

General Description

The WSR200N08 is the highest performance trench N-Ch MOSFET with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSR200N08 meet the RoHS and Green Product requirement,100% EAS guaranteed with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

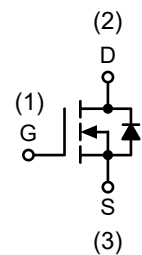
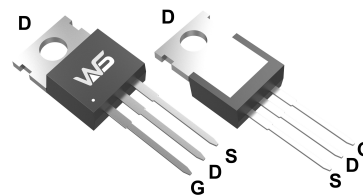
Product Summary

BV_{DSS}	$R_{DS(on)}$	I_D
80V	2.9mΩ	200A

Applications

- Switching application
- Power Management for Inverter Systems.

TO-220-3L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	200	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^1$	144	A
I_{DM}	Pulsed Drain Current ² $T_C=25^{\circ}C$	790	A
EAS	Avalanche Energy, Single pulse, $L=0.5mH$	1496	mJ
I_{AS}	Avalanche Current, Single pulse, $L=0.5mH$	200	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	345	W
$P_D@T_C=100^{\circ}C$	Total Power Dissipation ⁴	173	W
T_{STG}	Storage Temperature Range	-55 to 175	$^{\circ}C$
T_J	Operating Junction Temperature Range	175	$^{\circ}C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	62.5	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	0.43	$^{\circ}C/W$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	80	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.096	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =100A	---	2.9	3.5	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	2.0	3.0	4.0	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-5.5	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =80V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =55°C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±25V, V _{DS} =0V	---	---	±100	nA
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	3.2	---	Ω
Q _g	Total Gate Charge (10V)	V _{DS} =80V, V _{GS} =10V, I _D =30A	---	197	---	nC
Q _{gs}	Gate-Source Charge		---	31	---	
Q _{gd}	Gate-Drain Charge		---	75	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =50V, V _{GS} =10V, R _G =3Ω, I _D =30A	---	18	---	ns
T _r	Rise Time		---	28	---	
T _{d(off)}	Turn-Off Delay Time		---	42	---	
T _f	Fall Time		---	54	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	8154	---	pF
C _{oss}	Output Capacitance		---	1029	---	
C _{rss}	Reverse Transfer Capacitance		---	650	---	

Guaranteed Avalanche Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
EAS	Single Pulse Avalanche Energy ⁵	V _{DD} =25V, L=0.5mH, I _{AS} =28A	160	---	---	mJ

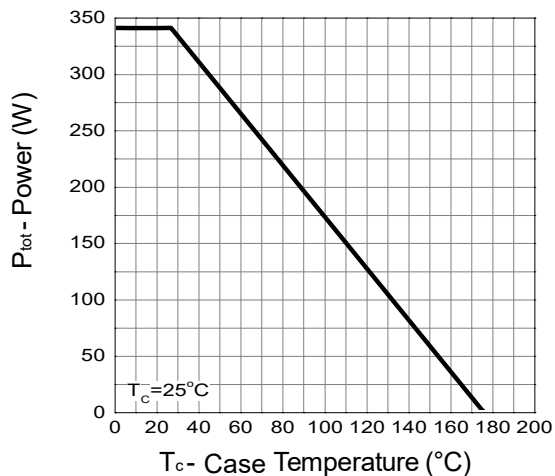
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,6}	V _G =V _D =0V, Force Current	---	---	200	A
I _{SM}	Pulsed Source Current ^{2,6}		---	---	350	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =15A, T _J =25°C	---	---	1.2	V
t _{rr}	Reverse Recovery Time	I _F =15A, dI/dt=100A/μs, T _J =25°C	---	30	---	nS
Q _{rr}	Reverse Recovery Charge		---	52	---	nC

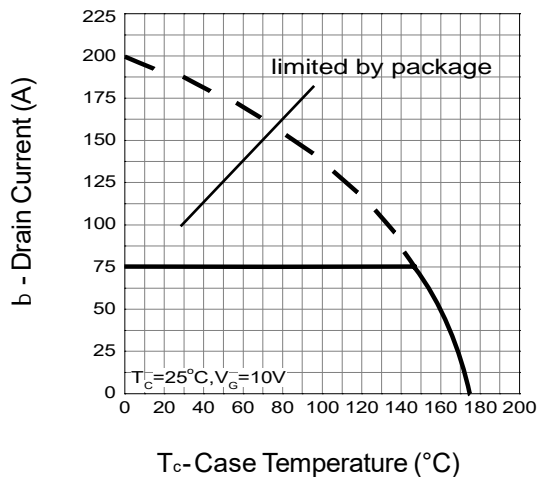
Note * : Pulse test ; pulse width ≤300μs, duty cycle ≤2%.

Typical Operating Characteristics

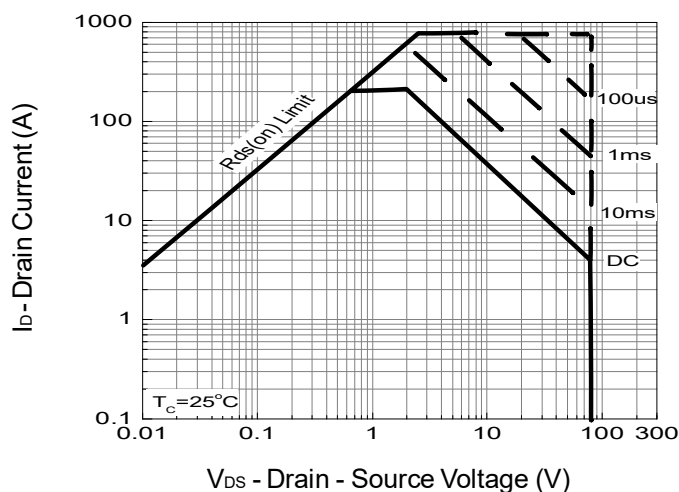
Power Dissipation



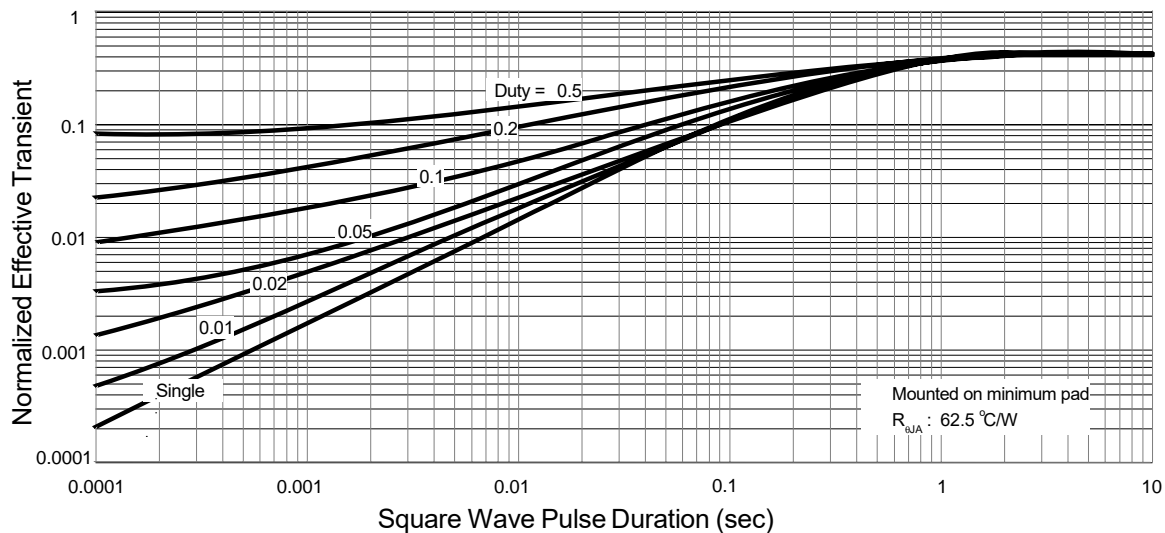
Drain Current



Safe Operation Area

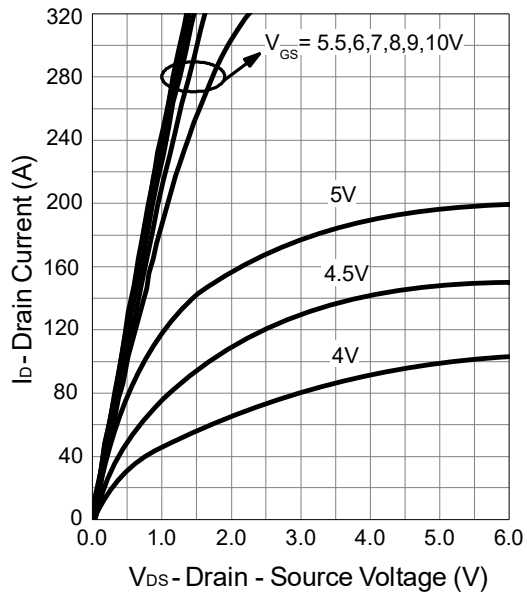


Thermal Transient Impedance

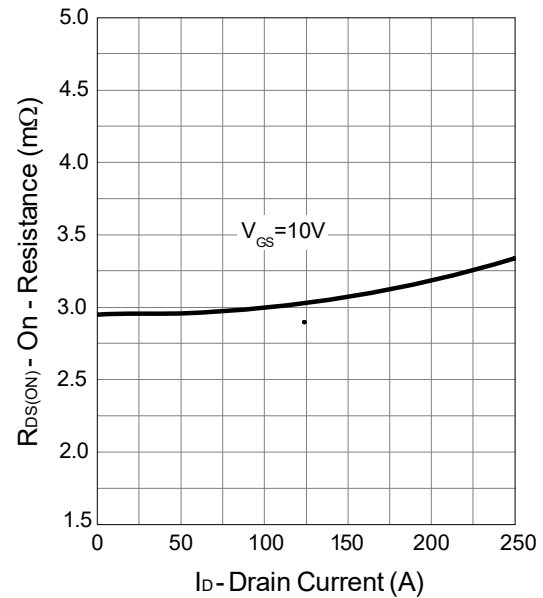


Typical Operating Characteristics (Cont.)

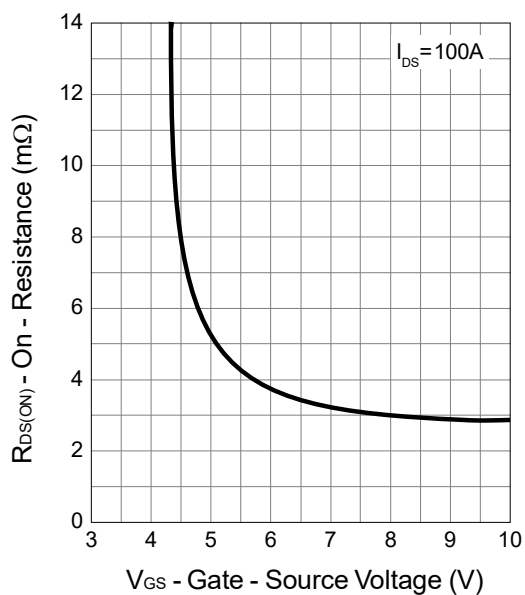
Output Characteristics



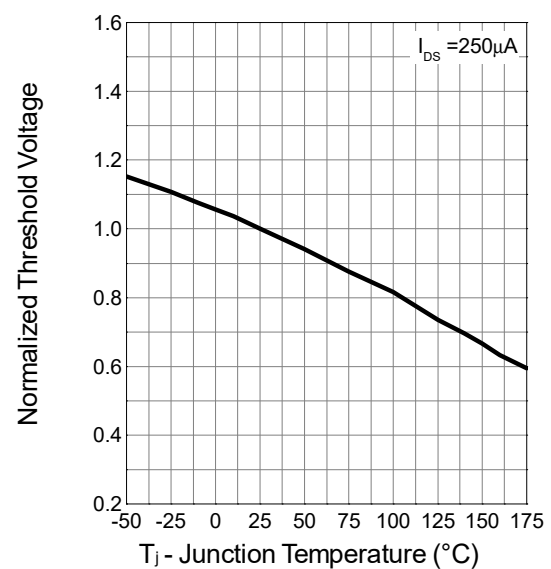
Drain-Source On Resistance



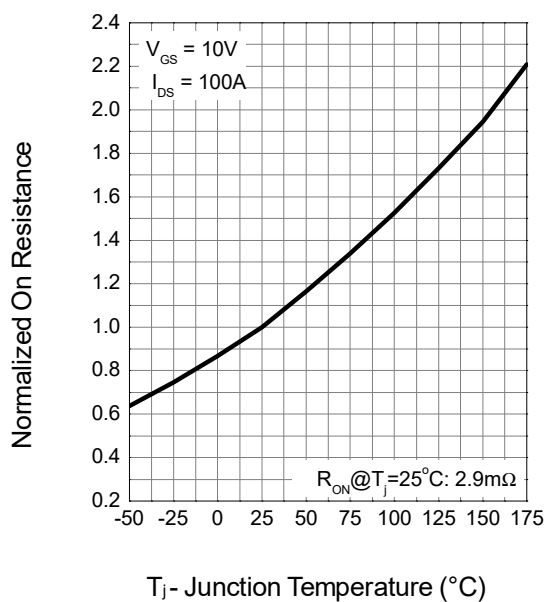
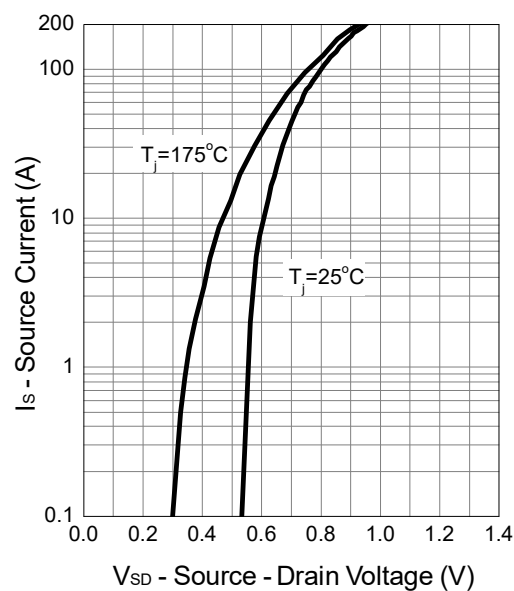
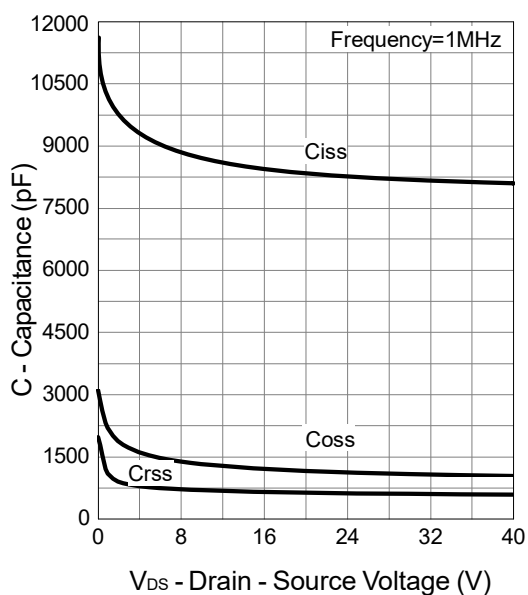
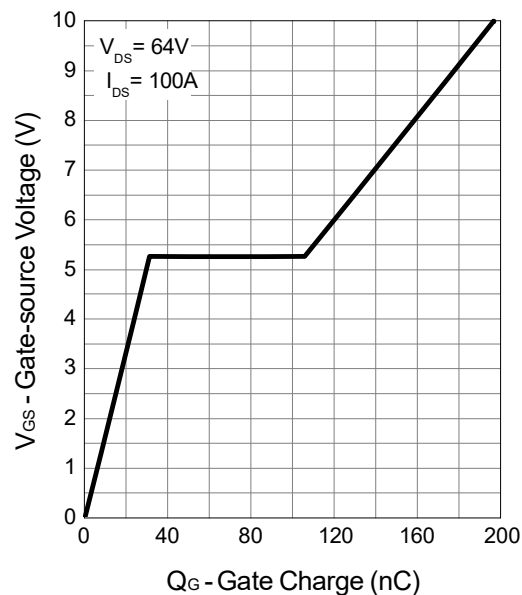
Gate-Source On Resistance

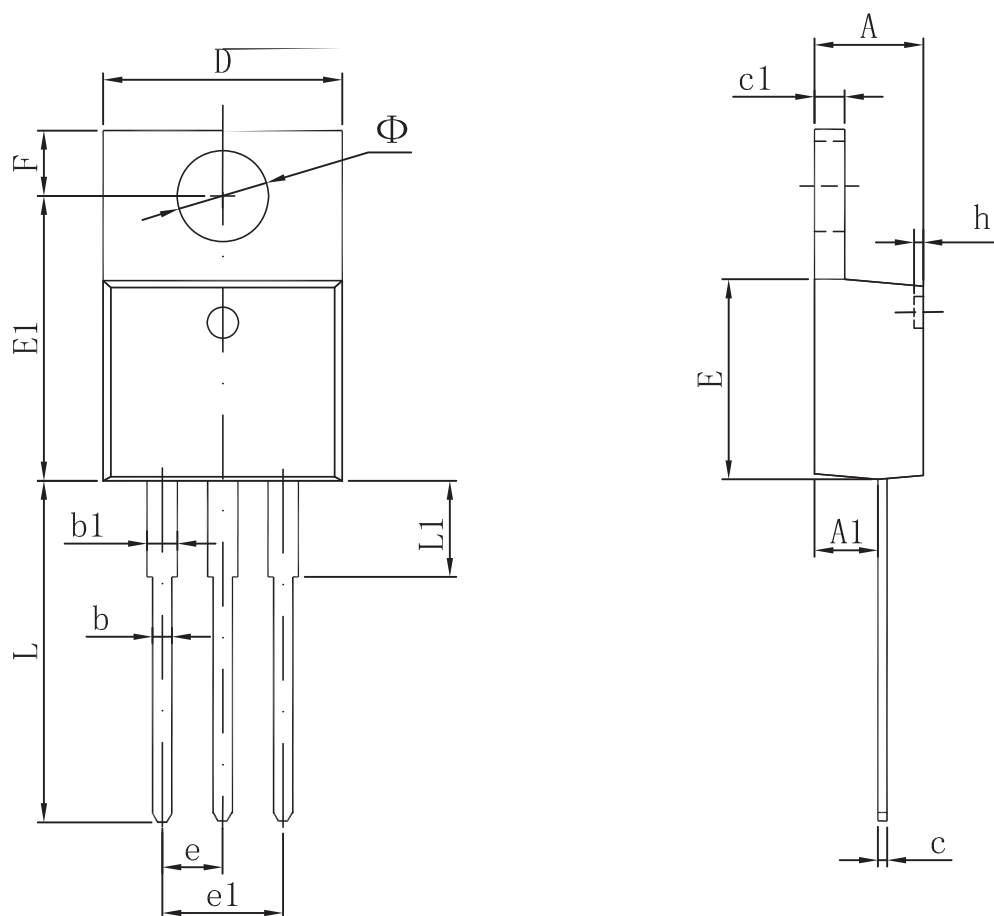


Gate Threshold Voltage



Typical Operating Characteristics (Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Packaging information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

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