General Description

The WSR80N08 is the highest performance trench N-ch MOSFET with extreme high cell density,which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications .

The WSR80N08 meet the RoHS and Green Product requirement,100% EAS guaranteed with full function reliability approved.

Product Summery

BV_{DSS}	R_{DSON}	I_D
80V	8.4mΩ	80A

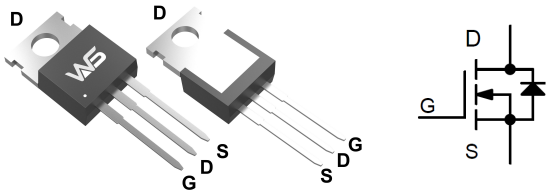
Applications

- Power Management
- DC/DC Converter
- Load Switch

Features

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

TO-220AB Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	T_C = 25°Continuous Drain Current. Lead current limit.	80	A
I_{DM}	T_C = 25°C,pulse width limited by T_{JM}	75	A
I_{AR}	T_C = 25°C,Avalanche Current.	320	A
E_{AR}	TC = 25°C,Single Pulse Avalanche Energy[3]	30	mJ
E_{AS}	TC = 25°C,Single Pulse Avalanche Energy[3]	1.0	J
P_D	TC = 25°C,Total Power Dissipation[4]	230	W
T_J	Operating Junction Temperature Range	-55 to 175	℃
T_{JM}	Storage Temperature Range	-55 to 175	℃
T_J	MAX Junction Temperature Range	175	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	0.65	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	80	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.096	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V,I_D=40A.	---	8.4	9.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.0	---	4.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5.5	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=55V , V_{GS}=0V , T_J=25℃	---	---	50	uA
		V_{DS}=55V , V_{GS}=0V , T_J=85℃	---	---	1000	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=40A	35	55	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.8	3.8	Ω
Q_g	Total Gate Charge (10V)	V_{DS}=60V,V_{GS}=10V,I_D=40A.	---	180	---	nC
Q_{gs}	Gate-Source Charge		---	42	---	
Q_{gd}	Gate-Drain Charge		---	75	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=60V, V_{GS}=10V , R_G=2.5Ω, I_D=40A.	---	50	---	ns
T_r	Rise Time		---	75	---	
$T_{d(off)}$	Turn-Off Delay Time		---	95	---	
T_f	Fall Time		---	31	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	4800	---	pF
C_{oss}	Output Capacitance		---	1670	---	
C_{rss}	Reverse Transfer Capacitance		---	590	---	

Diode Characteristics(T_J = 25°C, unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,6]	V_{GS}=0V, pulse width limited by T_{JM}	---	---	80	A
I_{SM}	Pulsed Source Current[2,6]		---	---	320	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=I_F. Note2	---	---	1.5	V
t_{rr}	Reverse Recovery Time	I_F=25A,d_I/d_t=100A/μs.	---	200	---	nS
Q_{rr}	Reverse Recovery Charge		---	500	---	nC

Note :

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper,t<=10sec.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3. The EAS data shows Max. rating . The test condition is V_{DS}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=25A
4. The power dissipation is limited by 150℃ junction temperature
5. The Min. value is 100% EAS tested guarantee.
6. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

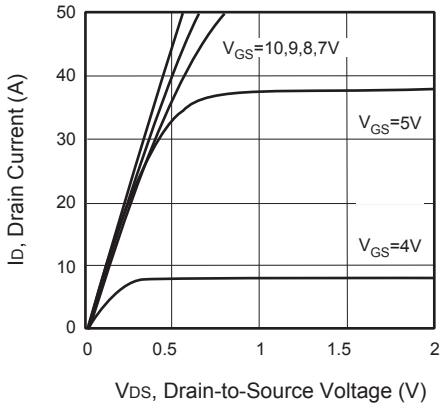


Figure 1. Output Characteristics

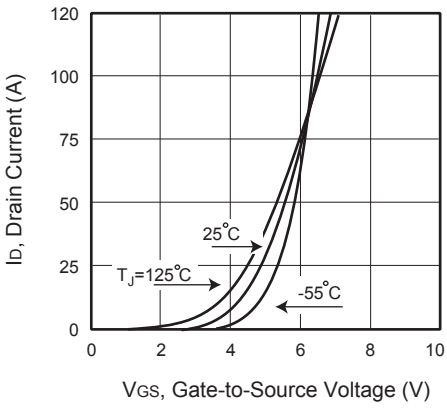


Figure 2. Transfer Characteristics

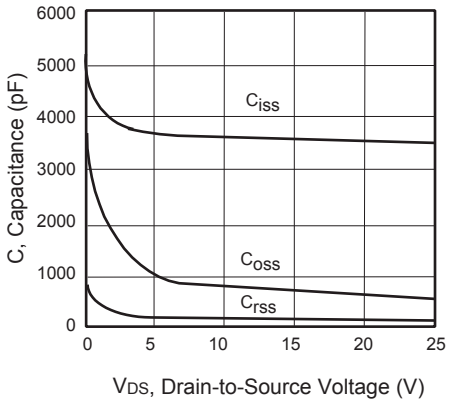


Figure 3. Capacitance

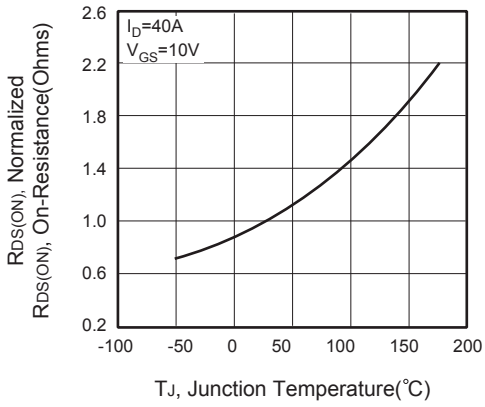


Figure 4. On-Resistance Variation with Temperature

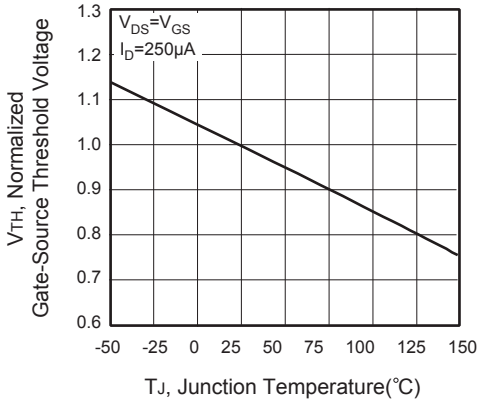


Figure 5. Gate Threshold Variation with Temperature

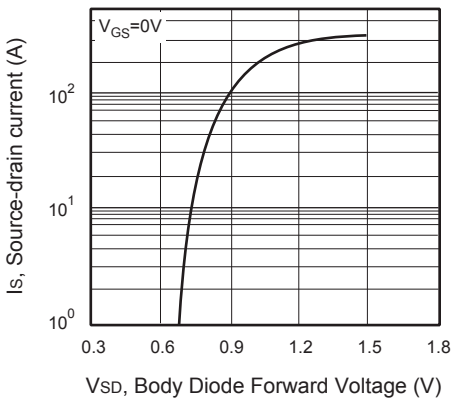


Figure 6. Body Diode Forward Voltage Variation with Source Current

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

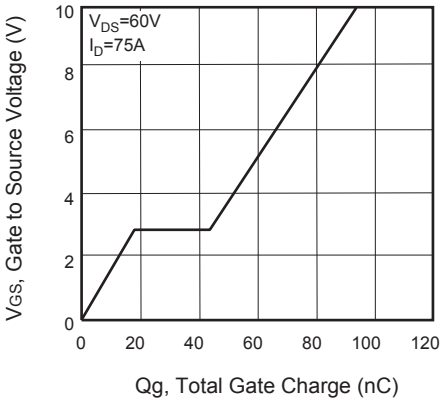


Figure 7. Gate Charge

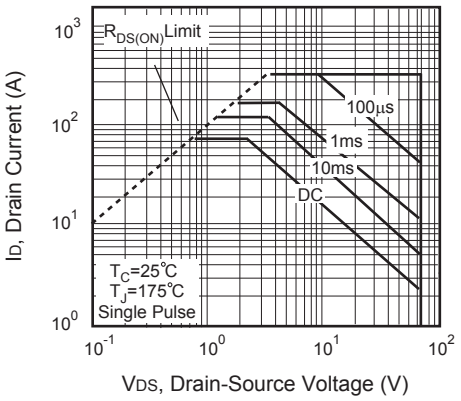


Figure 8. Maximum Safe Operating Area

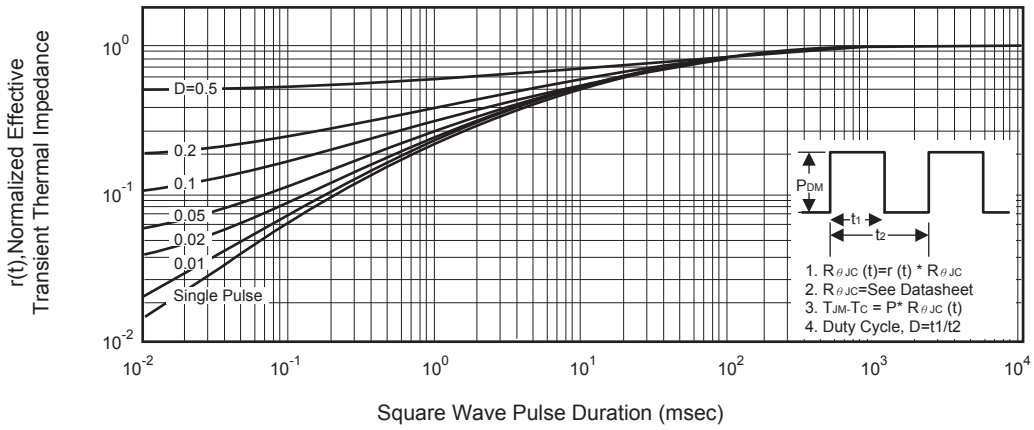


Figure 9. Normalized Thermal Transient Impedance Curve

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