

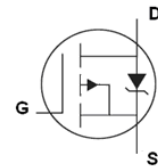
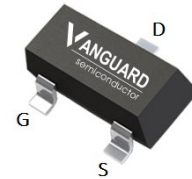
Features

- P-Channel, -2.5V Logic Level Control
- Enhancement mode
- Low on-resistance $R_{DS(on)}$ @ $V_{GS}=-2.5V$
- Fast Switching
- Pb-free lead plating; RoHS compliant; Halogen Free

V_{DS}	-20	V
$R_{DS(on),TYP} @ V_{GS}=-4.5V$	25	m Ω
$R_{DS(on),TYP} @ V_{GS}=-2.5V$	34	m Ω
I_D	-6	A



SOT23-3L



Part ID	Package Type	Marking	Tape and reel information
VS2522AL	SOT23-3L	VS14	3000pcs/reel

Maximum ratings, at $T_A=25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	-20	V
V_{GS}	Gate-Source voltage	± 12	V
I_S	Diode continuous forward current	$T_A=25^\circ\text{C}$ -1	A
I_D	Continuous drain current @ $V_{GS}=-4.5V$	$T_A=25^\circ\text{C}$ -6	A
		$T_A=100^\circ\text{C}$ -3.7	A
I_{DM}	Pulse drain current tested ①	$T_A=25^\circ\text{C}$ -24	A
P_D	Maximum power dissipation	$T_A=25^\circ\text{C}$ 1.25	W
MSL		Level 3	
T_{STG}, T_J	Storage and junction temperature range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JL}$	Thermal Resistance, Junction-to-Lead	60	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	$^\circ\text{C/W}$

Typical Electrical Characteristics

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	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _j =25°C)	V _{DS} =-20V, V _{GS} =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(T _j =125°C)	V _{DS} =-20V, V _{GS} =0V	--	--	-100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.6	-1	V
R _{DS(ON)}	Drain-Source On-State Resistance ②	V _{GS} =-4.5V, I _D =-4A	--	25	32	mΩ
		V _{GS} =-2.5V, I _D =-2A	--	34	44	mΩ
Dynamic Electrical Characteristics @ T_j= 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	1100	1630	2100	pF
C _{oss}	Output Capacitance		90	170	250	pF
C _{rss}	Reverse Transfer Capacitance		80	140	200	pF
R _g	Gate Resistance	f=1MHz	--	8.4	--	Ω
Q _g	Total Gate Charge	V _{DS} =-10V, I _D =-4A, V _{GS} =-4.5V	--	20	--	nC
Q _{gs}	Gate-Source Charge		--	7	--	nC
Q _{gd}	Gate-Drain Charge		--	7.5	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =-10 V, I _D =-4A, R _G =3Ω, V _{GS} =-4.5V	--	0.75	--	μs
t _r	Turn-on Rise Time		--	1.2	--	μs
t _{d(off)}	Turn-Off Delay Time		--	4.1	--	μs
t _f	Turn-Off Fall Time		--	3.9	--	μs
Source- Drain Diode Characteristics @ T_j= 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _{SD} =-4A, V _{GS} =0V	--	-0.8	-1.2	V
t _{rr}	Reverse Recovery Time	T _j =25°C, I _{SD} =-4A, V _{GS} =0V	--	18	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=-100A/μs		11		nC

NOTE:

- ① Repetitive rating; pulse width limited by max junction temperature.
- ② Pulse width ≤ 300μs; duty cycles ≤ 2%.

Typical Characteristics

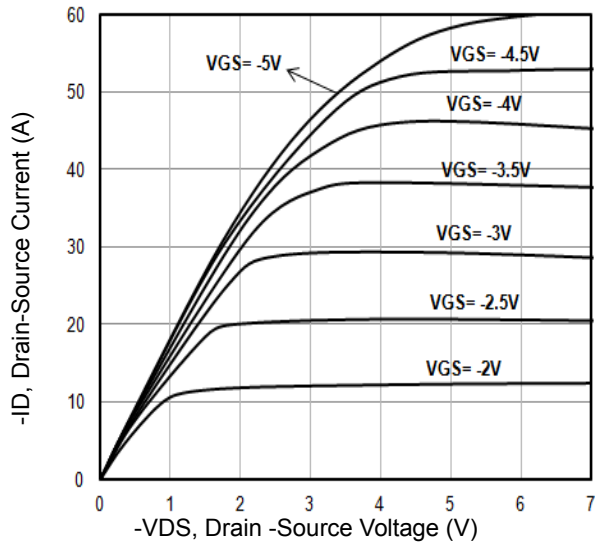


Fig1. Typical Output Characteristics

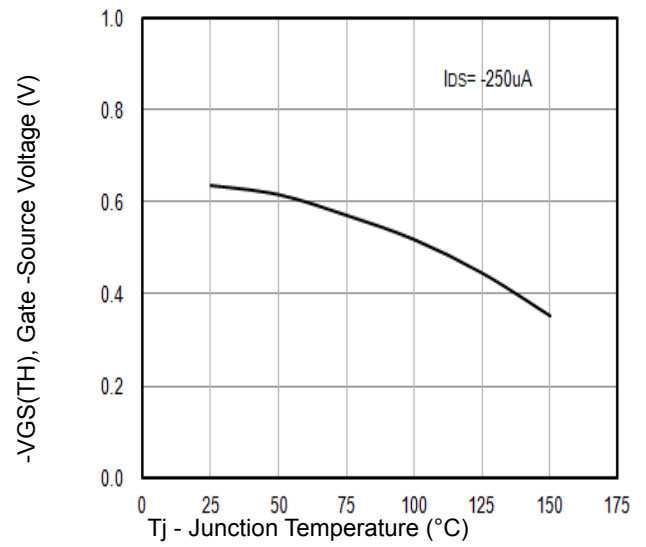


Fig2. -VGS(TH) Gate -Source Voltage Vs. Tj

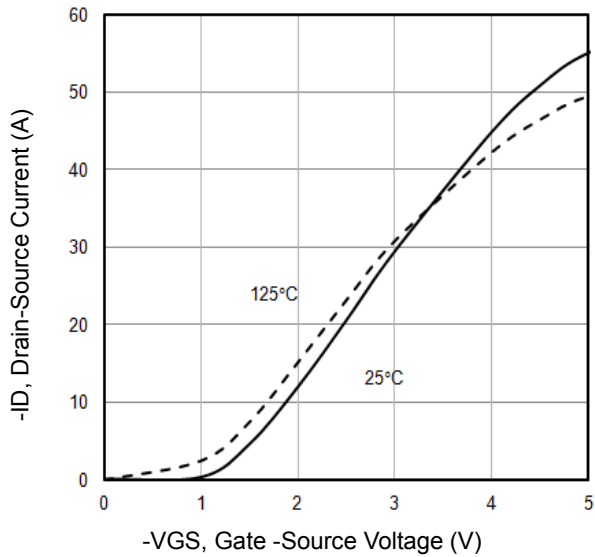


Fig3. Typical Transfer Characteristics

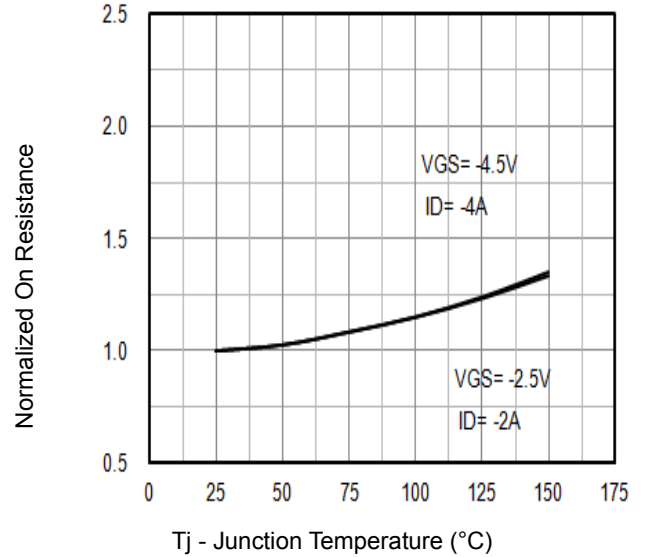


Fig4. Normalized On-Resistance Vs. Tj

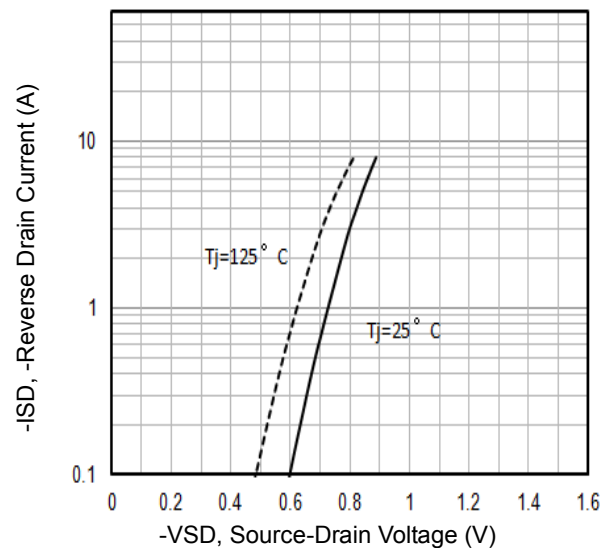


Fig5. Typical Source-Drain Diode Forward Voltage

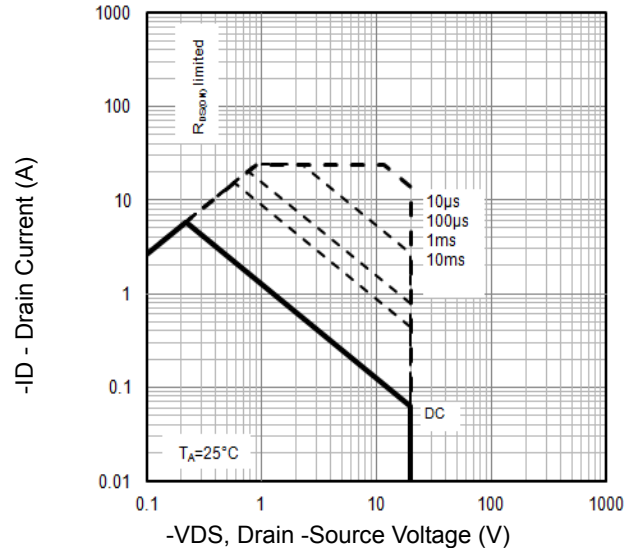


Fig6. Maximum Safe Operating Area

Typical Characteristics

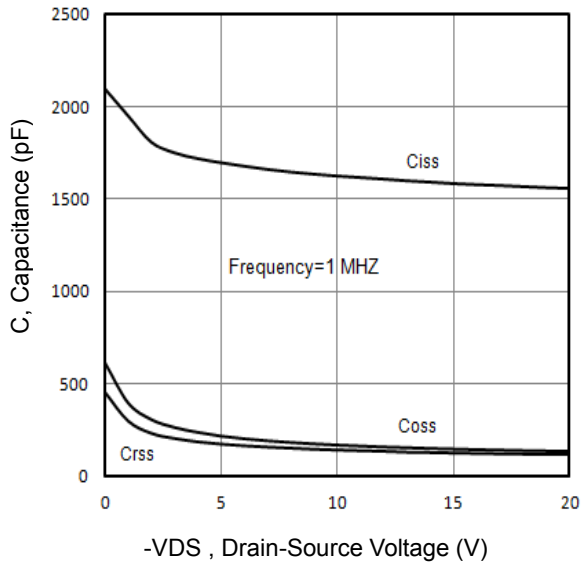


Fig7. Typical Capacitance Vs.Drain-Source Voltage

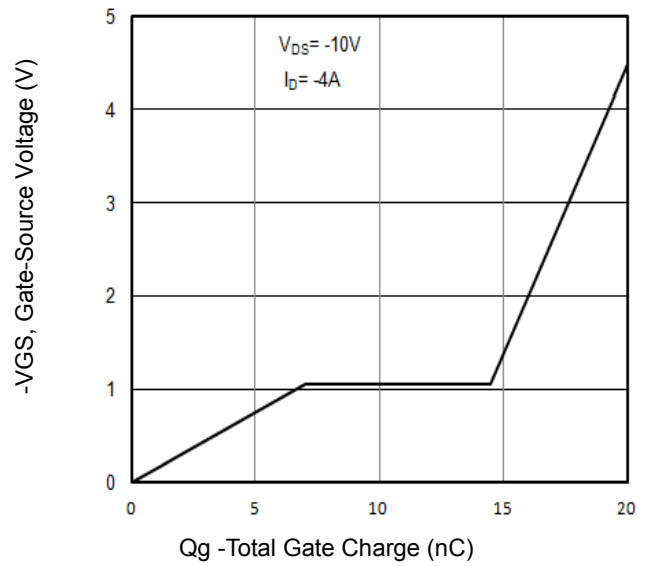


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

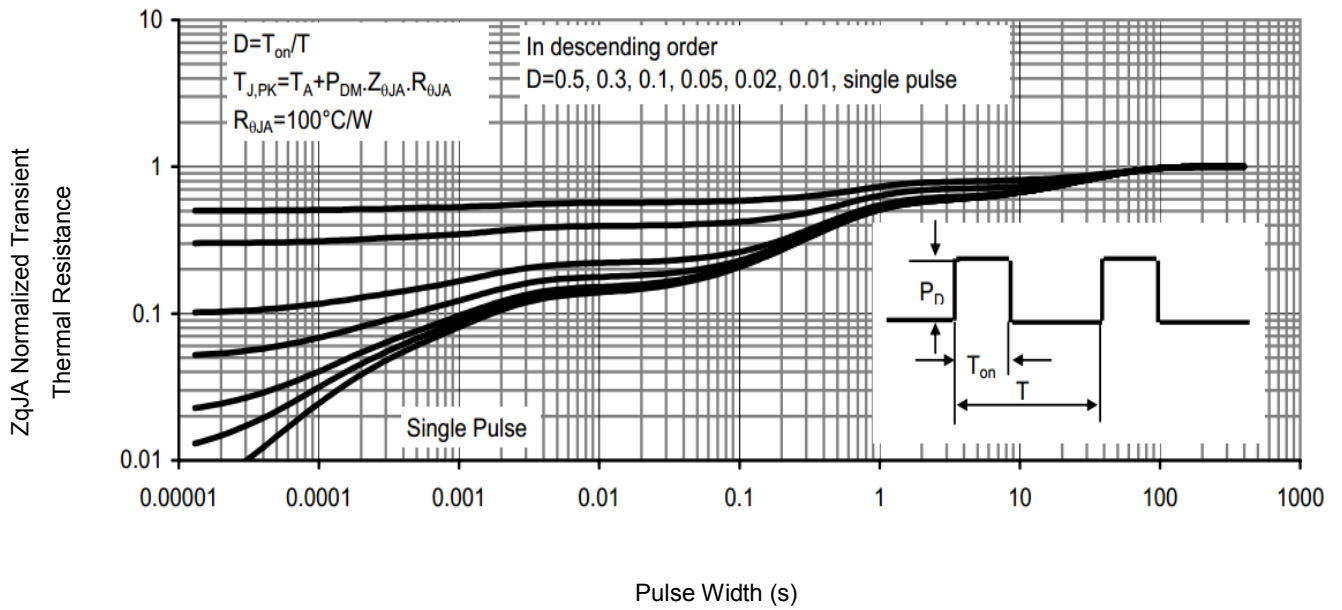


Fig9. Normalized Maximum Transient Thermal Impedance

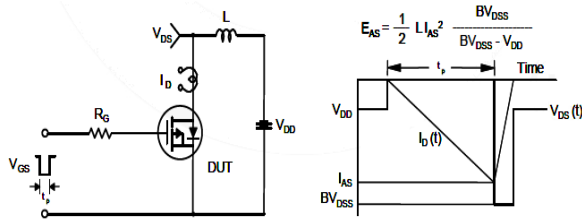


Fig10. Unclamped Inductive Test Circuit and waveforms

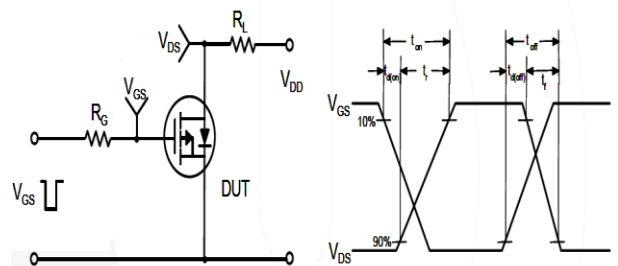
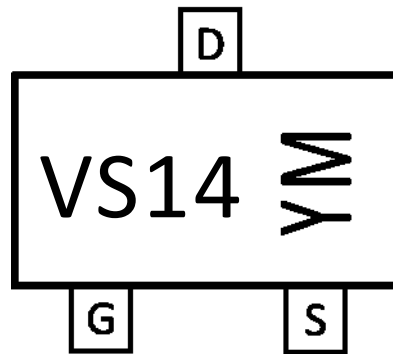


Fig11. Switching Time Test Circuit and waveforms

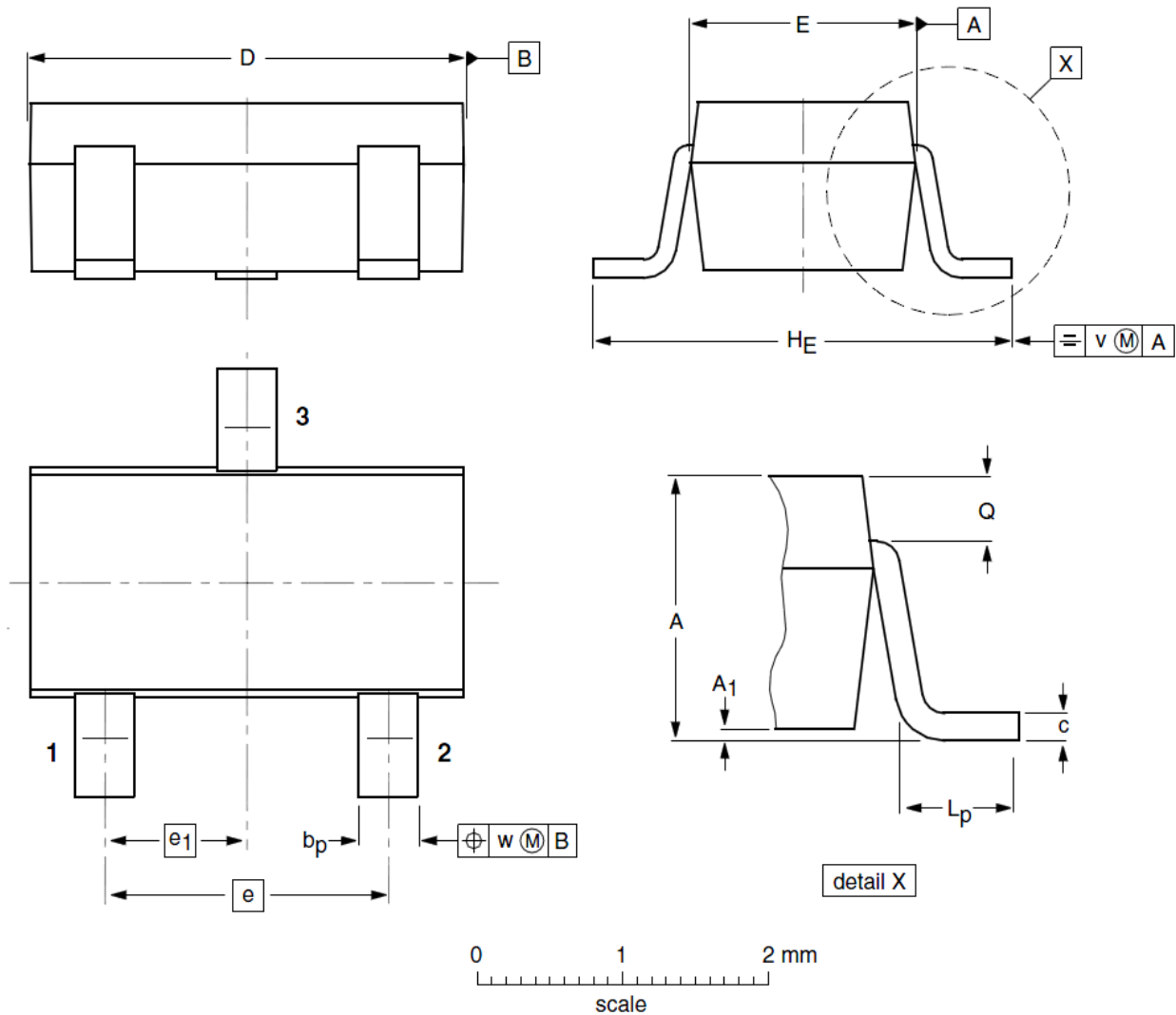
Marking Information



VS14: Part Number

YM: Date Code, Y means assembly year, M means assembly month

SOT23-3L Package Outline Data



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.90	1.07	1.25
A ₁	0.01	0.06	0.10
b _p	0.30	0.35	0.50
c	0.10	0.15	0.20
D	2.70	2.92	3.10
E	1.30	1.60	1.70
e	--	1.90	--
e ₁	--	0.95	--
H _E	2.50	2.80	3.00
L _p	0.30	0.40	0.60
Q	0.23	0.29	0.33
v	--	0.20	--
w	--	0.20	--

Customer Service

Sales and Service:
sales@vgsemi.com

Vanguard Semiconductor CO., LTD
TEL: (86-755) -26902410
FAX: (86-755) -26907027
WEB: www.vgsemi.com