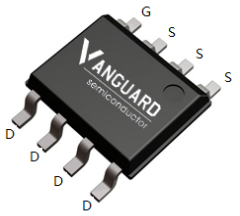
V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	6.6	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5V	8.8	mΩ
I_D	15	A

Features

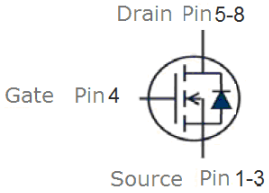
- N-Channel，5V Logic Level Control
- Enhancement mode
- Very low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- VitoMOS® Ⅱ Technology
- 100% Avalanche Tested
- Pb-free lead plating；RoHS compliant

Pb-Free RoHS HF Halogen-Free

SOP8



Part ID	Package Type	Marking	Tape and reel information
VSO009N10MS	SOP8	009N10M	3000pcs/Reel



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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		100	V
I_S	Diode continuous forward current	T_A=25°C	3.1	A
I_D	Continuous drain current@VGS=10V	T_A=25°C	15	A
		T_A=100°C	9.5	A
I_{DM}	Pulse drain current tested ①	T_A=25°C	60	A
EAS	Avalanche energy, single pulsed ②		20	mJ
P_D	Maximum power dissipation	T_A=25°C	3.1	W
VGS	Gate-Source voltage		±20	V
T_{STG} T_J	Storage and operating temperature range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	25	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	40	°C/W

Typical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_A = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=100V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=100V,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=10A	--	6.6	9.0	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance③	V_{GS}=4.5V, I_D=5A	--	8.8	12	mΩ
Dynamic Electrical Characteristics @ T_A=25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz	--	2760	--	pF
C_{oss}	Output Capacitance		--	1310	--	pF
C_{rss}	Reverse Transfer Capacitance		--	35	--	pF
R_g	Gate Resistance	f=1MHz	--	1.6	--	Ω
Q_g	Total Gate Charge	V_{DS}=50V,I_D=10A, V_{GS}=10V	--	69	--	nC
Q_{gs}	Gate-Source Charge		--	11	--	nC
Q_{gd}	Gate-Drain Charge		--	10	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=50V, I_D=10A, R_G=6.8Ω, V_{GS}=10V	--	12	--	nS
t_r	Turn-on Rise Time		--	8	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	60	--	nS
t_f	Turn-Off Fall Time		--	14	--	nS
Source- Drain Diode Characteristics@ T_A=25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	I_{SD}=10A,V_{GS}=0V	--	0.79	1.0	V
t_{rr}	Reverse Recovery Time	T_j=25℃,I_{sd}=10A, V_{GS}=0V di/dt=200A/μs	--	38	--	nS
Q_{rr}	Reverse Recovery Charge			175		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

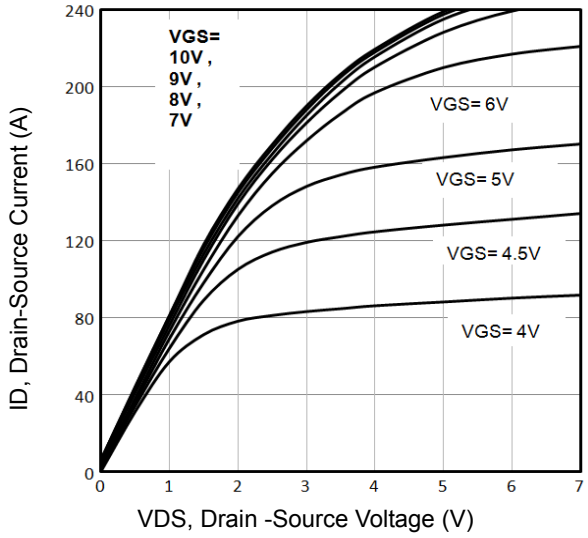


Fig1. Typical Output Characteristics

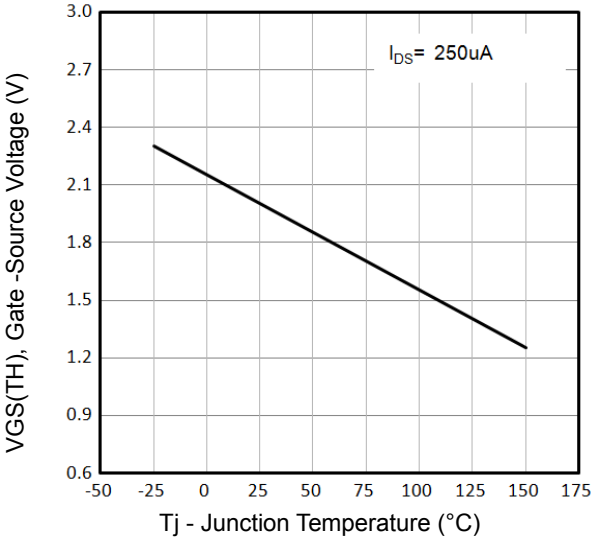


Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs. Tj

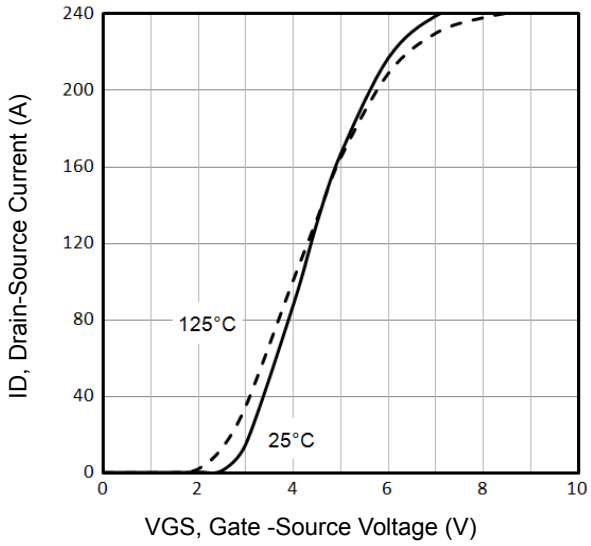


Fig3. Typical Transfer Characteristics

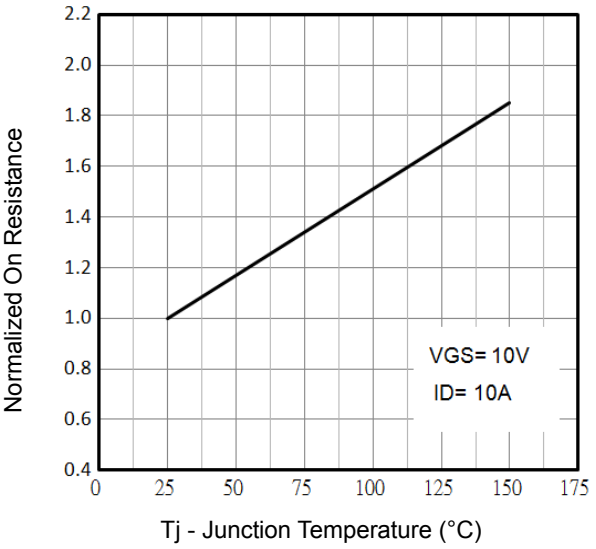


Fig4. Normalized On-Resistance Vs. Tj

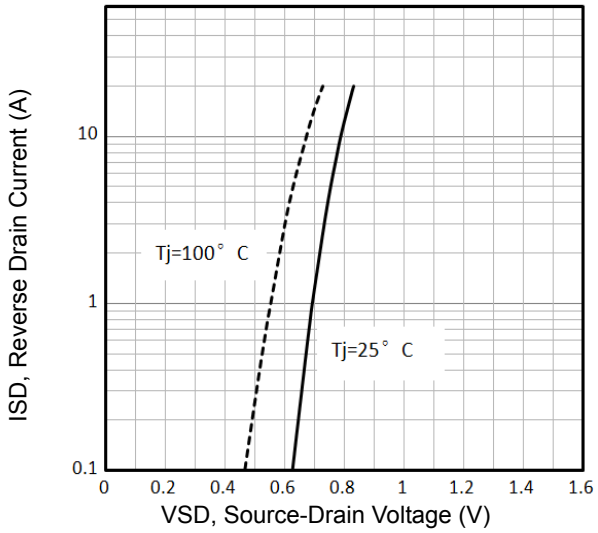


Fig5. Typical Source-Drain Diode Forward Voltage

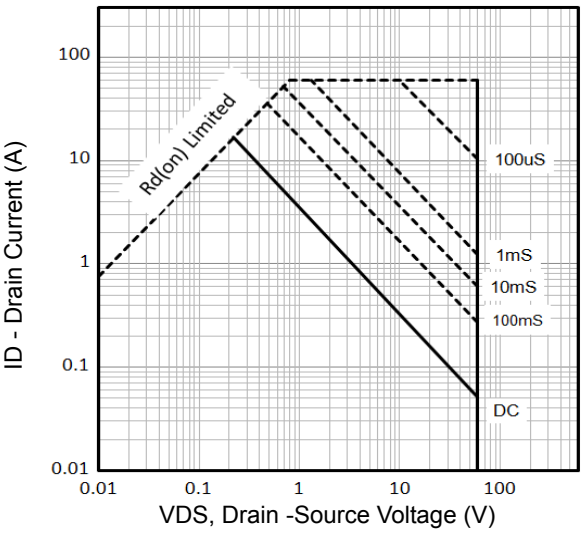


Fig6. Maximum Safe Operating Area

Typical Characteristics

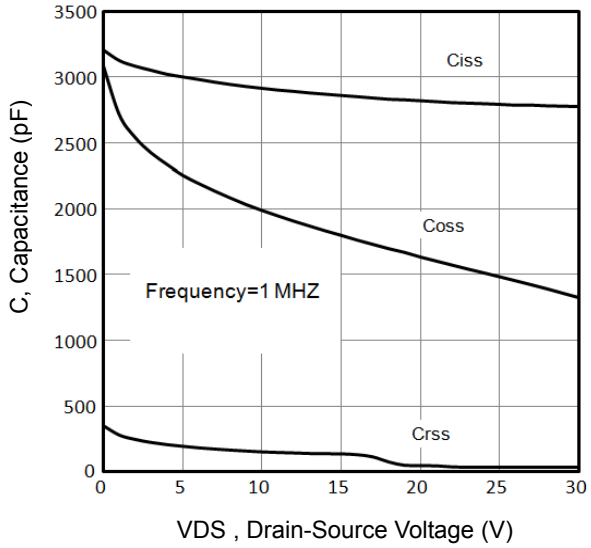


Fig7. Typical Capacitance Vs.Drain-Source Voltage

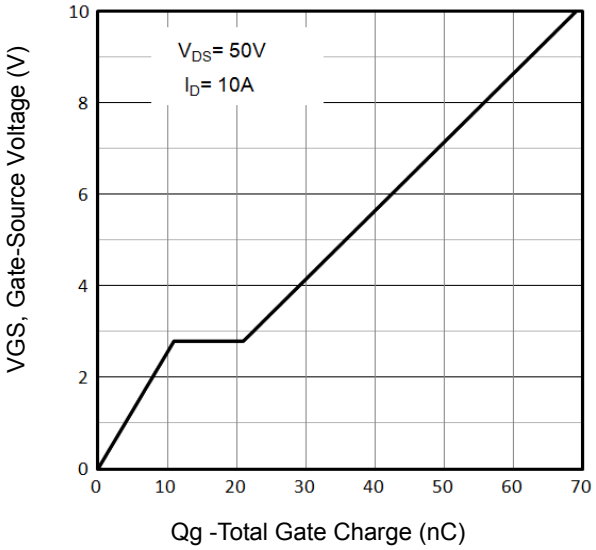


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

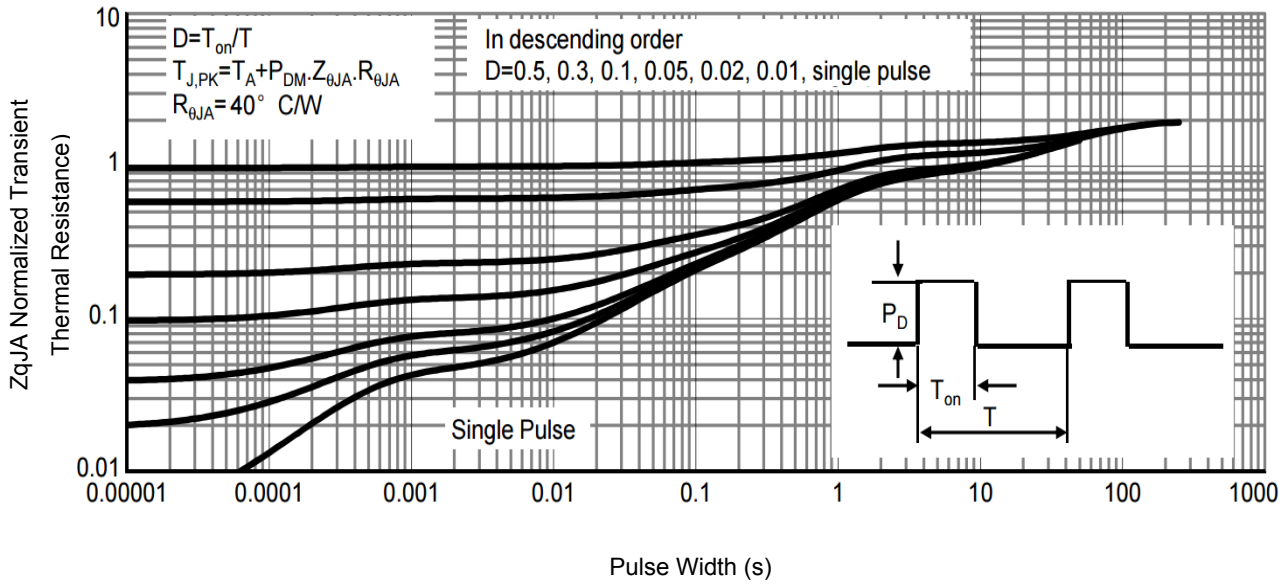


Fig9 . Normalized Maximum Transient Thermal Impedance

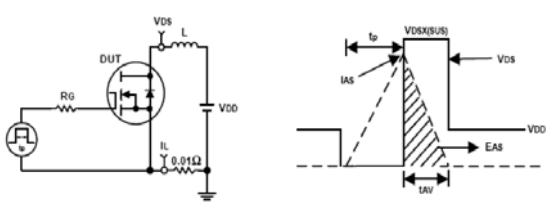


Fig10. Unclamped Inductive Test Circuit and waveforms

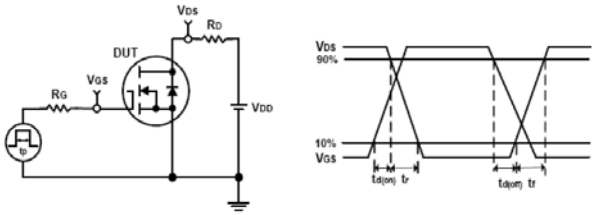
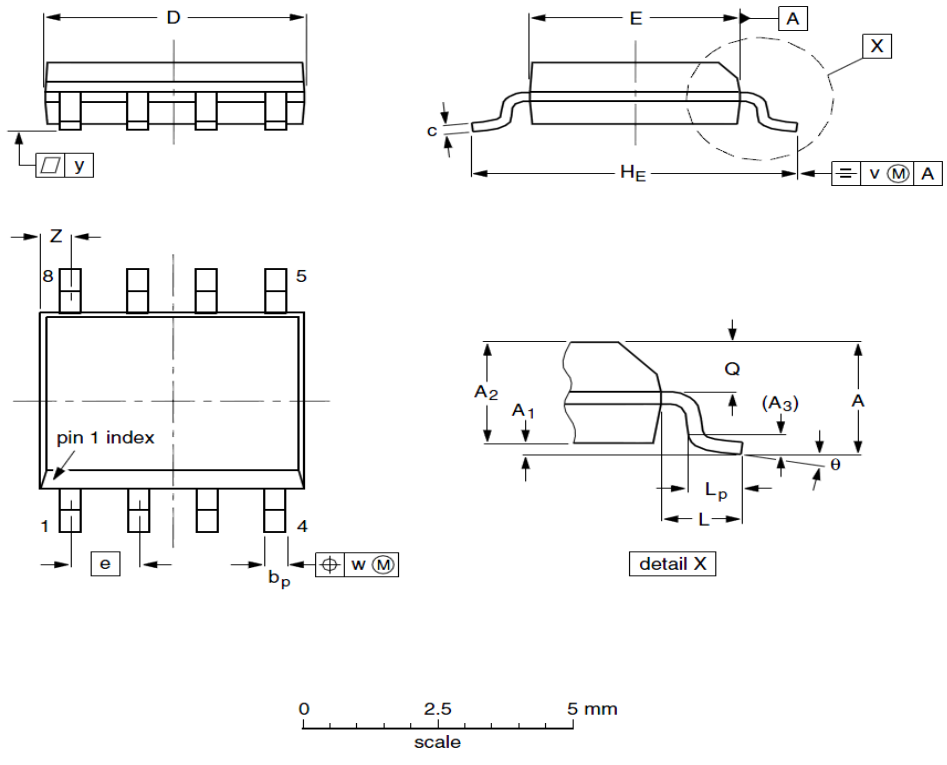


Fig11. Switching Time Test Circuit and waveforms

SOP8 Package Outline



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	--	1.75	--	**A_1**	0.10	0.18	0.25
A_2	1.25	1.35	1.45	**A_3**	--	0.25	--
b_p	0.36	0.42	0.49	**c**	0.19	0.22	0.25
D	4.80	4.92	5.00	**E**	3.80	3.90	4.00
e	--	1.27	--	**H_E**	5.80	5.98	6.20
L	--	1.05	--	**L_p**	0.40	0.68	1.00
Q	0.60	0.65	0.70	**v**	--	0.25	--
w	--	0.25	--	**y**	--	0.10	--
Z	0.30	0.50	0.70	**θ**	0°		8°

Customer Service

Sales and Service:

sales@vgsemi.com

Vanguard Semiconductor CO., LTD

TEL: (86-755) -26902410

FAX: (86-755) -26907027

WEB: **www.vgsemi.com**