D308N10D

308A 100V N-Channel Enhancement Mode Power MOSFET

Features

- Advanced Trench MOS Technology
- 100% EAS Guaranteed
- Fast Switching Speed
- Green Device Available

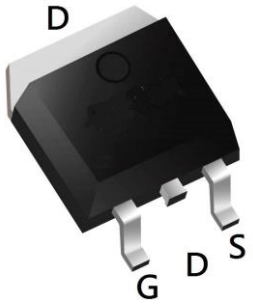
Applications

- Power Tools.
- Motor Control.
- UPS
- Synchronous Rectification in SMPS

Product Summary

BVDSS	RDSON	ID
100V	2.5mΩ	308A

TO263 Pin Configuration



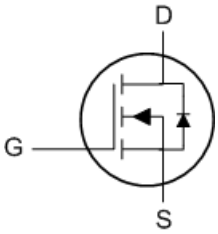


Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1,6]	I_D@T_C=25℃	308	A
Continuous Drain Current[1,6]	I_D@T_C=100℃	218	A
Pulsed Drain Current[2]	I_{DM}	550	A
Single Pulse Avalanche Energy[3]	EAS	2000	mJ
Avalanche Current	I_{AS}	45	A
Total Power Dissipation[4]	P_D@T_C=25℃	429	W
Storage Temperature Range	T_{STG}	-55 to 175	℃
Operating Junction Temperature Range	T_J	-55 to 175	℃

Table 2.Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	---	60	℃/W
Thermal Resistance Junction-Case[1]	$R_{\theta JC}$	---	0.35	℃/W

Table 3. Electrical Characteristics (T_J=25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	100	---	---	V
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=10V , I_D=50A	---	2.1	2.5	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=100℃	---	---	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Forward Transconductance	gfs	V_{DS}=5V , I_D=20A	---	75	---	S
Total Gate Charge	Qg	V_{DS}=50V , V_{GS}=10V , I_D=50A	---	206	---	nC
Gate-Source Charge	Qgs		---	67.6	---	
Gate-Drain Charge	Qgd		---	47.7	---	
Turn-On Delay Time	Td(on)	V_{DD}=50V , V_{GS}=10V , R_G=3Ω, I_D=20A	---	47	---	ns
Rise Time	Tr		---	28	---	
Turn-Off Delay Time	Td(off)		---	79	---	
Fall Time	Tf		---	18	---	
Input Capacitance	Ciss	V_{DS}=50V , V_{GS}=0V , f=1MHz	---	14420	---	pF
Output Capacitance	Coss		---	1262	---	
Reverse Transfer Capacitance	Crss		---	298	---	
Diode Characteristics						
Continuous Source Current[1,5,6]	I_S	V_G=V_D=0V , Force Current	---	---	80	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.1	V
Reverse Recovery Time	t_{rr}	I_F=20A , di/dt=100A/μs , T_J=25℃	---	70	---	nS
Reverse Recovery Charge	Q_{rr}		---	580	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=50V,V_{GS}=10V,L=0.5mH
4.The power dissipation is limited by 175℃ junction temperature
5.The data is theoretically the same as I_D and I_S , in real applications , should be limited by total power dissipation.
6. Bonding wire limitation current is 120A.

Typical Characteristics

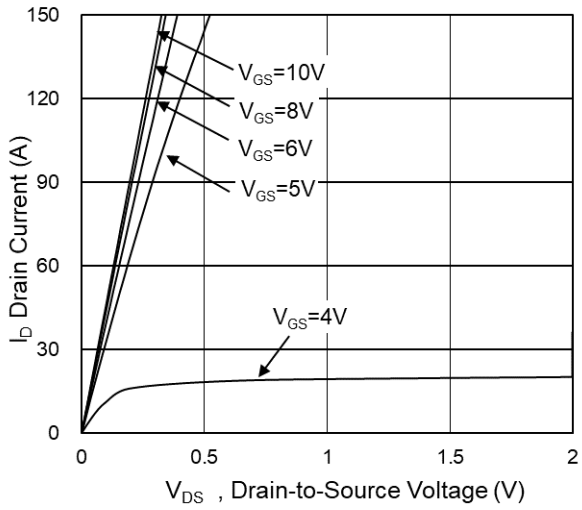


Fig.1 Typical Output Characteristics

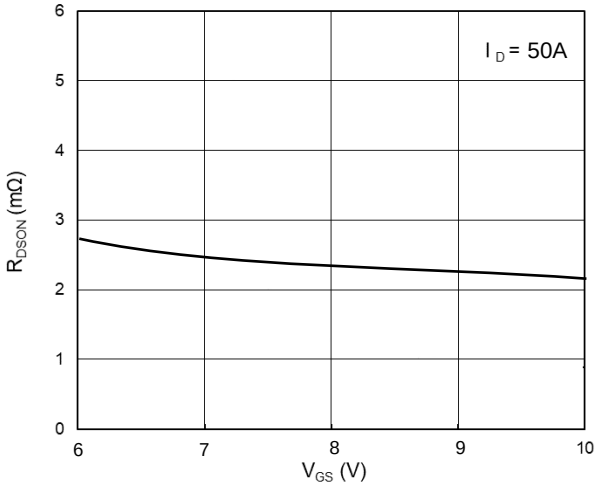


Fig.2 On-Resistance vs G-S Voltage

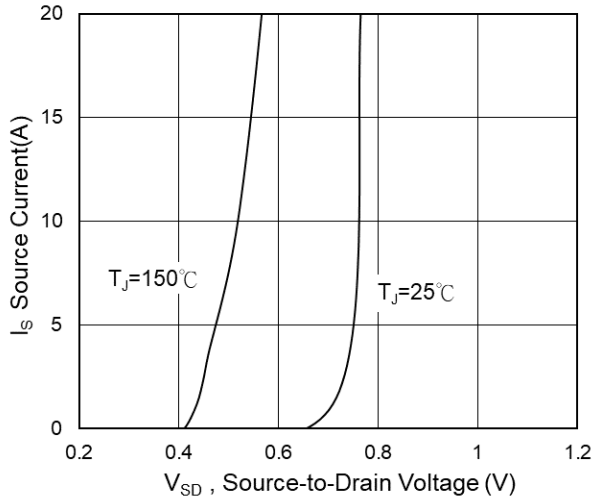


Fig.3 Source-Drain Forward Characteristics

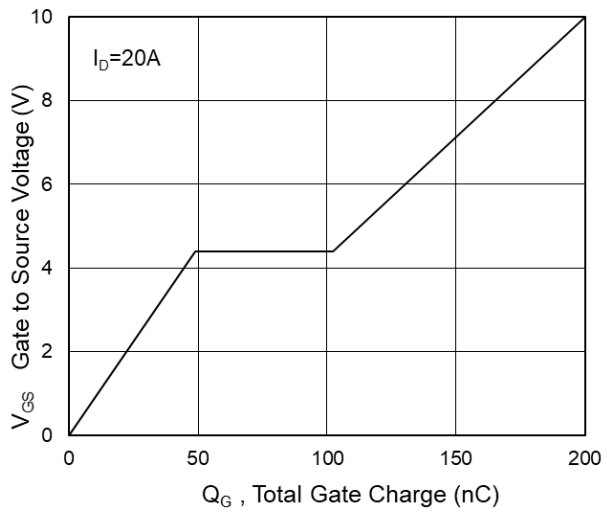


Fig.4 Gate-Charge Characteristics

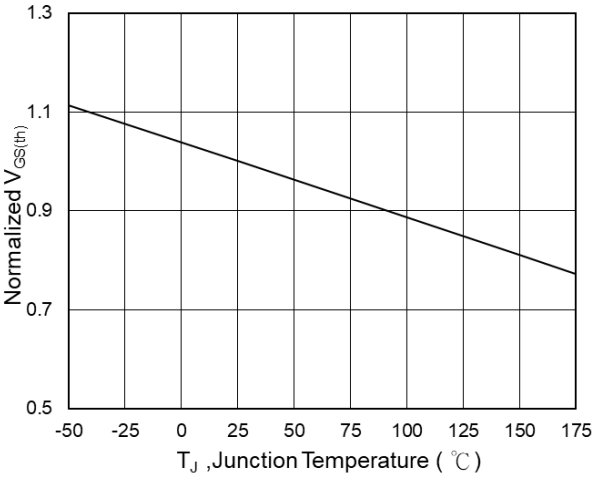


Fig.5 Normalized $V_{GS(th)}$ vs T_J

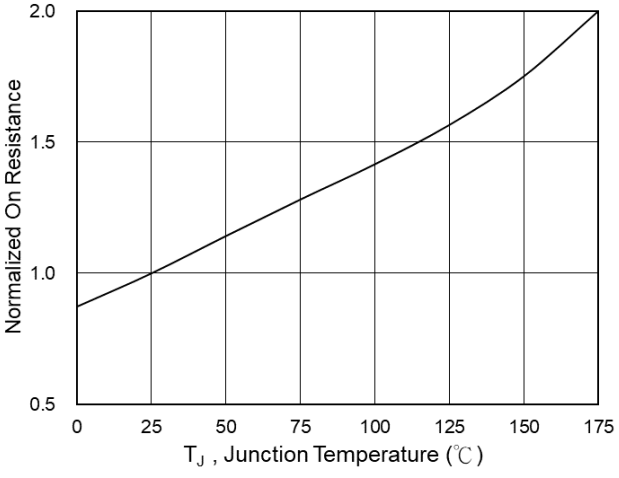


Fig.6 Normalized R_{DSON} vs T_J

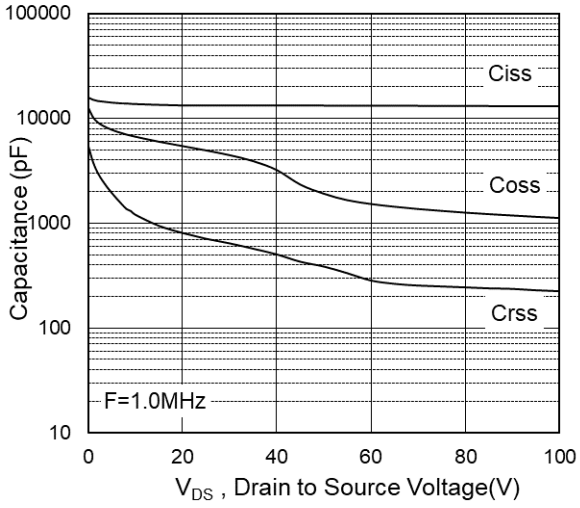


Fig.7 Capacitance

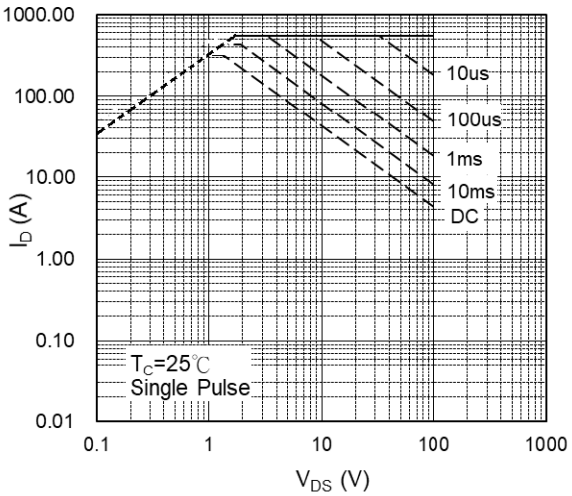


Fig.8 Safe Operating Area

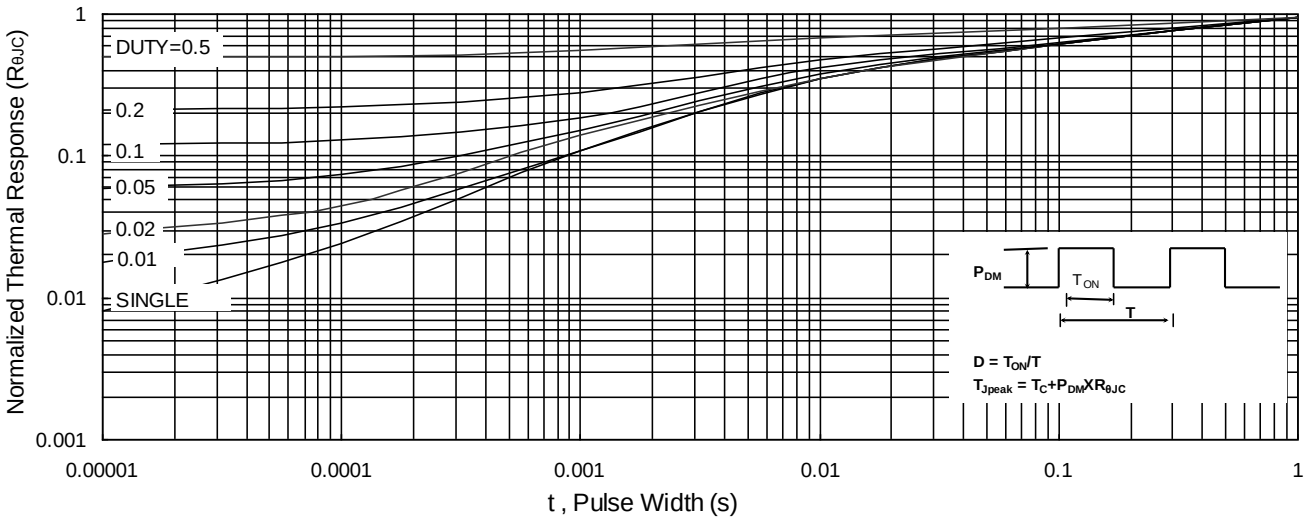


Fig.9 Normalized Maximum Transient Thermal Impedance

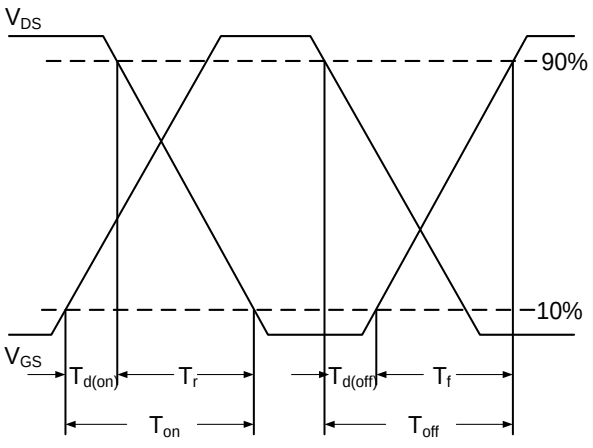


Fig.10 Switching Time Waveform

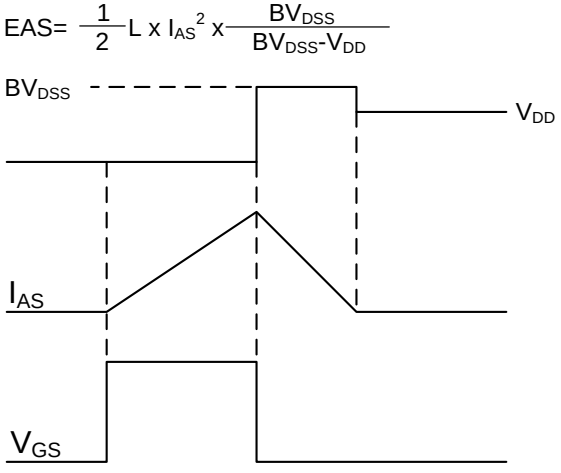


Fig.11 Unclamped Inductive Switching Waveform

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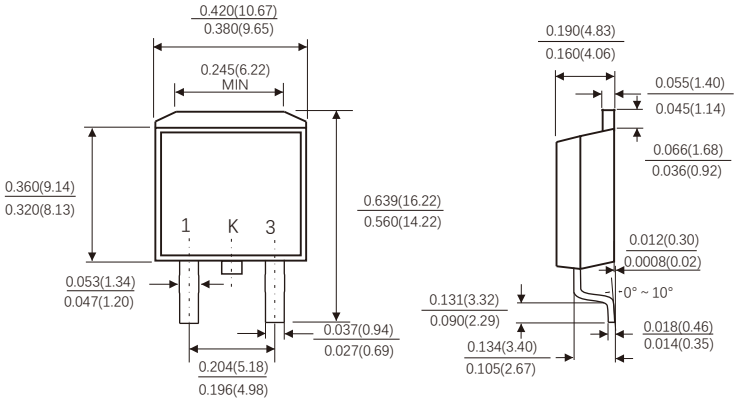
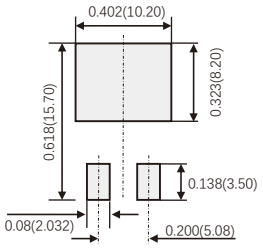


Suggested Pad Layout

(TO-263)



(设计者可参考推荐值根据焊接工艺
要求自行确定适合的焊盘尺寸)
(Designers can refer to the recommended
values according to the manufacturing process
requirements to determine the appropriate pad size)

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