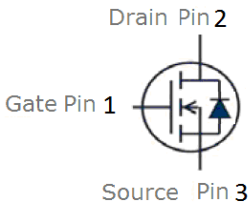
V_{DS}	80	V
$R_{DS(on),TYP}$@ V_{GS}=10V	13	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	15	mΩ
I_D	53	A

Features

- N-Channel，5V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- Fast Switching
- 100% Avalanche Tested
- Pb-free lead plating; RoHS compliant

Pb-Free RoHS HF Halogen-Free

TO-251-S



Part ID	Package Type	Marking	Tape and reel information
VSI018N08MS	TO-251-S	018N08M	80pcs/Tube

Maximum ratings, at T_j=25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		80	V
I_S	Diode continuous forward current	T_C=25°C	53	A
I_D	Continuous drain current @V_{GS}=10V	T_C=25°C	53	A
		T_C=100°C	33	A
I_{DM}	Pulse drain current tested ①	T_C=25°C	150	A
EAS	Avalanche energy, single pulsed ②		20	mJ
P_D	Maximum power dissipation	T_C=25°C	75	W
V_{GS}	Gate-Source voltage		±20	V
T_{STG} T_J	Storage and operating temperature range		-55 to 175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.0	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	42	°C/W

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_C = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	80	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=80V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125℃)	V_{DS}=80V,V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	2.0	3.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=10V, I_D=40A	--	13.0	18	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=4.5V, I_D=15A	--	15.0	20	mΩ
Dynamic Electrical Characteristics @ T_C= 25°C (unless otherwise stated)						
R_g	Gate Resistance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	2.4	--	Ω
C_{iss}	Input Capacitance			2185	--	pF
C_{oss}	Output Capacitance		--	165	--	pF
C_{rss}	Reverse Transfer Capacitance		--	135	--	pF
Q_g	Total Gate Charge	V_{DS}=40V,I_D=20A, V_{GS}=10V	--	36	--	nC
Q_{gs}	Gate-Source Charge		--	8	--	nC
Q_{gd}	Gate-Drain Charge		--	15	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=40V, I_D=10A, R_G=6.8Ω, V_{GS}=10V	--	18	--	nS
t_r	Turn-on Rise Time		--	14	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	28	--	nS
t_f	Turn-Off Fall Time		--	12	--	nS
Source- Drain Diode Characteristics@ T_C = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=30A,V_{GS}=0V	--	0.86	1.2	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=20A, V_{GS}=0V di/dt=500A/μs	--	26	--	nS
Q_{rr}	Reverse Recovery Charge			82		nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.1mH,R_G = 25Ω, I_{AS} = 20A, V_{GS} =10V. Part not recommended for use above this value

③ Pulse width ≤ 300μs; duty cycle≤ 2%.

Typical Characteristics

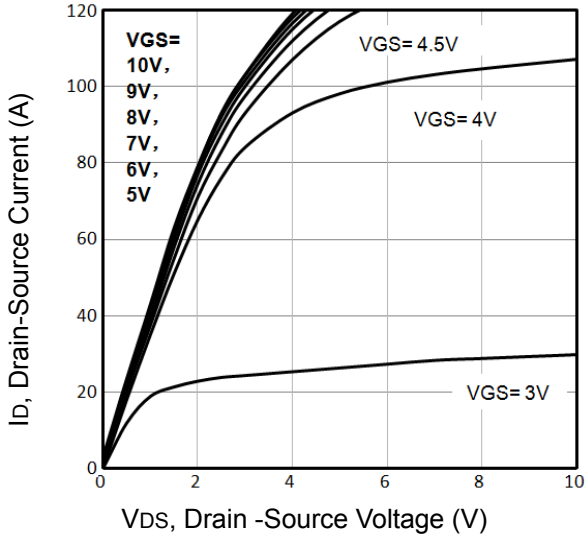


Fig1. Typical Output Characteristics

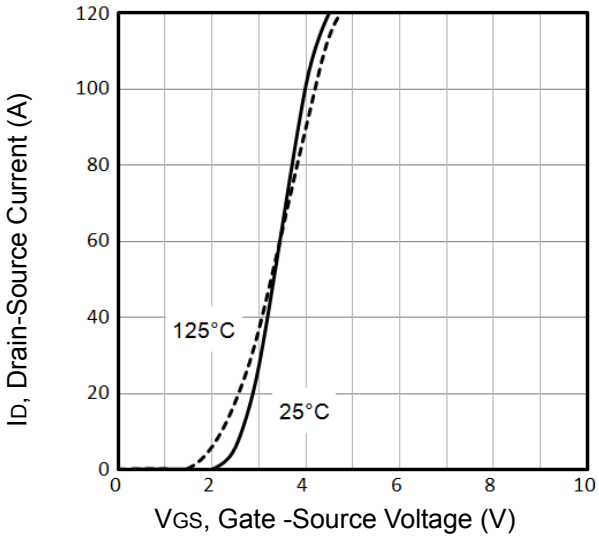


Fig2. Typical Transfer Characteristics

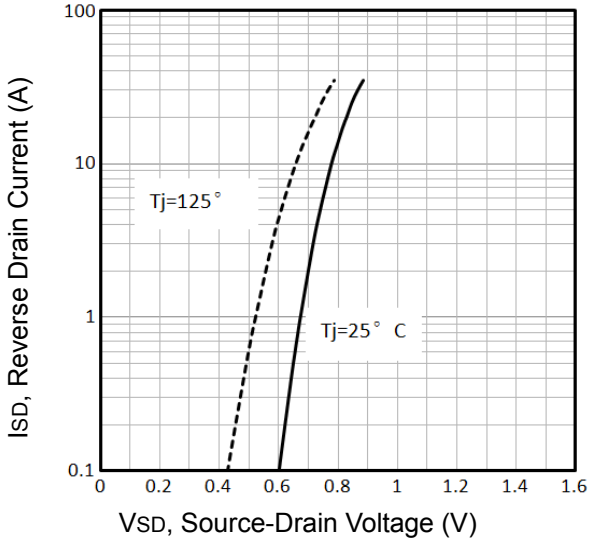


Fig3. Typical Source-Drain Diode Forward

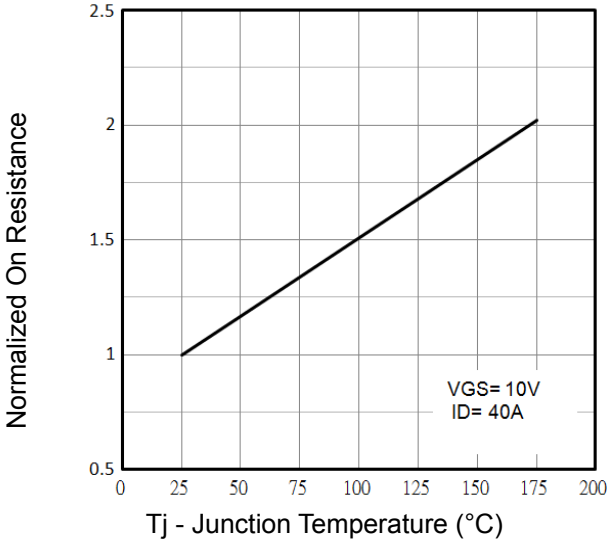


Fig4. Normalized On-Resistance Vs. Temperature

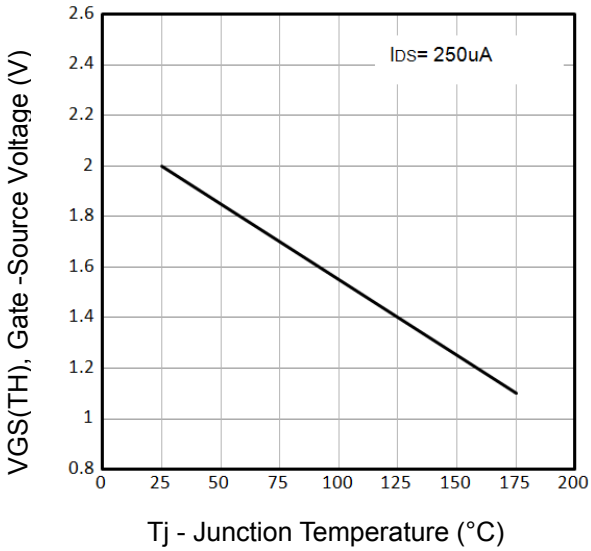


Fig5. Normalized Threshold Voltage Vs.

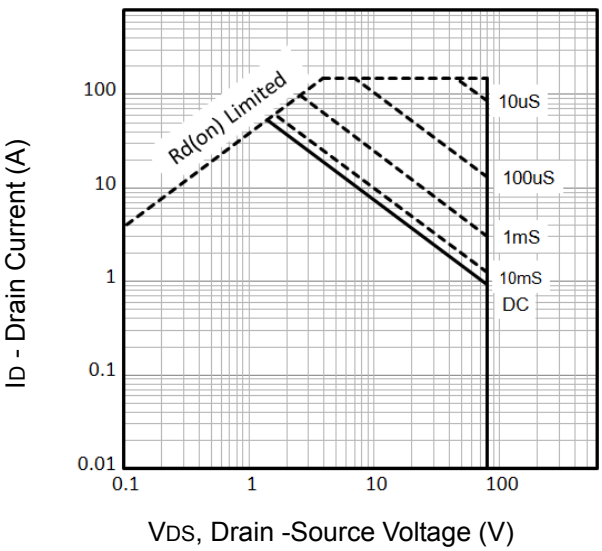


Fig6. Maximum Safe Operating Area

Typical Characteristics

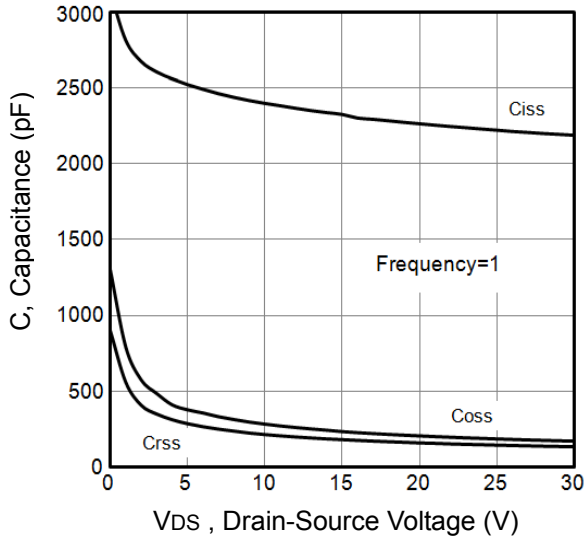


Fig7. Typical Capacitance Vs.Drain-Source Voltage

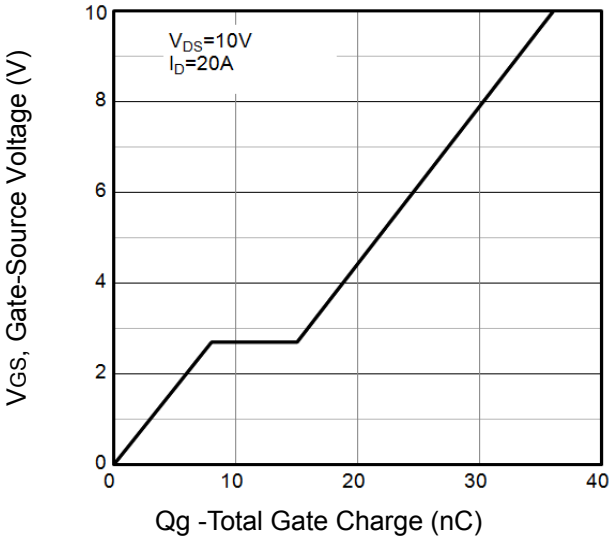


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

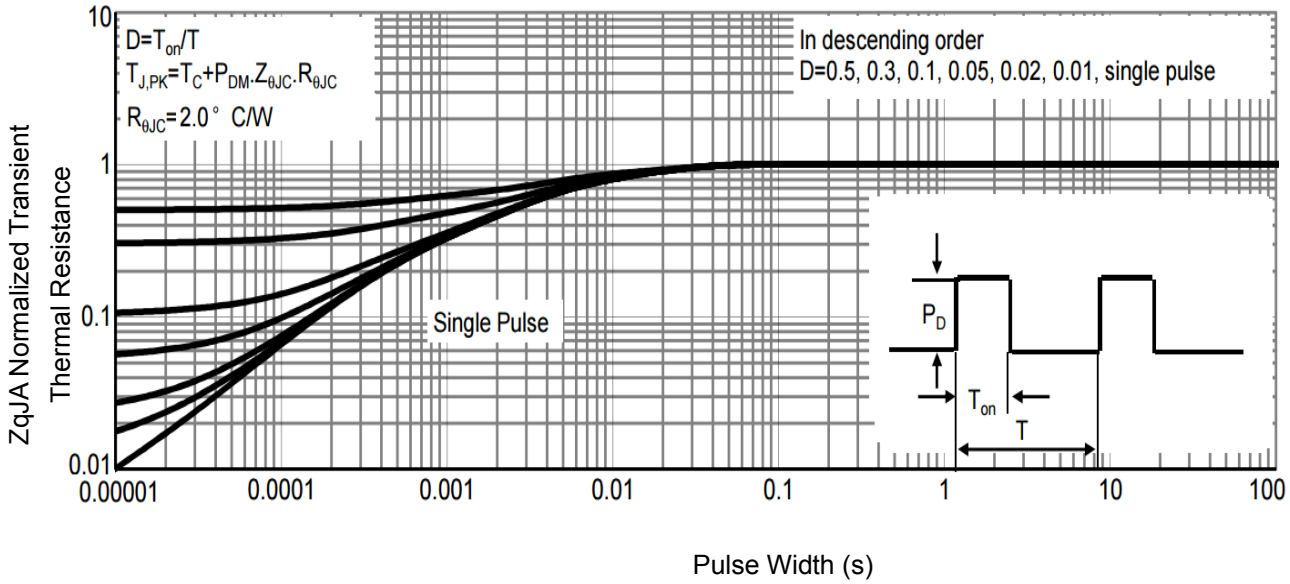


Fig9. Normalized Maximum Transient Thermal

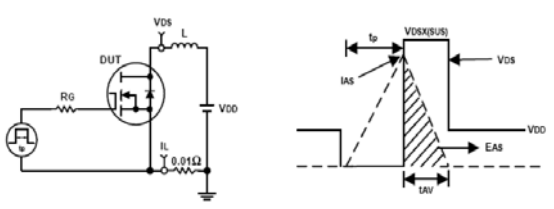


Fig10. Unclamped Inductive Test Circuit and waveforms

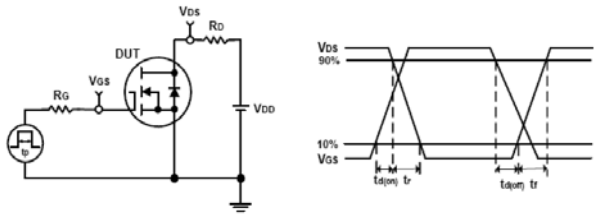
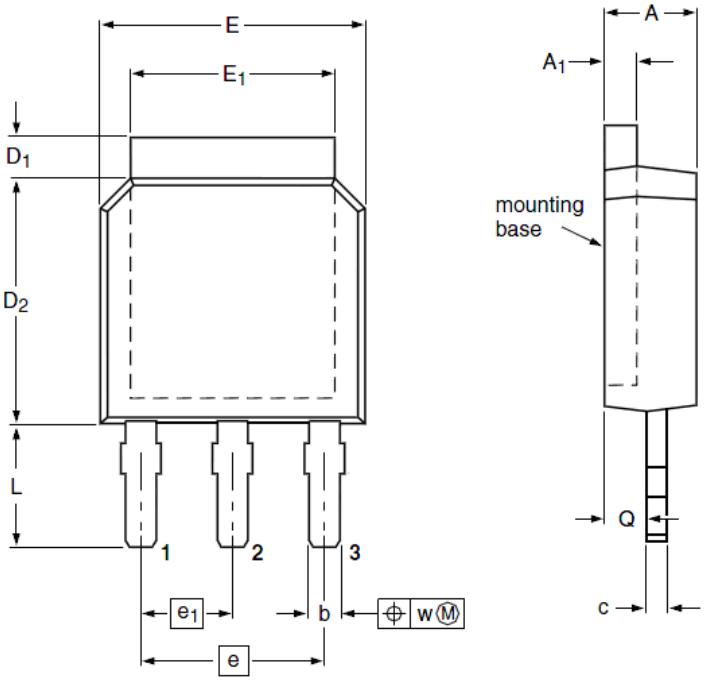


Fig11. Switching Time Test Circuit and waveforms

TO-251-S Package Outline Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	2.10	2.30	2.50	**A_1**	0.40	0.48	0.60
b	0.65	0.75	0.85	**c**	0.40	0.50	0.60
D_1	0.65	0.90	1.20	**D_2**	5.90	6.08	6.25
E	6.35	6.58	6.80	**E_1**	5.10	5.28	5.50
e	--	2.28	--	**e_1**	--	4.57	--
L	4.75	5.15	5.85	**Q**	0.80	0.90	1.08
w	--	0.20	--				

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