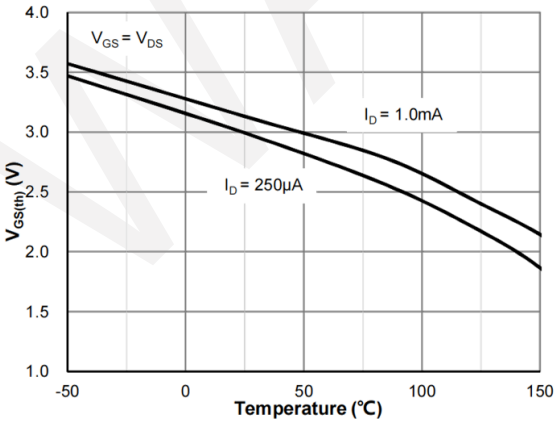
Transfer Characteristics



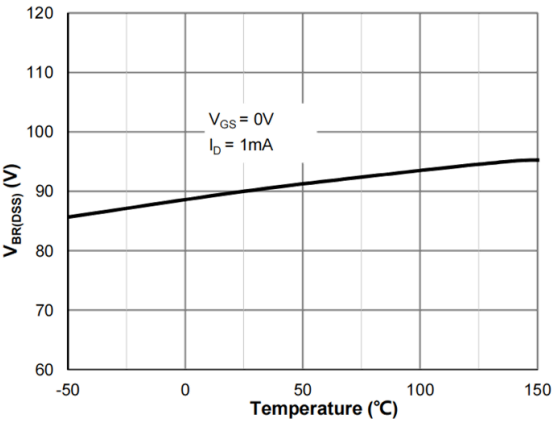
$R_{DS(on)}$vs.Drain Current



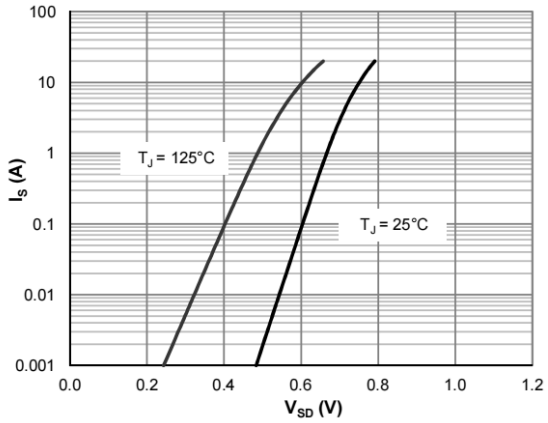
$R_{DS(on)}$vs.Junction Temperature



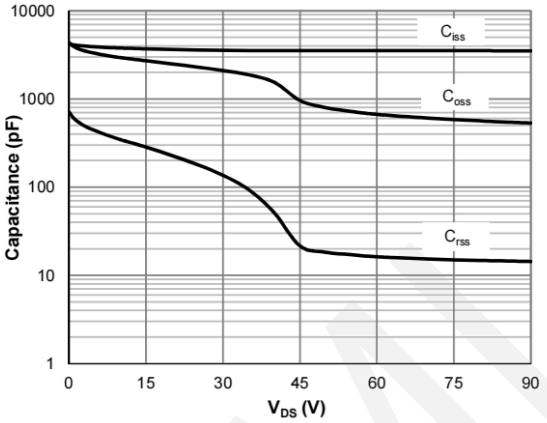
VGS(th) vs. Junction Temperature



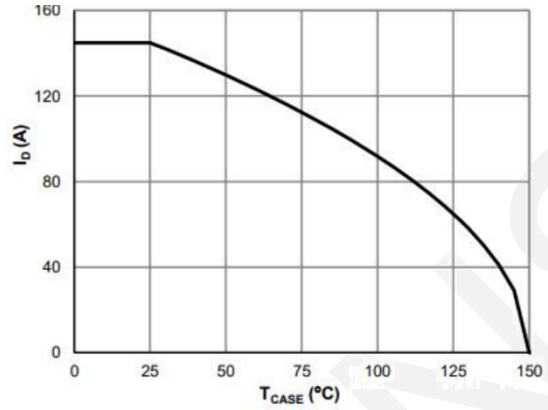
$V_{BR(DSS)}$vs.Junction Temperature



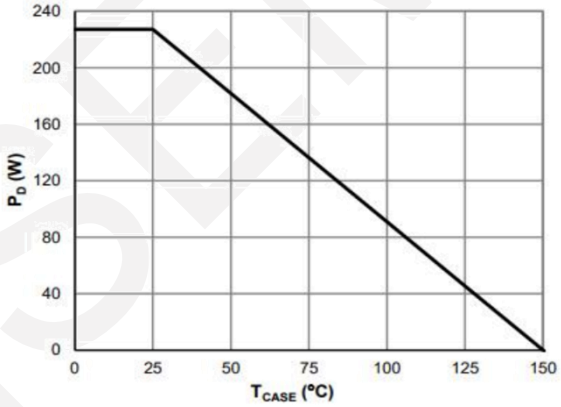
Body-Diode Characteristics



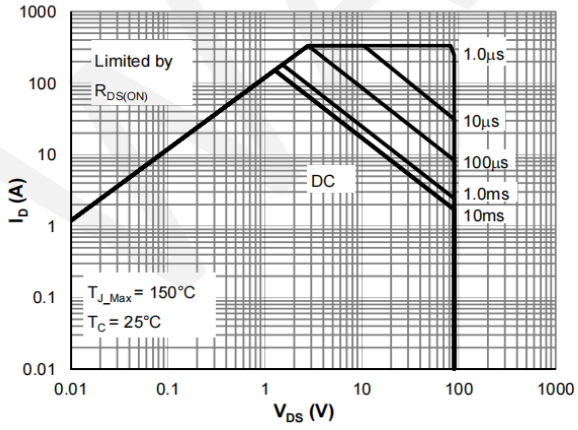
Capacitance Characteristics



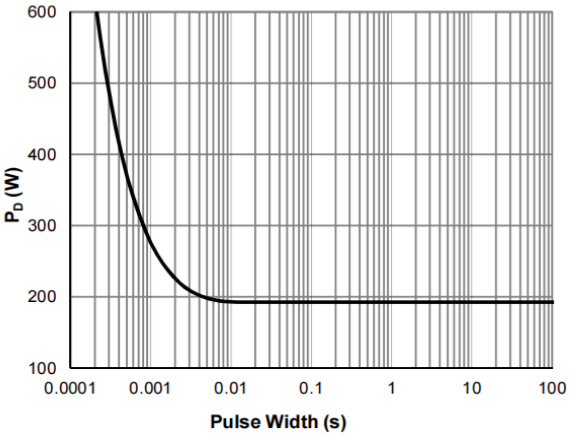
Current De-rating



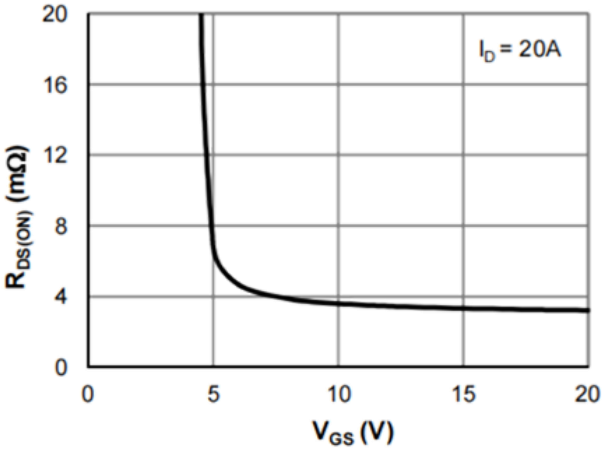
Power De-rating



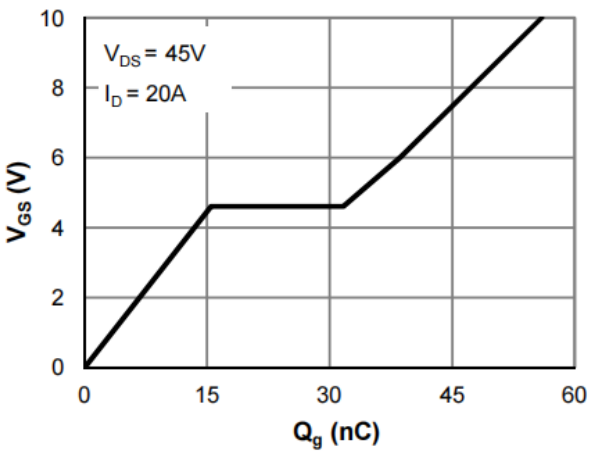
Maximum Safe Operating Area



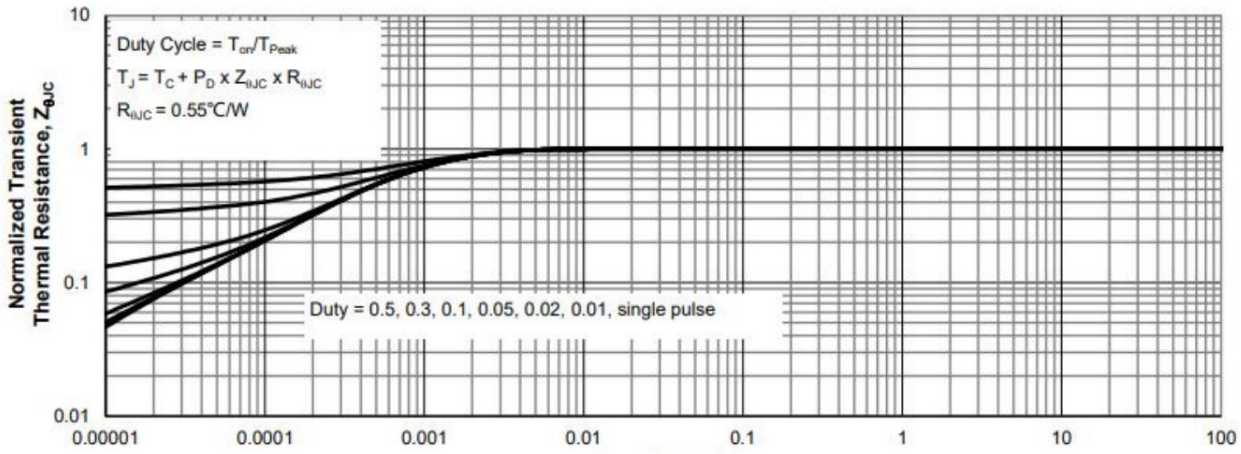
Single Pulse Power Rating,Junction-to-Case



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

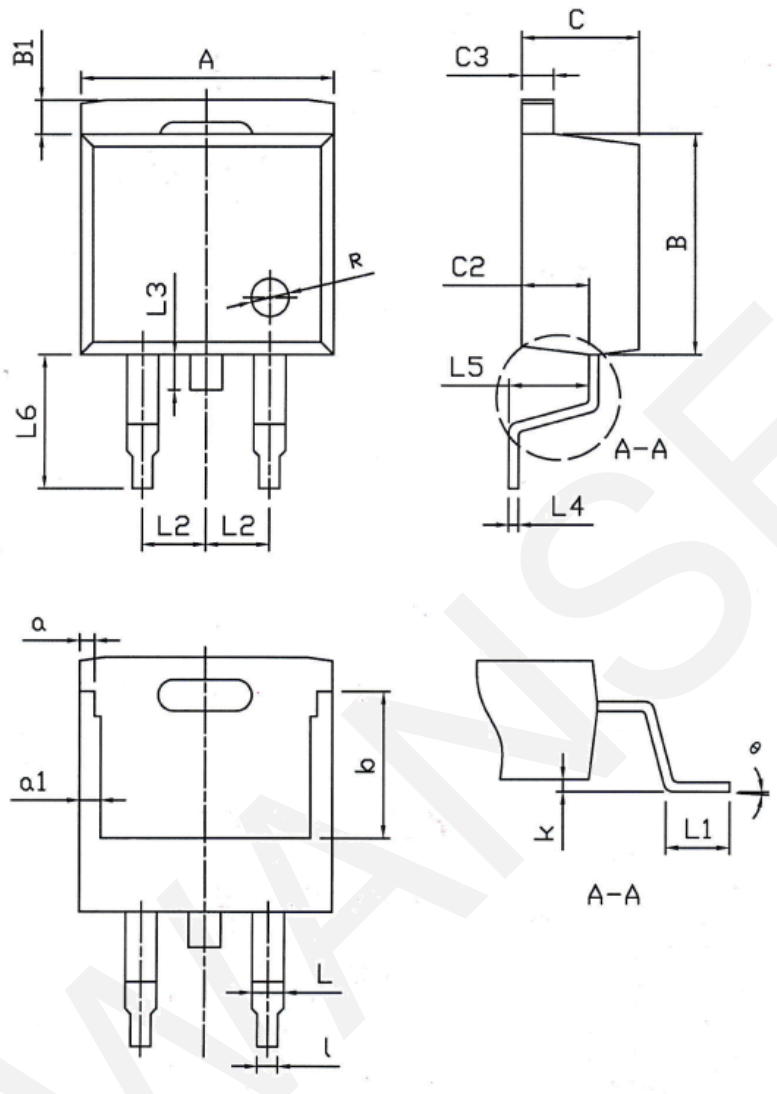


Gate Charge



Normalized Maximum Transient Thermal Impedance

8.Package Dimensions



Dimensions In Millimeters			
Symbol	MIN	TYP	MAX
A	10.00	10.20	10.40
B	8.50	8.70	8.90
B1	1.06	1.26	1.46
C	4.49	4.69	4.89
C2	2.54	2.69	2.84
C3	1.17	1.27	1.37
L	1.12	1.27	1.42
L1	2.34	2.54	2.74
L2	–	2.54	–
L3	1.20	1.40	1.60
L4	0.281	0.381	0.481
L5	2.54	2.79	3.04
L6	5.05	5.30	5.55
R	–	1.50	–
a	0.455	0.655	0.855
a1	0.70	0.90	1.10
b	5.648	5.798	5.948
k	0.00	–	0.25
l	0.70	0.81	0.96
θ	0°	–	9°

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