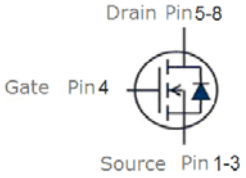
Features

- N-Channel
- Enhancement mode
- Low on-resistance $R_{DS(on)}$ @ V_{GS}=4.5 V
- Fast Switching
- Pb-free lead plating; RoHS compliant

V_{DS}	30	V
$R_{DS(on),Typ}$ @ V_{GS}=10 V	17	mΩ
$R_{DS(on),Typ}$ @ V_{GS}=4.5 V	22	mΩ
I_D	8	A

Pb-Free RoHS HF Halogen-Free

SOP8



Part ID	Package Type	Marking	Tape and reel information
VSO018N03MS	SOP8	018N03M	3000pcs/reel

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

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		30	V
I_D	Continuous drain current@V_{GS}=10V	T_C=25°C	8	A
		T_C=100°C	5.2	A
I_{DM}	Pulse drain current tested ①	T_C=25°C	32	A
P_D	Maximum power dissipation	T_C=25°C	2	W
V_{GS}	Gate-Source voltage		±20	V
MSL			Level 3	
T_{STG}	Storage and operating temperature range		-55 to 150	°C

Thermal characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.55	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current (Tc=25℃)	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current (Tc=125℃)	V_{DS}=30V,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	1.8	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=5A	--	17	20	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=2A	--	22	25	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	--	445	--	pF
C_{oss}	Output Capacitance		--	75	--	pF
C_{rss}	Reverse Transfer Capacitance		--	40	--	pF
Q_g	Total Gate Charge	V_{DS}=20V,I_D=6A, V_{GS}=10V	--	15	--	nC
Q_{gs}	GateSource Charge		--	4.5	--	nC
Q_{gd}	GateDrain Charge		--	5.0	--	nC
Switching Characteristics						
$t_{d(on)}$	Turnon Delay Time	V_{DD}=20V, I_D=6A, R_G=3.3Ω, V_{GS}=10V	--	15	--	nS
t_r	Turnon Rise Time		--	19	--	nS
$t_{d(off)}$	TurnOff Delay Time		-	30	--	nS
t_f	TurnOff Fall Time		--	13	--	nS
Source Drain Diode Characteristics						
I_{SD}	Sourcedrain current(Body Diode)	T_c=25℃	7.5①	--	--	A
V_{SD}	Forward on voltage	T_j=25℃,I_{SD}=5A, V_{GS}=0V	--	0.82	1.3	V

Notes:

① Pulse test ; Pulse width≤300μs, duty cycle≤2%.

② Pulse width limited by maximum allowable junction temperature

Typical Characteristics

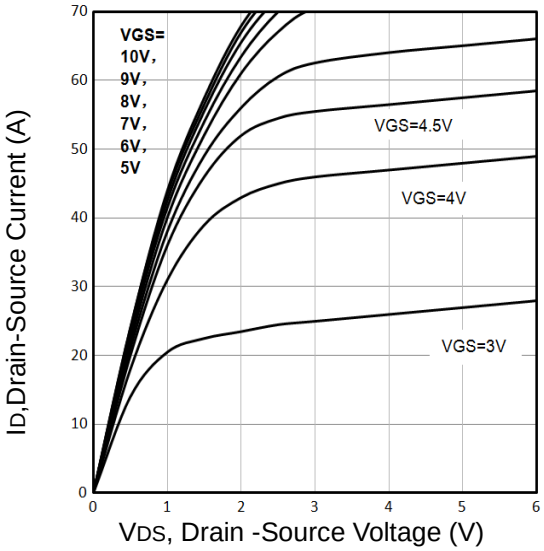


Fig1. Typical Output Characteristics

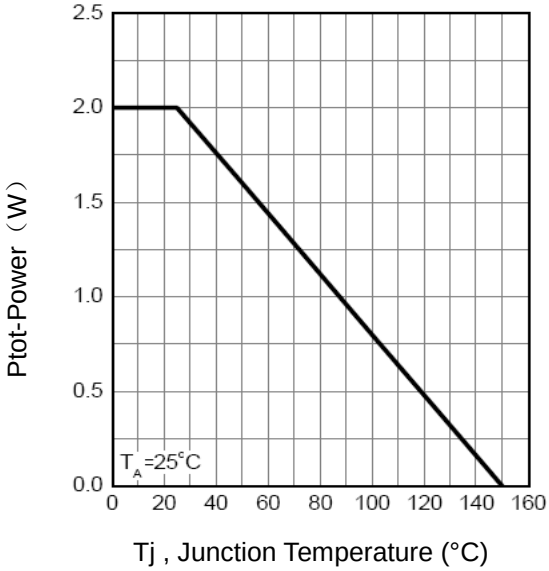


Fig2. Power Dissipation

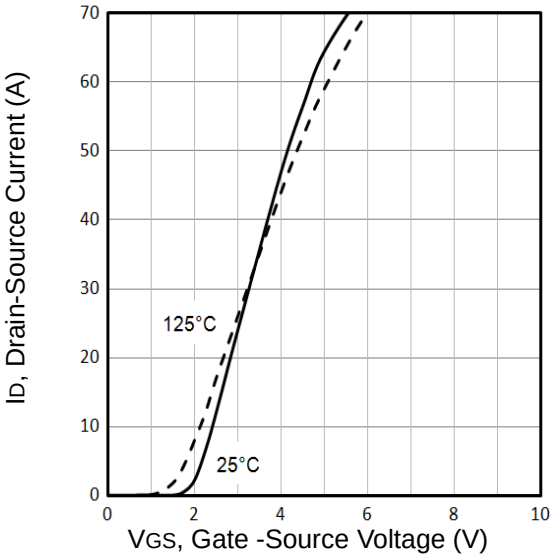


Fig3. Typical Transfer Characteristics

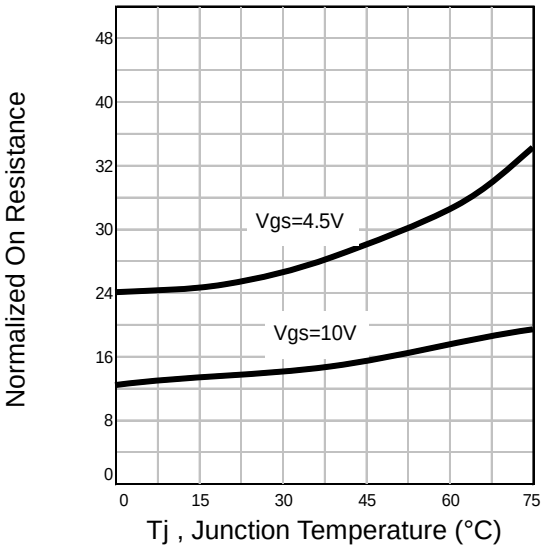


Fig4. Normalized On-Resistance Vs. Temperature

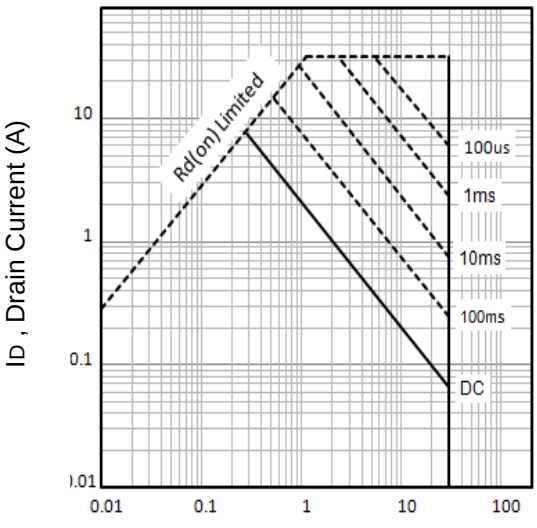


Fig5. Maximum Safe Operating Area

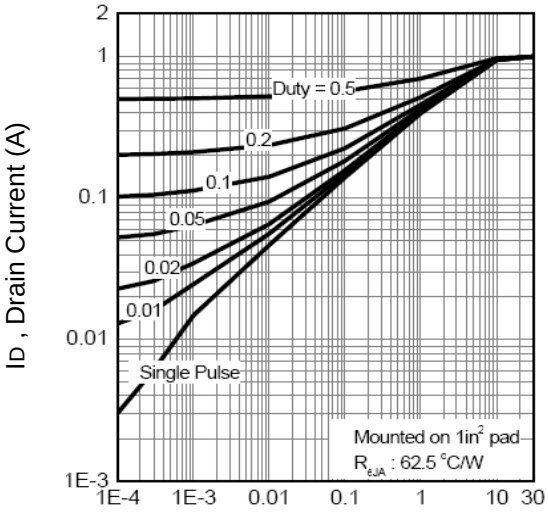


Fig6. **Thermal Transient Impedance**

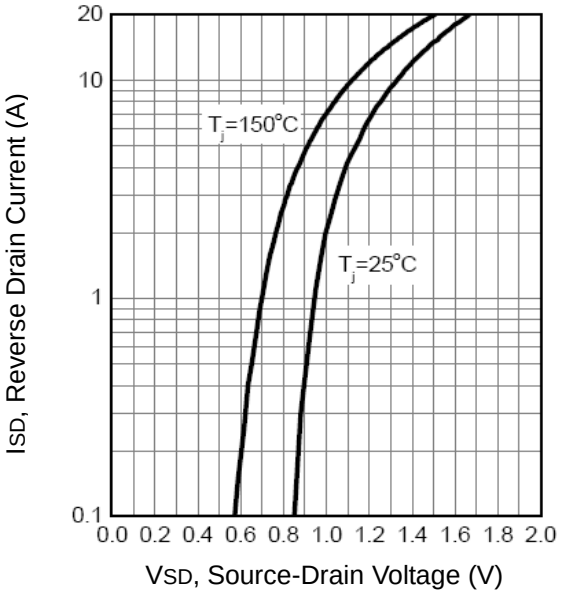


Fig7. Typical Source-Drain Diode Forward Voltage

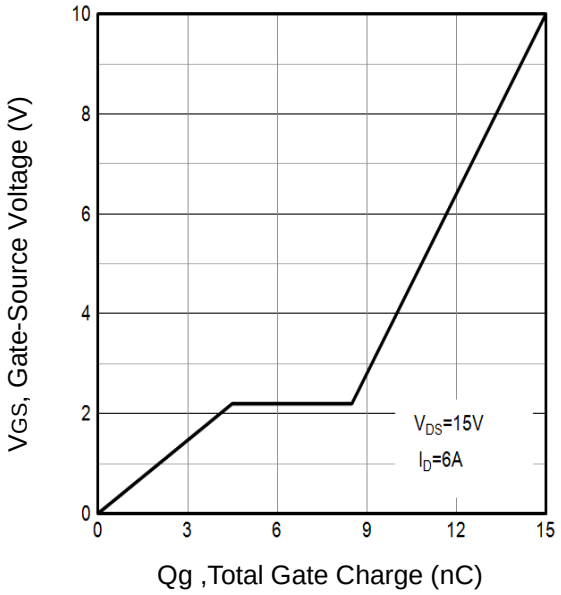


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

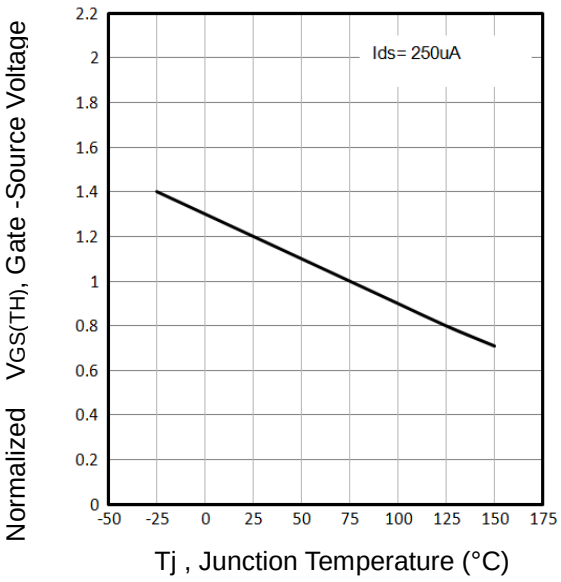


Fig9. Threshold Voltage Vs. Temperature

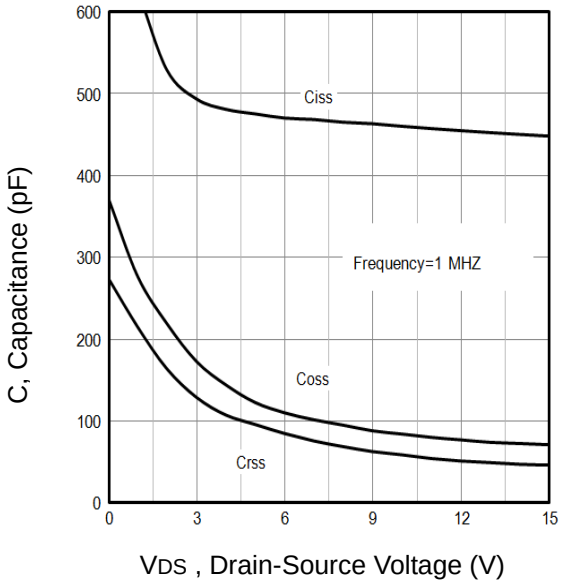


Fig10. Typical Capacitance Vs.Drain-Source Voltage

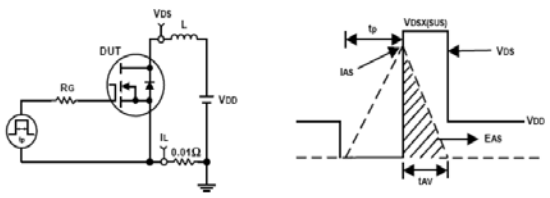


Fig11. Unclamped Inductive Test Circuit and waveforms

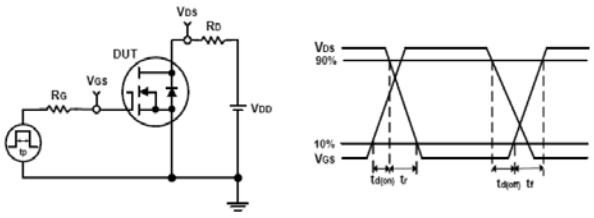
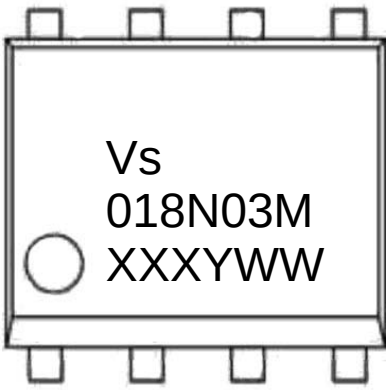


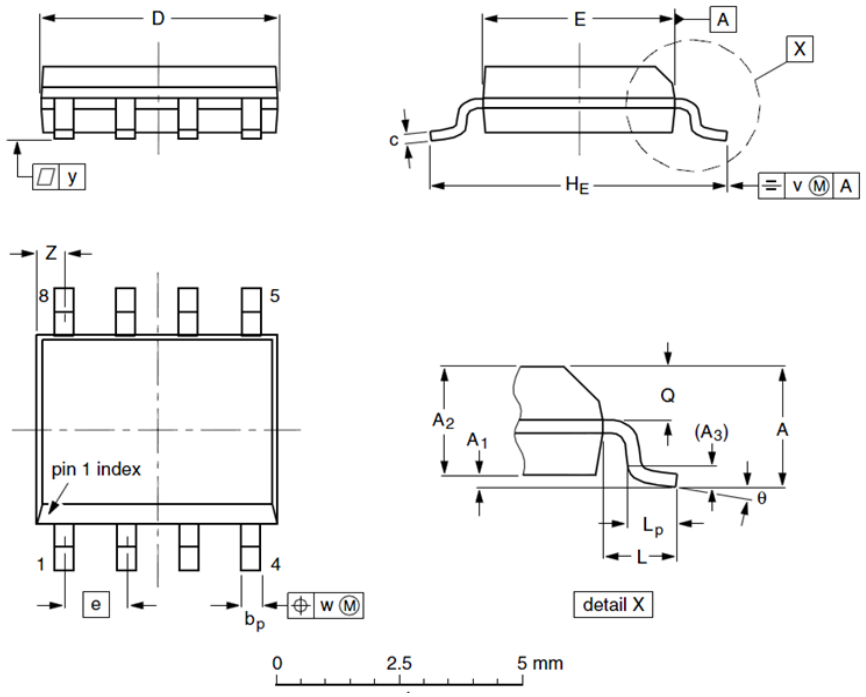
Fig12. Switching Time Test Circuit and waveforms

Marking Information



1st line：Company Code（Vs），Company Logo
2nd line：Part Number（018N03M）
3rd line：Date code （XXXYWW）
XXX：Wafer Lot Number
Y：Year Code，e.g. E means 2017
WW：Week Code

SOP8 Package Outline Data



Label	Dimensions (unit: mm)		
	Min	Typ	Max
A	--	--	1.75
A_1	0.10	0.18	0.25
A_2	1.25	1.35	1.50
A_3	--	0.25	--
b_p	0.36	0.42	0.51
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	6.00	6.20
L	--	1.05	--
L_p	0.40	0.68	1.00
Q	0.60	0.65	0.725
v	--	0.25	--
w	--	0.25	--
y	--	0.10	--
Z	0.30	0.50	0.70
θ	0°		8°

Notes:

1. Follow JEDEC MS-012.
2. Dimension "D" does NOT include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.15mm per side.
3. Dimension "E" does NOT include interlead flash or protrusion. Interlead flash or protrusion shall not exceed 0.25mm per side.
4. Dimension "bp" does NOT include dambar protrusion. Allowable dambar protrusion shall be 0.1mm total in excess of "bp" dimension at maximum material condition. The dambar cannot be located on the lower radius of the foot.

Customer Service

Sales and Service:

sales@vgsemi.com

Vanguard Semiconductor CO., LTD

TEL: (86-755) -26902410

FAX: (86-755) -26907027

WEB: www.vgsemi.com