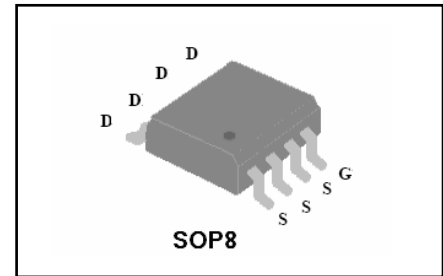
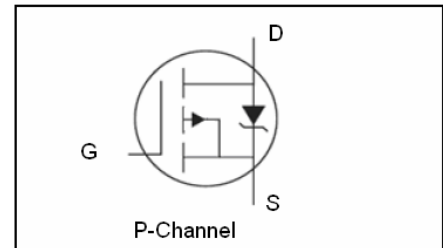


Features

- ◆ P-CH: -30V/-7.8A, $R_{DS(ON)}=18m\Omega$
- ◆ Low On-Resistance
- ◆ Fast Switching
- ◆ Lead-Free, Green Product

Description

VS4435AS 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.

Pin Description

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 ^①	T _c =25°C	-7.8	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested ^②	T _c =25°C	-30	A
I _D	Continuous Drain Current(V _{GS} =-10V)	T _c =25°C	-7.8	A
		T _c =100°C	-5	
P _D	Maximum Power Dissipation	T _c =25°C	2	W
R _{θJA}	Thermal Resistance Junction-Ambient		62.5	°C/W

P-Channel

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 (T _c =25°C)	V _{DS} =-30V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current (T _c =125°C)	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	-1.5	-2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-8A	--	18	22	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-4A	--	25	32	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-24V, 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} =-12V, I _D =-4A, V _{GS} =-10V	--	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 =-6A, R _G =3.3Ω, V _{GS} =-4.5V	--	8.6	--	nS
t _r	Turn-on Rise Time		--	7.5	--	nS
t _{d(off)}	Turn-Off Delay Time		--	35	--	nS
t _f	Turn-Off Fall Time		--	32	--	nS
Source- Drain Diode Characteristics						
I _{SD}	Source-drain current(Body Diode)	T _c =25°C	-7.8 ^①	--		A
V _{SD}	Forward on voltage	T _J =25°C, I _{SD} =-7.8A V _{GS} =0V	--	-0.83	-1.3	V

Notes:

- ① Pulse test ; Pulse width≤300μs, duty cycle≤2%.
- ② Pulse width limited by maximum allowable junction temperature.

P-Channel Typical Characteristics

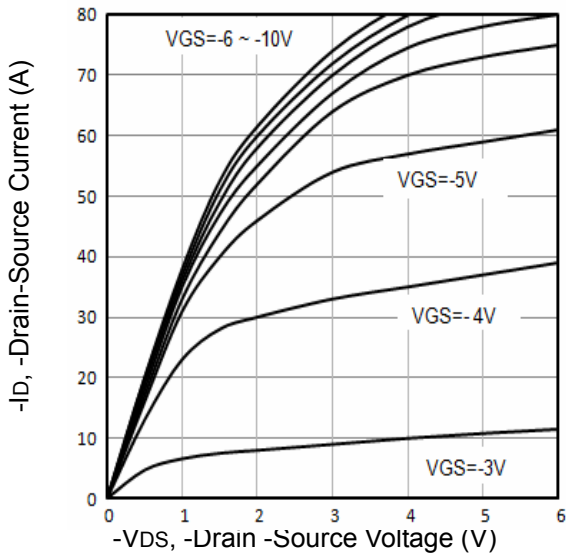


Fig1. Typical Output Characteristics

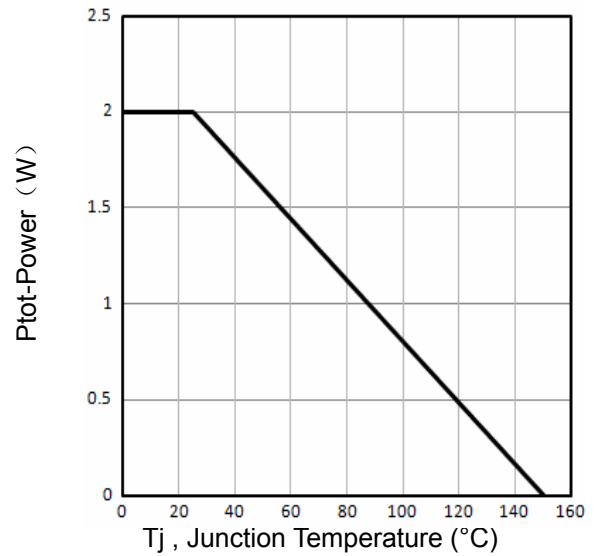


Fig2. Power Dissipation

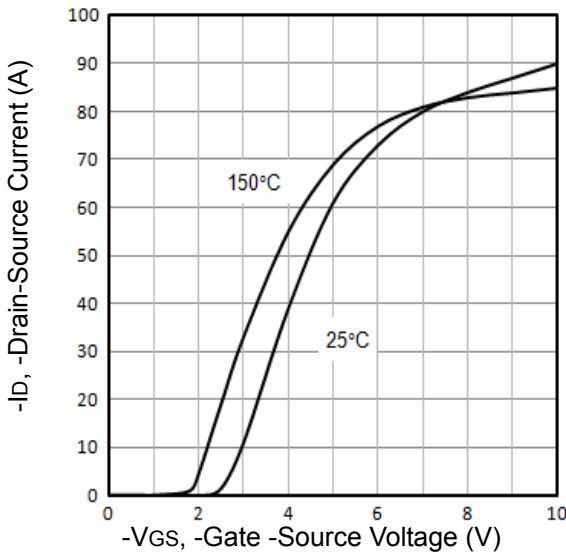


Fig3. Typical Transfer Characteristics

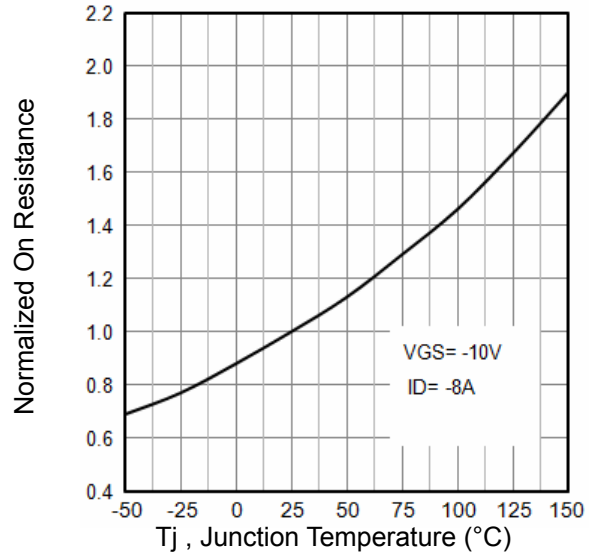


Fig4. Normalized On-Resistance Vs. Temperature

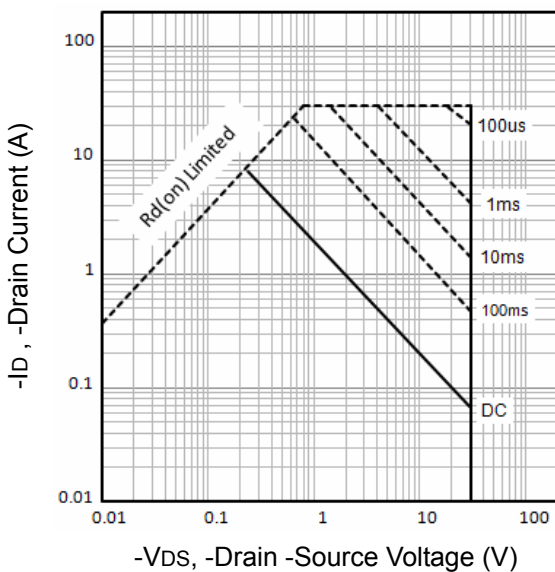


Fig5. Maximum Safe Operating Area

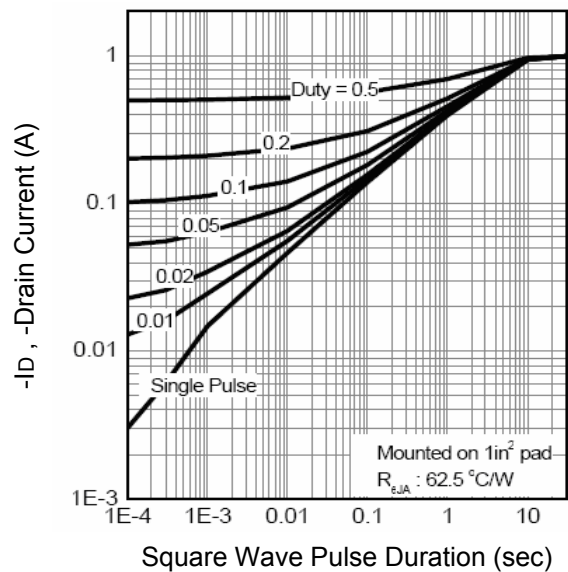


Fig6. Thermal Transient Impedance

P-Channel Typical Characteristics

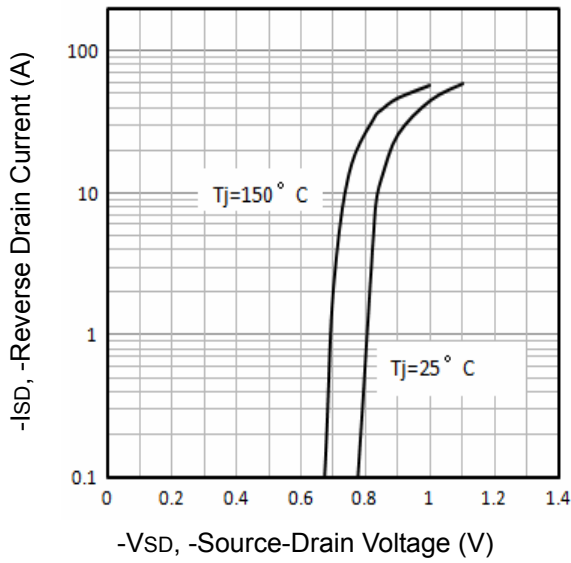


Fig7. Typical Source-Drain Diode Forward Voltage

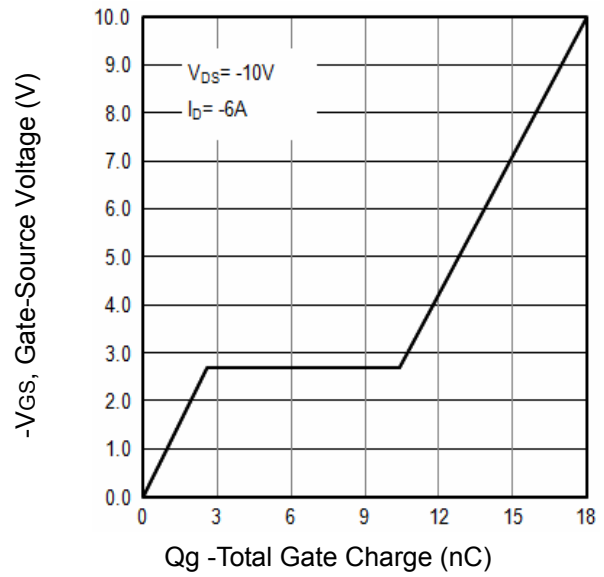


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

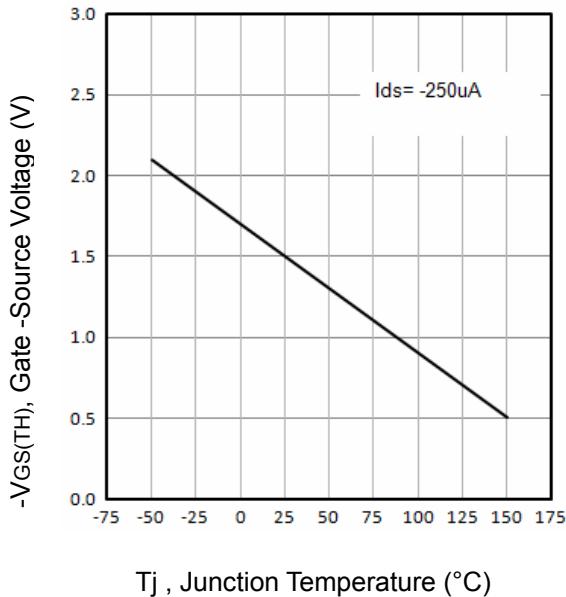


Fig9. Threshold Voltage Vs. Temperature

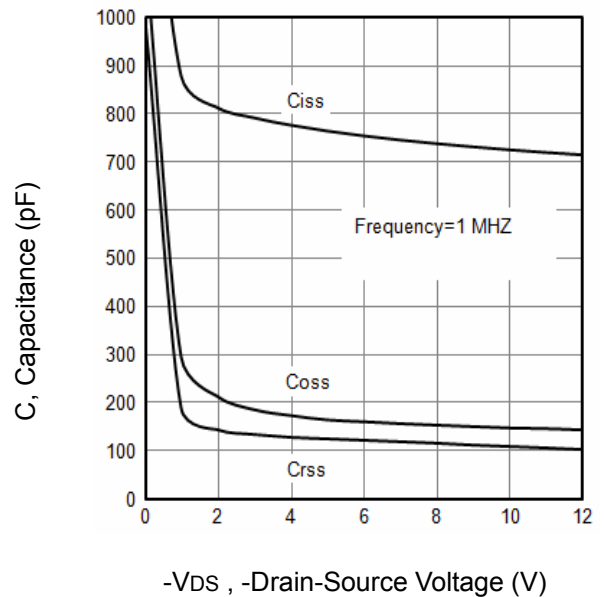


Fig10. Typical Capacitance Vs. Drain-Source Voltage

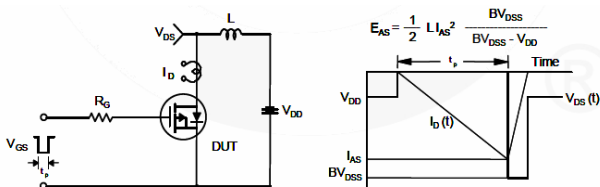


Fig11. Unclamped Inductive Test Circuit and waveforms

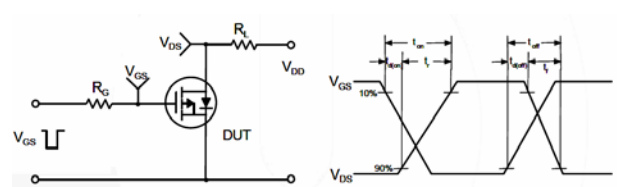
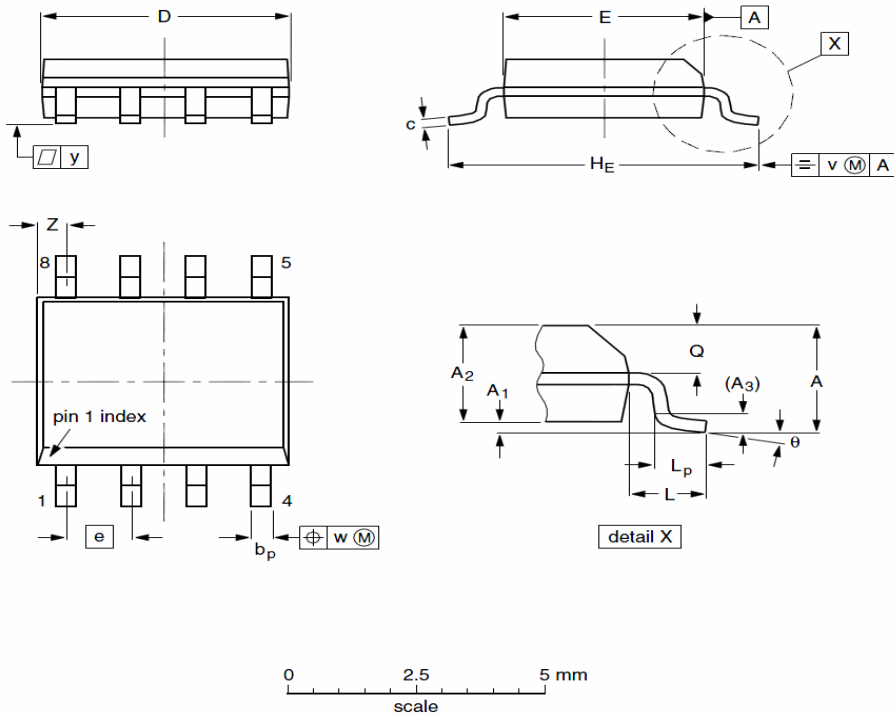


Fig12. Switching Time Test Circuit and waveforms

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
VS4435AS	VS4435AS	SOP8	3000/Reel	6000

Customer Service

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