ZhenYangGroup CO,LTD

AO9926

Dual N-Channel Enhancement Mode Field Effect Transistor

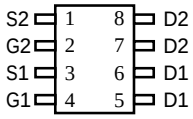
General Description

The AO9926 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 1.8V while retaining a 12V $V_{GS(MAX)}$ rating. This device is suitable for use as a uni-directional or bi-directional load switch.

Features

V_{DS} (V) = 20V
I_D = 6 A (V $_{GS}$ = 4.5V)
$R_{DS(ON)}$ < 30mΩ (V_{GS} = 4.5V)
$R_{DS(ON)}$ < 40mΩ (V_{GS} = 2.5V)

- **Pin Configuration**



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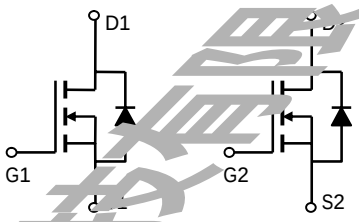

Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [A]	T_A=25°C	I_D	6	A
	T_A=70°C		5	
Pulsed Drain Current [B]		I_{DM}	24	
Power Dissipation [A]	T_A=25°C	P_D	2	W
	T_A=70°C		1.3	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient [A]	t ≤ 10s	$R_{\theta JA}$	48	62.5	°C/W
Maximum Junction-to-Ambient [A]	Steady-State		74	110	°C/W
Maximum Junction-to-Lead [C]	Steady-State	$R_{\theta JL}$	35	50	°C/W

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Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0V	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	μA
		T_J=55°C			5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=±12V				nA
BV_{GSO}	Gate-Source Breakdown Voltage	V_{DS}=0V, I_G=±250uA	±12			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250uA			1	V
$I_{D(ON)}$	On state drain current	V_{GS}=4.5V, V_{DS}=5V				A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=7.6A		18	23	mΩ
		T_J=		25	30	
		V_{GS}=4.5V, I_D=6A		21	30	mΩ
		V_{GS}=2.5V, I_D=5.2A		30	40	mΩ
		V_{GS}=1.8V, I_D=2A		38	52	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=6		12		S
V_{SD}	Diode Forward Voltage	I_S=1.7A,V_{GS}=0V		0.8	1	V
I_S	Maximum Body-Diode Continuous Current				1.7	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=8V, f=1MHz		522.3		pF
C_{oss}	Output Capacitance			98.48		pF
C_{rss}	Reverse Transfer Capacitance			74.69		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.5		Ω
SWITCHING PARAMETERS						
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=10V, I_D=6A		6.24	8.11	nC
Q_{gs}	Gate Source Charge			1.64	2.13	nC
Q_{gd}	Gate Drain Charge			1.34	1.74	nC
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=4.5V, V_{DS}=10V, R_L=10Ω, R_{GEN}=6Ω		10.4	20.8	ns
t_r	Turn-On Rise Time			4.4	8.8	ns
$t_{D(off)}$	Turn-Off Delay Time			27.36	54.72	ns
t_f	Turn-Off Fall Time			4.16	8.32	ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=7.6A, dI/dt=100A/μs		15.2		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=7.6A, dI/dt=100A/μs		6.3		nC

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- **TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS**

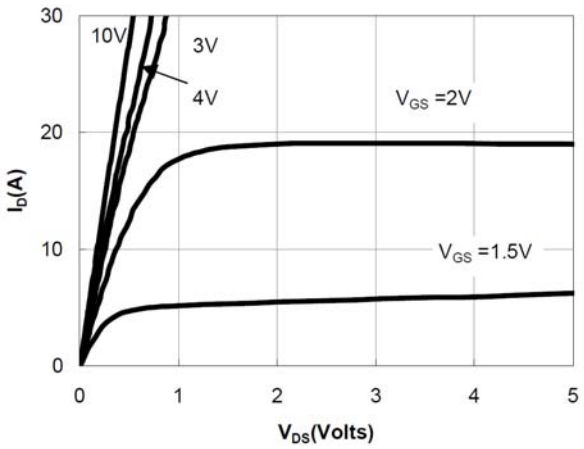

Figure 1: On-Regions Characteristi CS

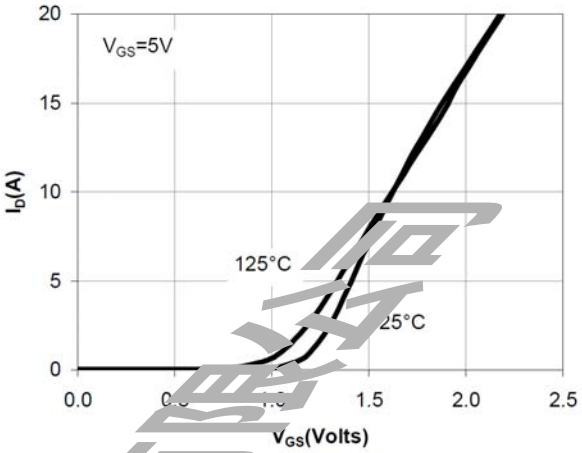

Figure 2: Transfer Characteristics

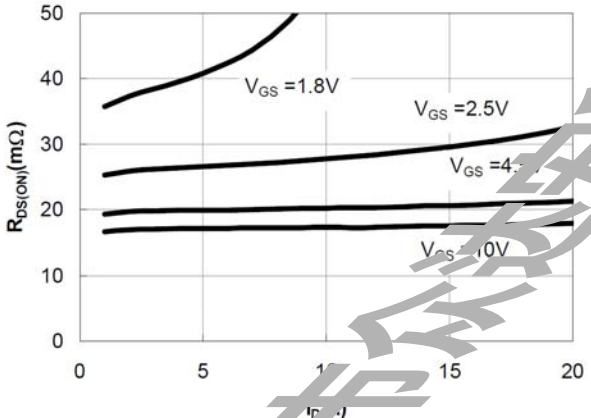

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

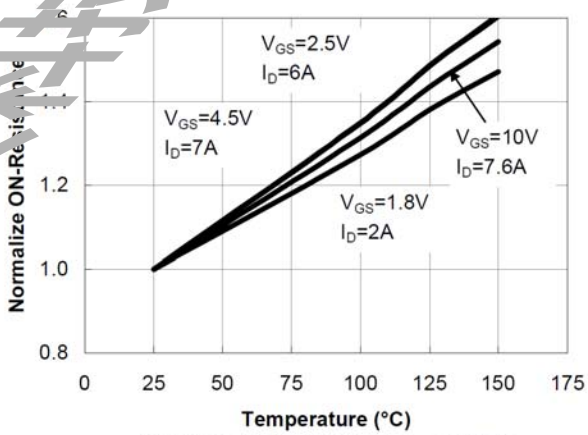

Figure 4: On-Resistance vs. Junction Temperature

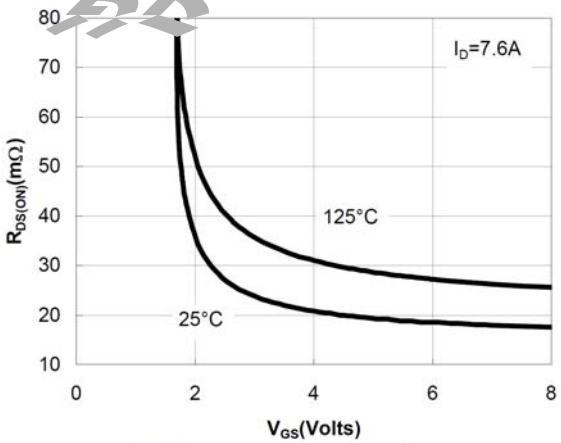

Figure 5: On-Resistance vs. Gate-Source Voltage

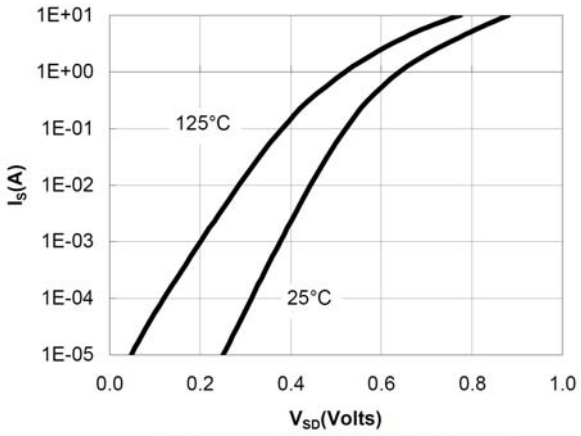

Figure 6: Body-Diode Characteristics

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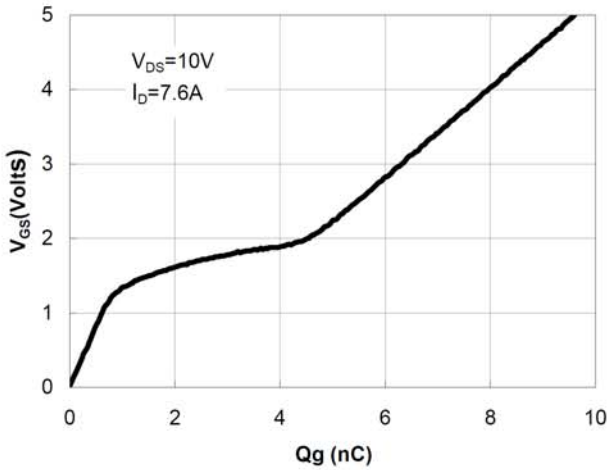

Figure 7: Gate-Charge Characteristics

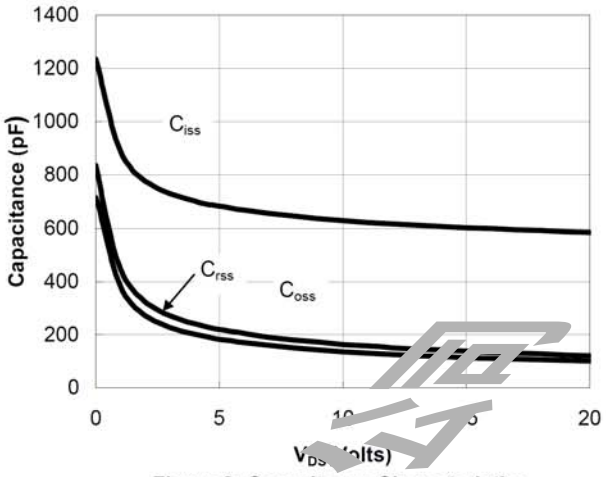

Figure 8: Capacitance Characteristics

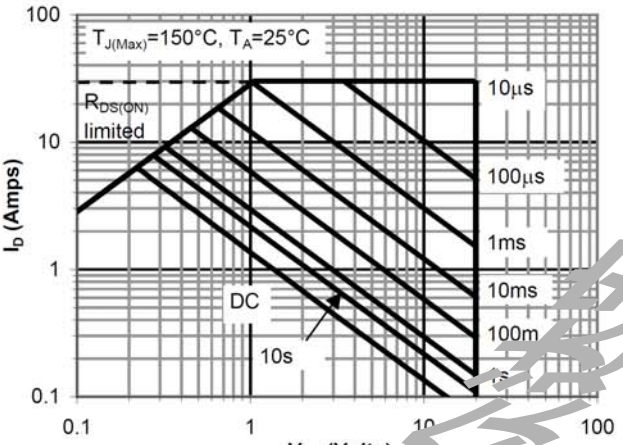

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

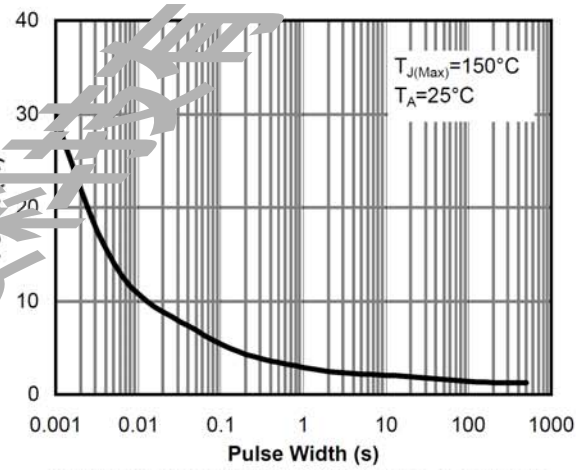

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

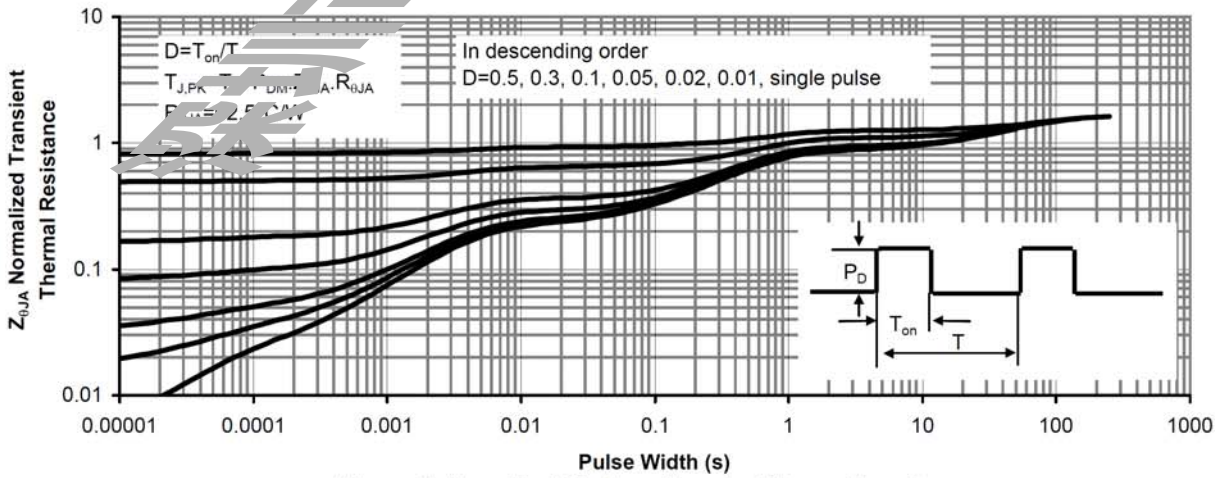

Figure 11: Normalized Maximum Transient Thermal Impedance

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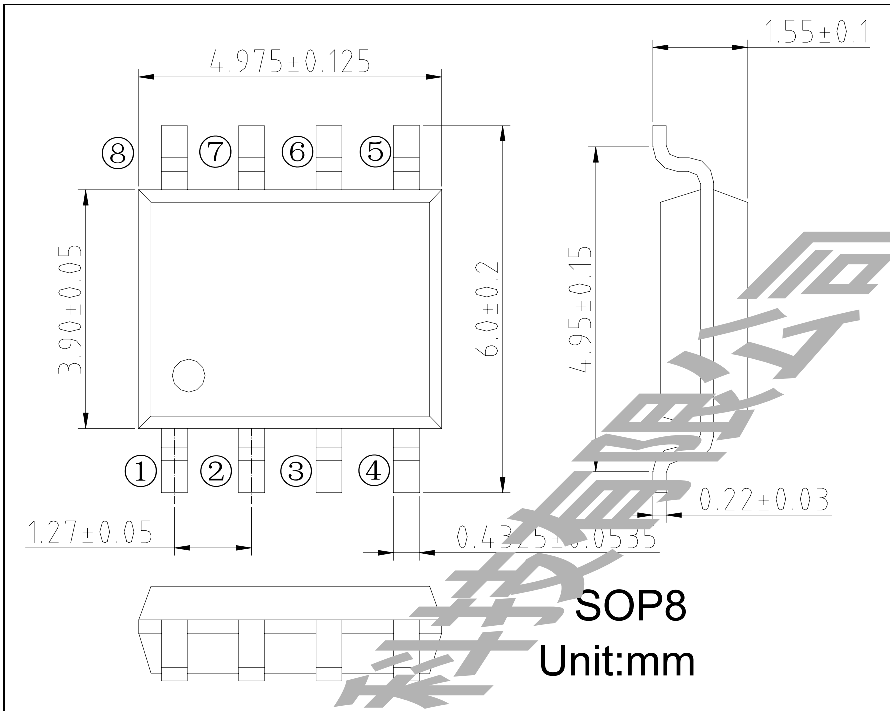
- **Package Information**



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