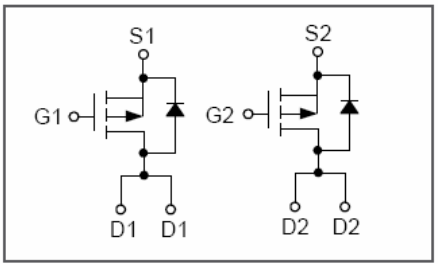
Features

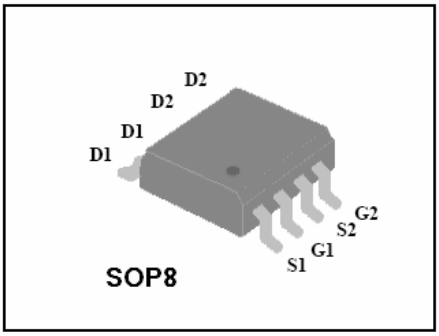
- ♦BVDSS (typ.)=-30V
- ♦Ron(typ.)=18mΩ @VGS=-10V
- ♦Ron(typ.)=28mΩ @VGS=-4.5V
- ♦Low On-Resistance
- ♦Fast Switching
- ♦Lead-Free, Hg-Free,Rohs Compliant

Pin Description



Description

VS4805DS designed by the trench processing techniques to achieve extremely low on-resistance. And fast switching speed and improved transfer effective . These features combine to make this design an extremely efficient and reliable device for variety of DC-DC applications.



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-30	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	-7.8①	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	T_C=25°C	-30②	A
I_D	Continuous Drain Current(V_{GS}=-10V)	T_C=25°C	-7.8①	A
		T_C=100°C	-5.5	
P_D	Maximum Power Dissipation	T_C=25°C	2	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62.5	°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	-1.0	-1.6	-2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-8A	--	18	28	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-4.5V, I_D=-4A	--	28	38	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1MHz	--	718	--	pF
C_{oss}	Output Capacitance		--	146	--	pF
C_{rss}	Reverse Transfer Capacitance		--	105	--	pF
Q_g	Total Gate Charge	V_{DS}=-15V,I_D=-3A, V_{GS}=-4.5V	--	18	--	nC
Q_{gs}	Gate-Source Charge		--	2.6	--	nC
Q_{gd}	Gate-Drain Charge		--	7.8	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-15V, I_D=-2.8A, R_G=3.3Ω, V_{GS}=-4.5V	--	12	--	nS
t_r	Turn-on Rise Time		--	8	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	19	--	nS
t_f	Turn-Off Fall Time		--	9	--	nS
Source- Drain Diode Characteristics						
I_{SD}	Source-drain current(Body Diode)	T_c=25℃	-8.0①	--		A
V_{SD}	Forward on voltage	T_j=25℃,I_{SD}=-4A, V_{GS}=0V	--	-0.8	-1.3	V

Notes:

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

② Pulse width limited by maximum allowable junction temperature.

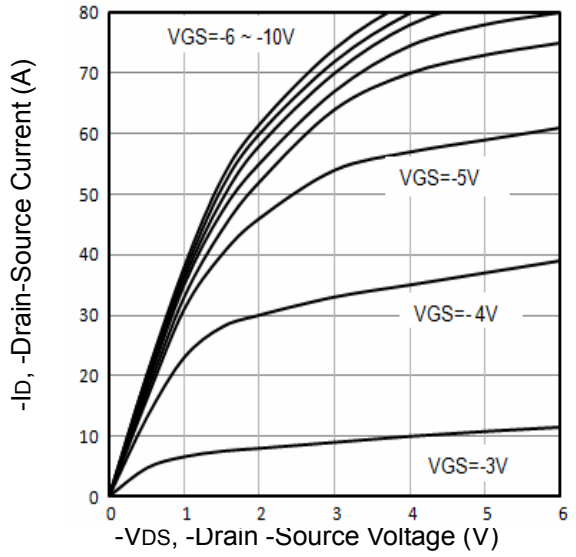


Fig1. Typical Output Characteristics

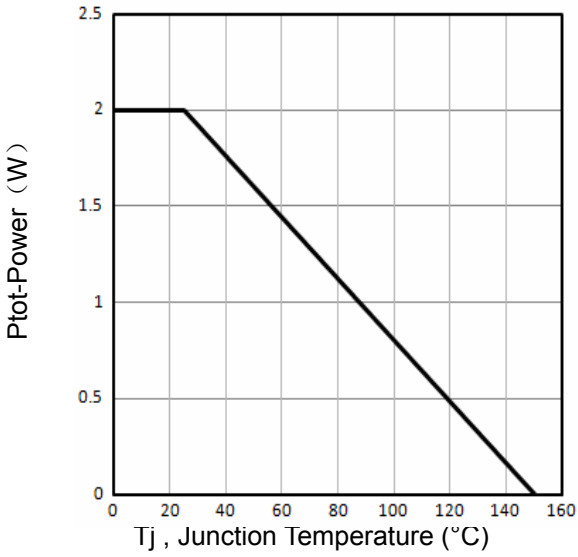


Fig2. Power Dissipation

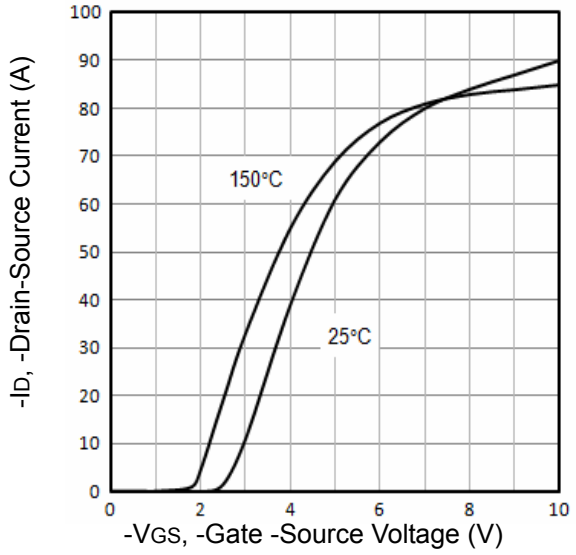


Fig3. Typical Transfer Characteristics

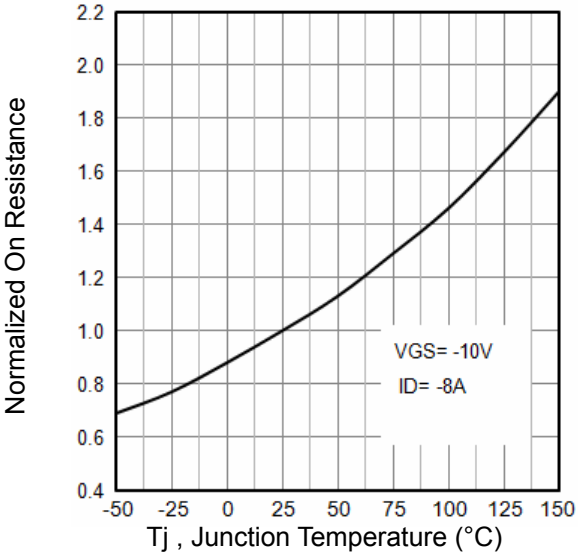
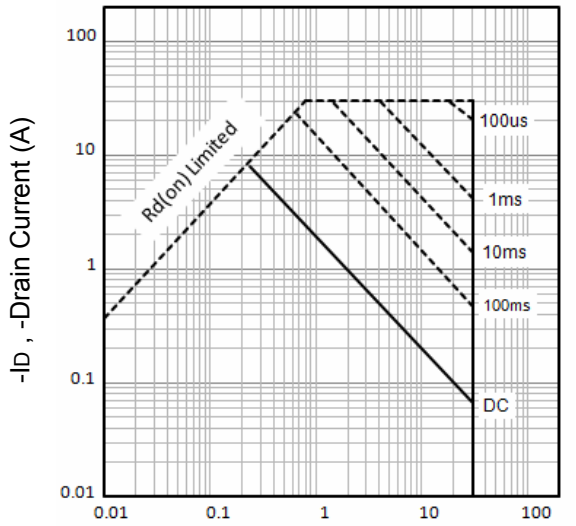
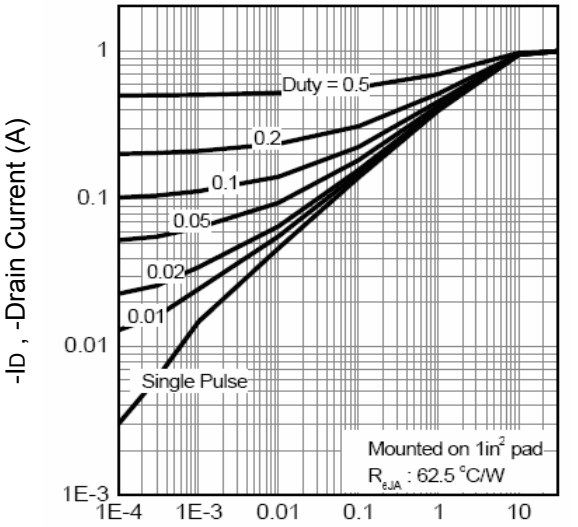


Fig4. Normalized On-Resistance Vs. Temperature





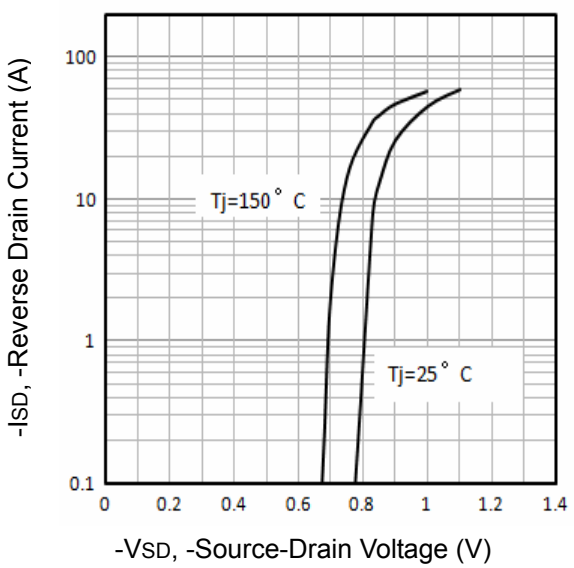


Fig7. Typical Source-Drain Diode Forward Voltage

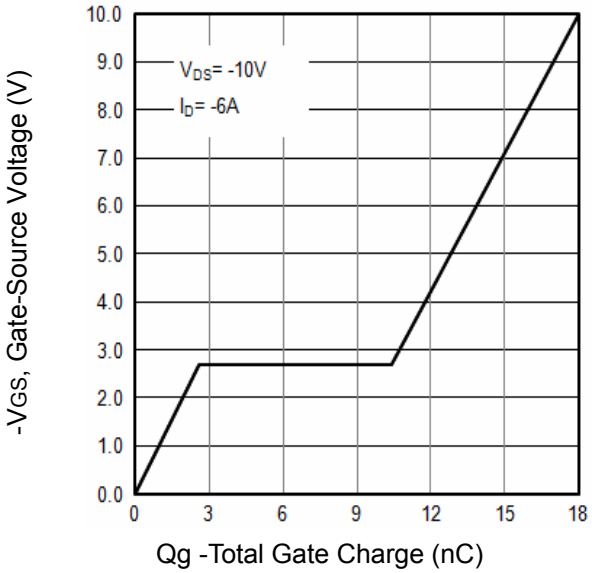


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

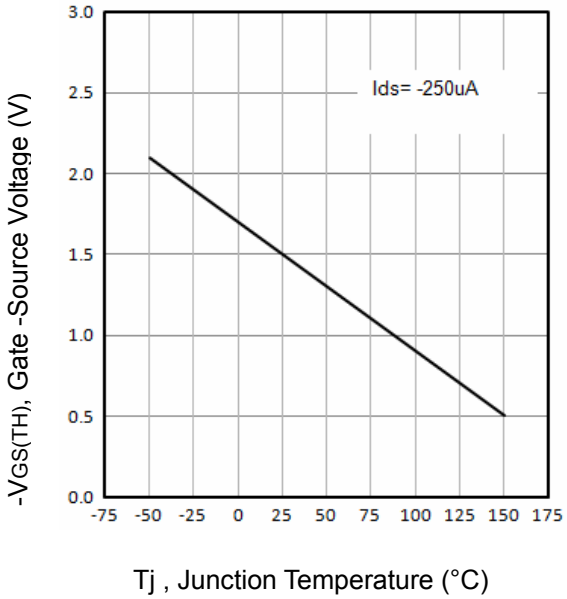


Fig9. Threshold Voltage Vs. Temperature

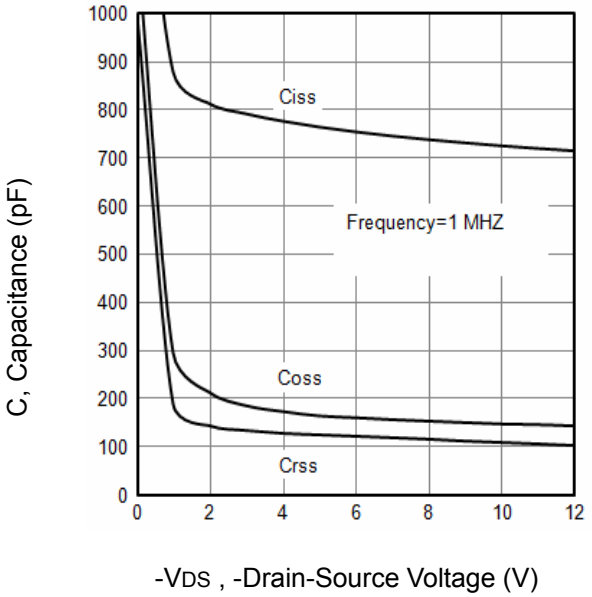


Fig10. Typical Capacitance Vs.Drain-Source Voltage

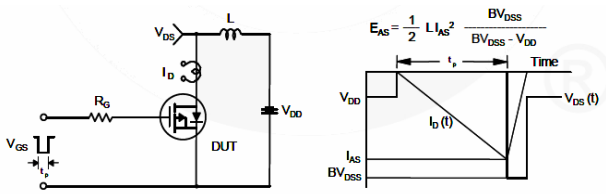


Fig11. Unclamped Inductive Test Circuit and waveforms

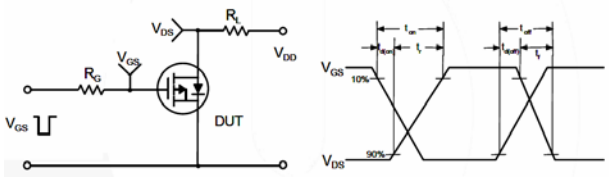
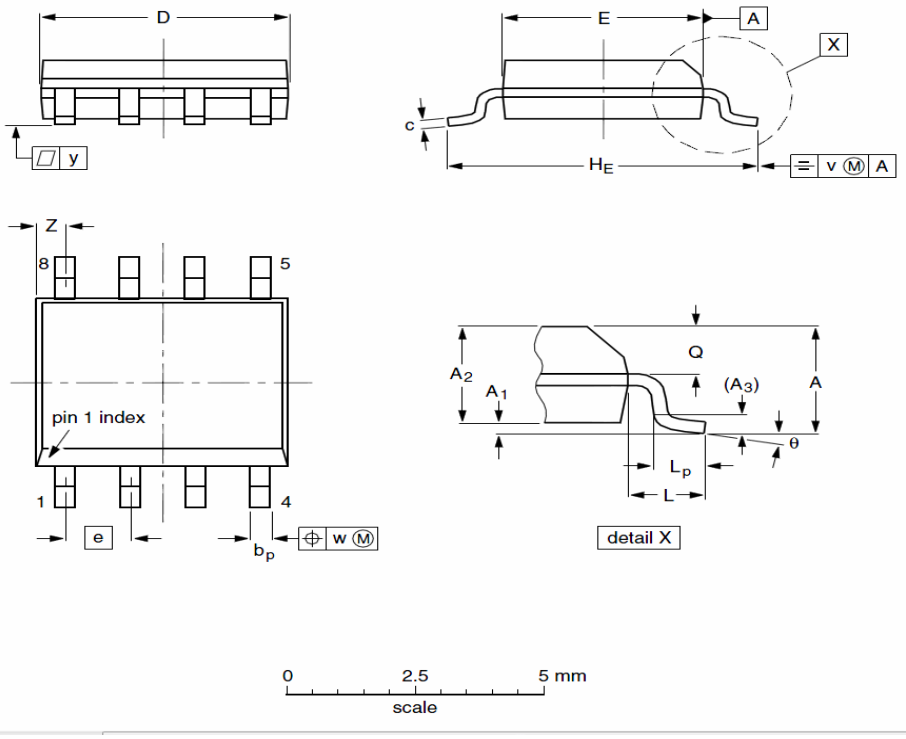


Fig12. Switching Time Test Circuit and waveforms

SOP8 Package Outline Data



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°

Order Information

Product	Marking	Package	Packaging	Min Unit Quantity
VS4805DS	VS4805DS	SOP8	3000/Reel	6000

Customer Service

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