

Features

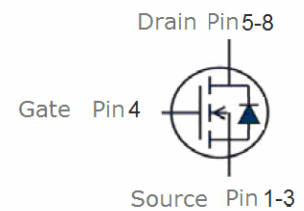
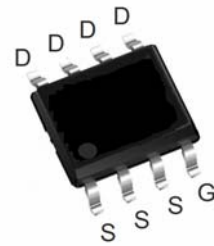
- ◆ 30V/8A
- ◆ $R_{on}(typ.)=15\text{ m}\Omega$ @VGS=10V
- ◆ $R_{on}(typ.)=25\text{ m}\Omega$ @VGS=4.5V
- ◆ Low On-Resistance
- ◆ 150°C Operating Temperature
- ◆ Fast Switching
- ◆ Lead-Free, Green Compliant

Description

VS3038AO 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

SOP8



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	7.5 ^①	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested	T _C =25°C	32 ^②	A
I _D	Continuous Drain Current(VGS=10V)	T _C =25°C	8 ^①	A
		T _C =100°C	6.0	
P _D	Maximum Power Dissipation	T _C =25°C	2	W
R _{θJA}	Thermal Resistance Junction-Ambient		62.5	°C/W
R _{θJC}	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 (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	0.9	1.5	2.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =8A	--	15	20	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =4.5A	--	25	40	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =20V,V _{GS} =0V, f=1MHz	--	450	--	pF
C _{oss}	Output Capacitance		--	69	--	pF
C _{rss}	Reverse Transfer Capacitance		--	40	--	pF
Q _g	Total Gate Charge	V _{DS} =20V,I _D =6A, V _{GS} =10V	--	13	--	nC
Q _{gs}	GateSource Charge		--	3.6	--	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°C	7.5 ^①	--	--	A
V _{SD}	Forward on voltage	T _J =25°C,I _{SD} =6A, V _{GS} =0V	--	0.88	1.3	V

Notes:

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

Typical Characteristics

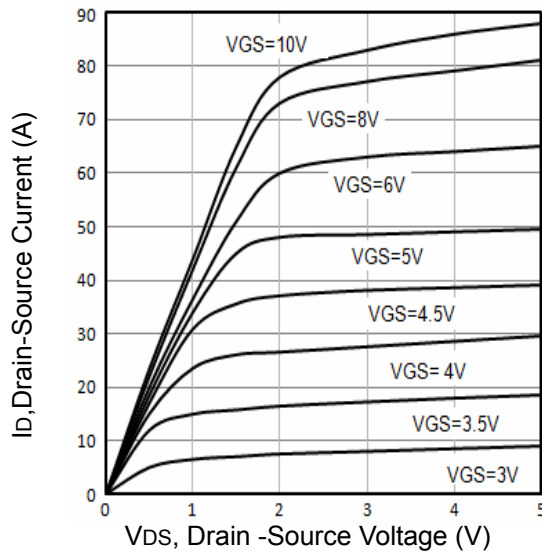


Fig1. Typical Output Characteristics

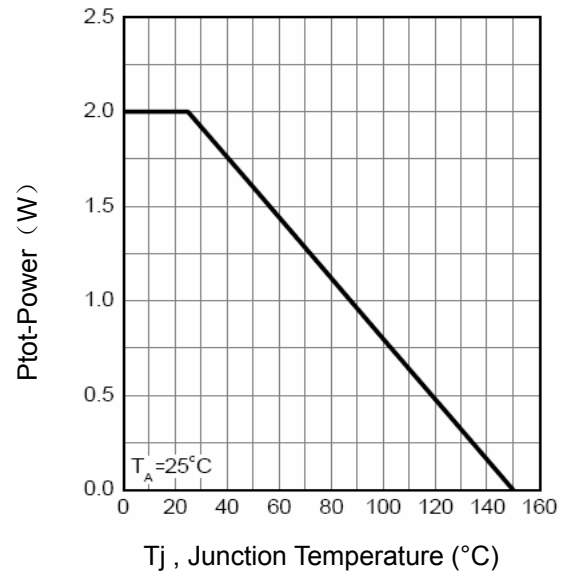


Fig2. Power Dissipation

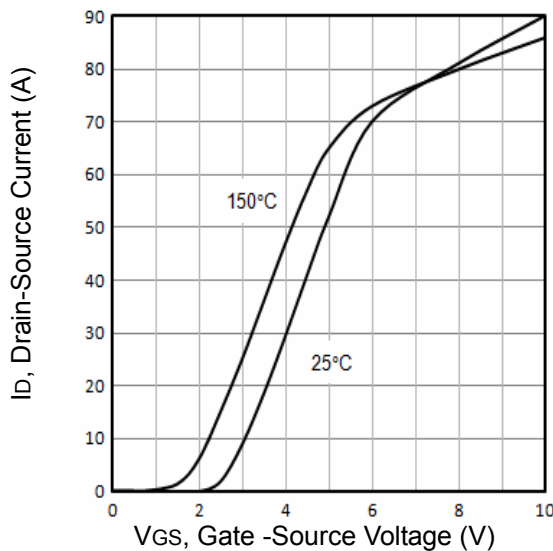


Fig3. Typical Transfer Characteristics

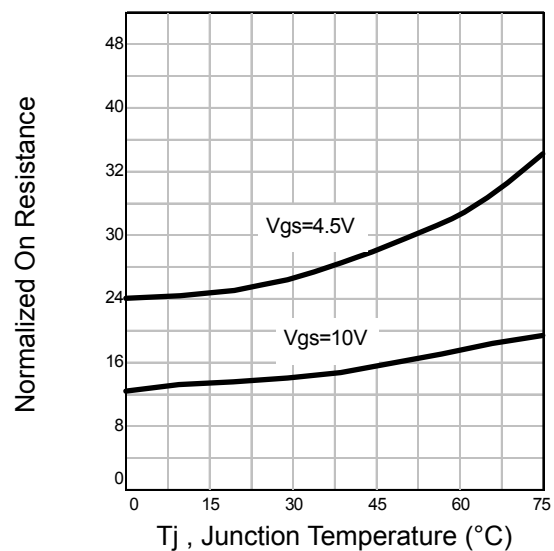


Fig4. Normalized On-Resistance Vs. Temperature

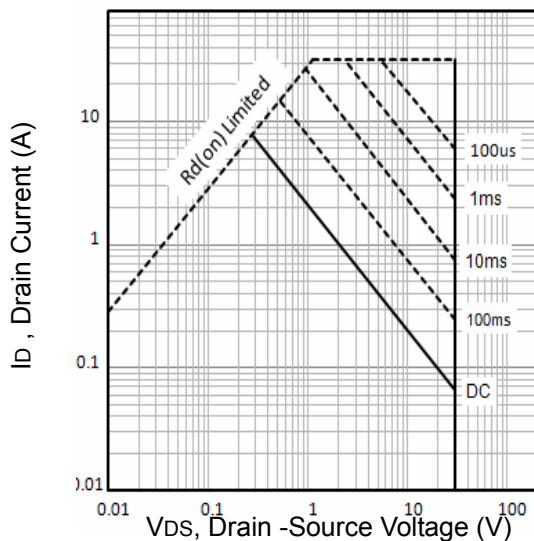


Fig5. Maximum Safe Operating Area

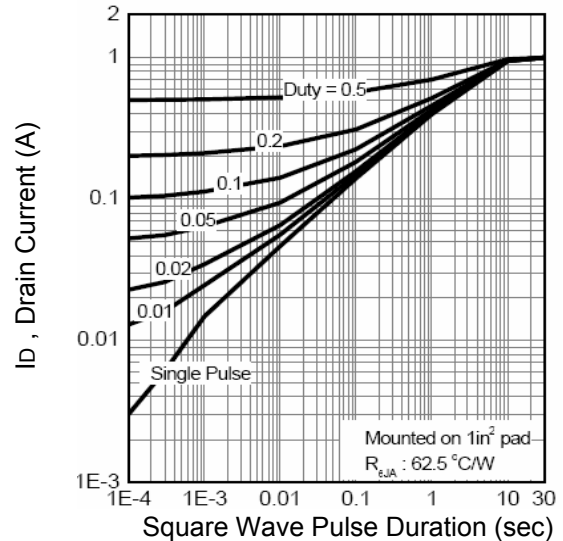


Fig6. Thermal Transient Impedance

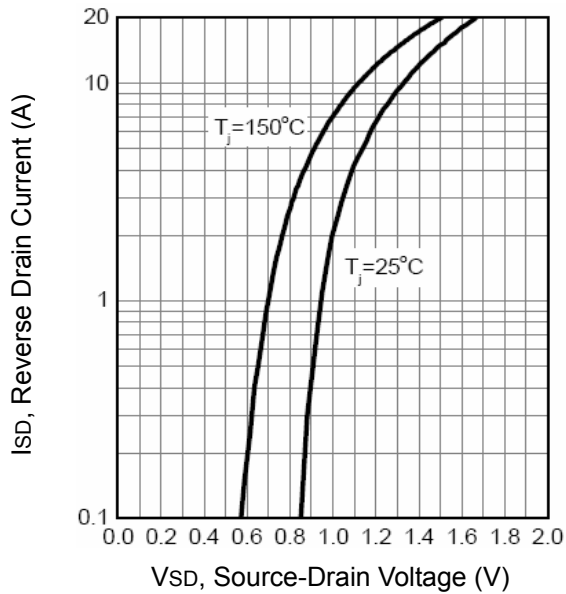


Fig7. Typical Source-Drain Diode Forward Voltage

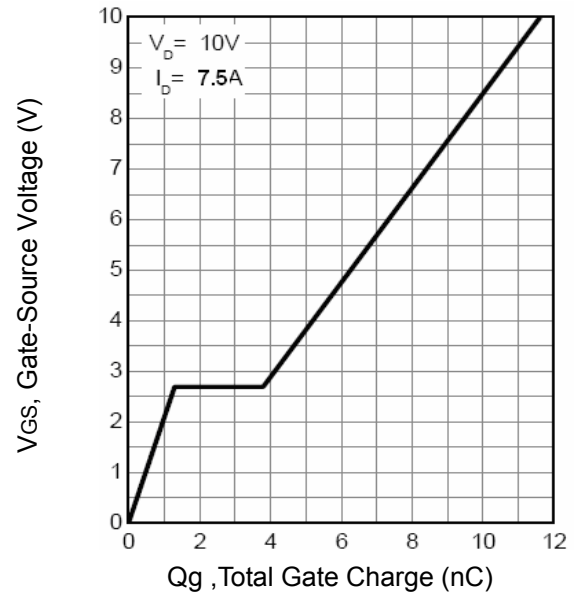


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

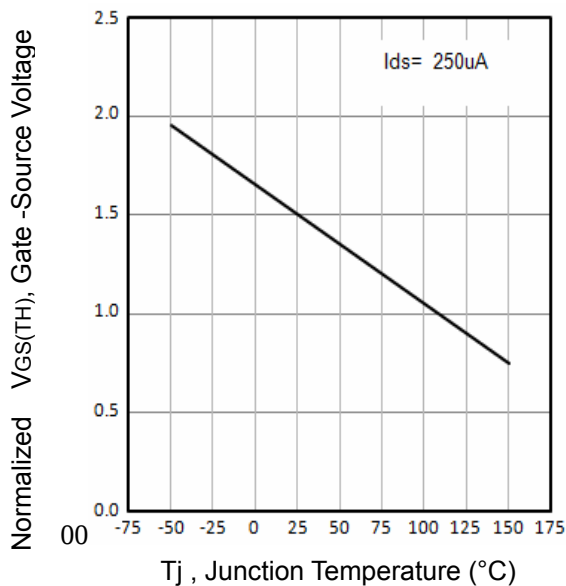


Fig9. Threshold Voltage Vs. Temperature

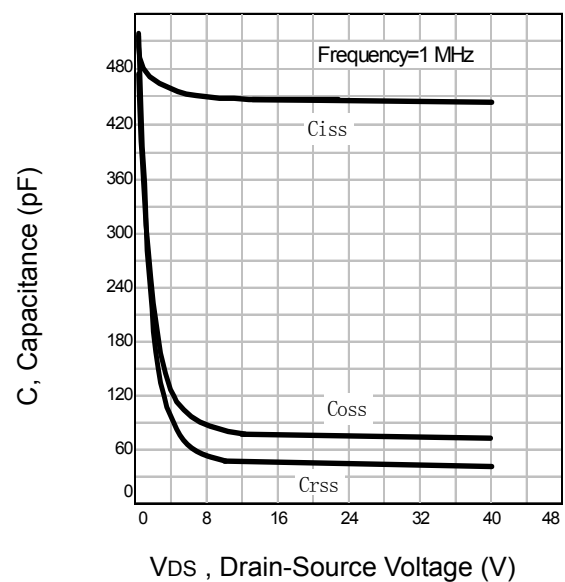


Fig10. Typical Capacitance Vs. Drain-Source Voltage

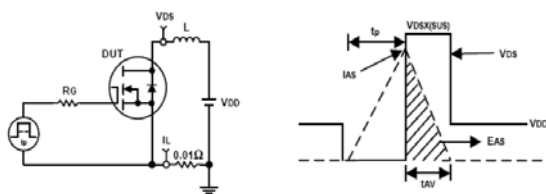


Fig11. Unclamped Inductive Test Circuit and waveforms

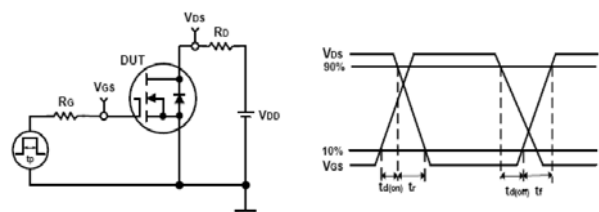
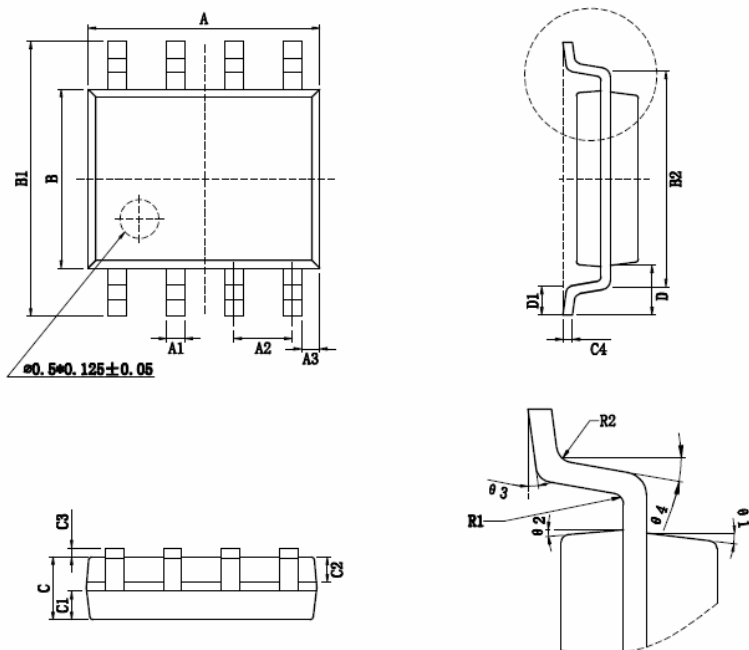


Fig12. Switching Time Test Circuit and waveforms

SOP8 Mechanical Data



Symbol	Dimensions In Millimeters		
	Min	Nom	Max
A	4.800	4.900	5.000
A1	0.356	0.406	0.456
A2	1.270Typ.		
A3	0.345Typ.		
B	3.800	3.900	4.000
B1	5.800	6.000	6.200
B2	5.00Typ.		
C	1.300	1.400	1.500
C1	0.550	0.600	0.650
C2	0.550	0.600	0.650
C3	0.050	--	0.200
C4	0.203Typ.		
D	1.050Typ.		
D1	0.400	0.500	0.600
R1	0.200Typ.		
R2	0.200Typ.		
Θ1	17°Typ.		
Θ2	13°Typ.		
Θ3	0°~ 8°Typ.		
Θ4	4°~ 12°Typ.		

Order Information

Product	Marking	Package	Packaging	Min Unit Quantity
VS3038AO	VS3008AO	SOP8	3000/Reel	6000

Customer Service

Sales and Service:

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