20V Dual N-Channel MOSFET

General Description

The LPM9926 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

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Order Information

LPM9926 □ □ □

F: Pb-Free

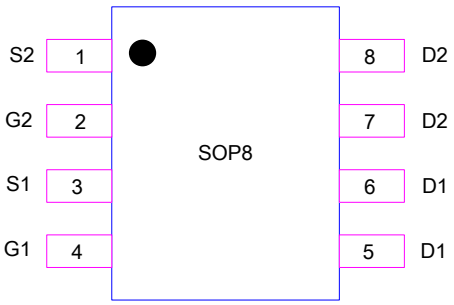
Package Type

SO : SOP8

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Pin Configurations



Pin Description

Pin Number	Pin Description
1	S2
2	G2
3	S1
4	G1
5	D2
6	
7	D1
8	

Marking Information

Part	Marking	Package	Shipping
LPM9926SOF	LPS LPM9926 YWX	SOP8	4K/REEL
Marking indication: Y:Production year W:Production week X:Production batch.			

Absolute Maximum Ratings

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	TA=25℃	I_D	7.6	A
	TA=70℃		6.1	
Pulsed Drain Current		I_{DM}	38	
Power Dissipation	TA=25℃	P_D	2	W
	TA=70℃		1.28	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

Thermal resistance ratings

Parameter		Symbol	TYP	Unit
Junction-to-Case Thermal Resistance	t ≤ 10s	$R_{\theta JA}$	48	℃/W
Junction-to-Case Thermal Resistance	Steady State		74	℃/W
Maximum Junction-to-Lead	Steady State	$R_{\theta JL}$	32	℃/W

Electrical Characteristics

Electrical Characteristics (T_J=25℃ 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℃			5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=12V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.4	0.75	1.1	V
$I_{D(ON)}$	On state drain current	V_{GS}=10V, V_{DS}=5V	38			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=7.6A		16.5	23	mΩ
		T_J=125℃		25	30	
		V_{GS}=4.5V, I_D=7A		18.5	28	
		V_{GS}=2.5V, I_D=6A		24	38	
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=7.6A		25		S
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V		0.7	1	V
I_S	Maximum Body-Diode Continuous Current				2.5	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		525		pF
C_{oss}	Output Capacitance			95		pF
C_{rss}	Reverse Transfer Capacitance			75		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.7		Ω
SWITCHING PARAMETERS						
Q_g (10V)	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=7.6A		12.5		nC
Q_g(4.5V)	Total Gate Charge			6		nC
Q_{gs}	Gate Source Charge			1		nC
Q_{gd}	Gate Drain Charge			2		nC
$t_{D(on)}$	Turn-On DelayTime	V_{GS}=10V, V_{DS}=20V, R_L= 2Ω, R_{GEN}=3Ω		3		ns
t_r	Turn-On Rise Time			7.5		ns
$t_{D(off)}$	Turn-Off DelayTime			20		ns
tf	Turn-Off Fall Time			6		ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=7.6A, dI/dt=100A/μs		14		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=7.6A, dI/dt=100A/μs		6		nC

Typical Characteristics

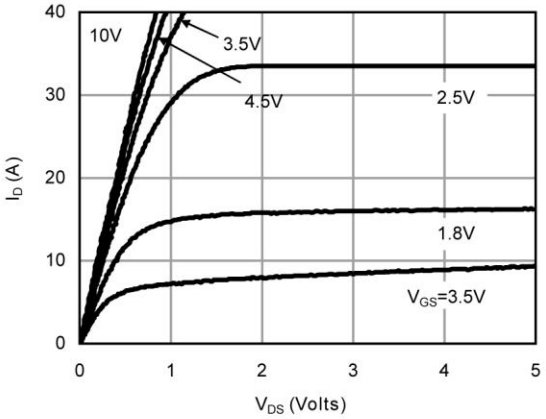


Fig 1: On-Region Characteristics (Note E)

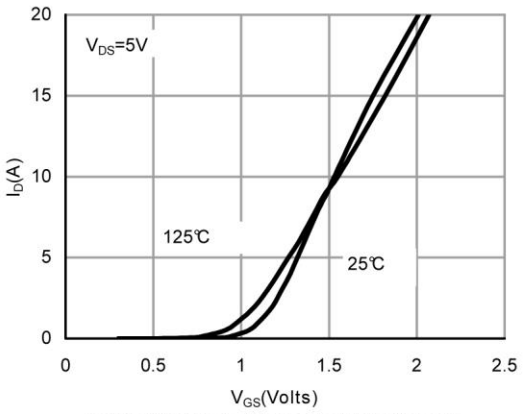


Figure 2: Transfer Characteristics (Note E)

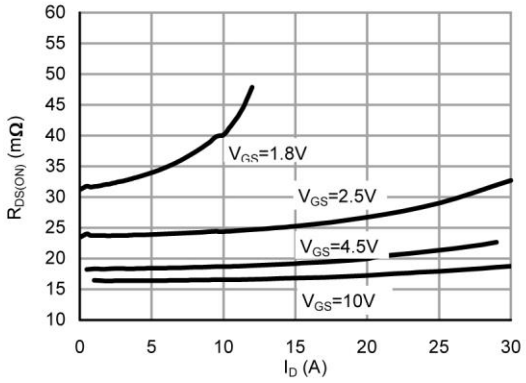


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

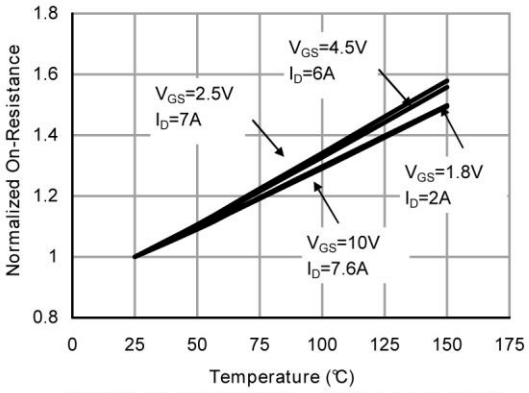


Figure 4: On-Resistance vs. Junction Temperature (Note E)

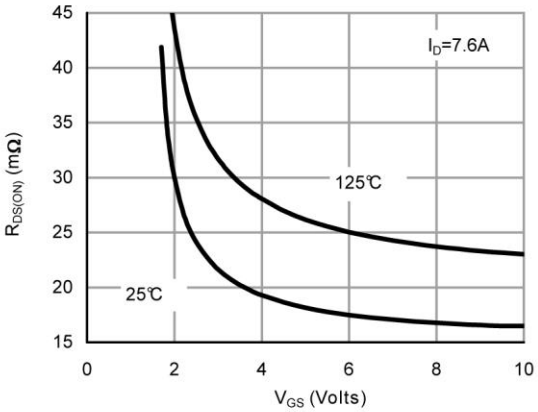


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

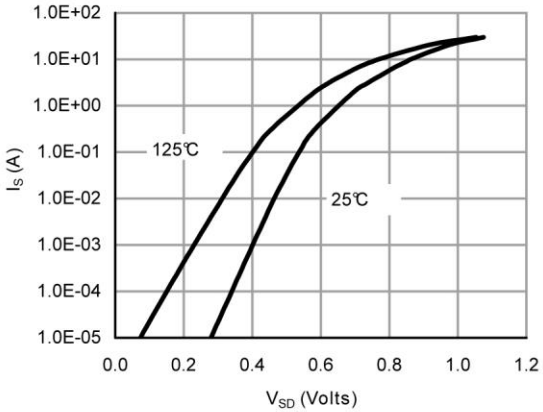


Figure 6: Body-Diode Characteristics (Note E)

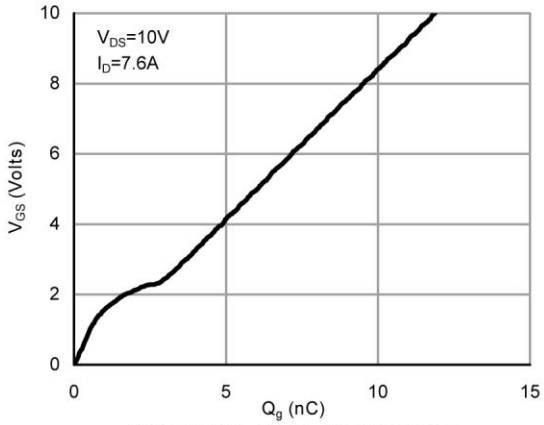


Figure 7: Gate-Charge Characteristics

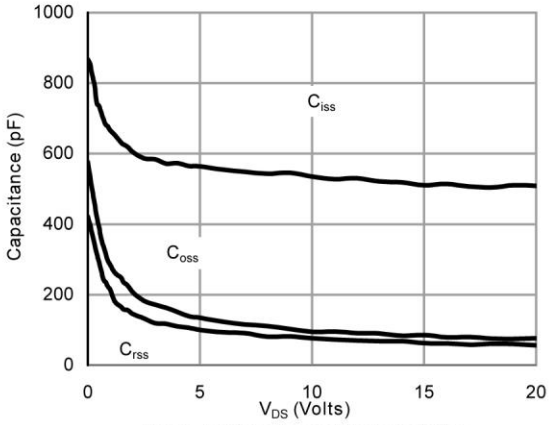


Figure 8: Capacitance Characteristics

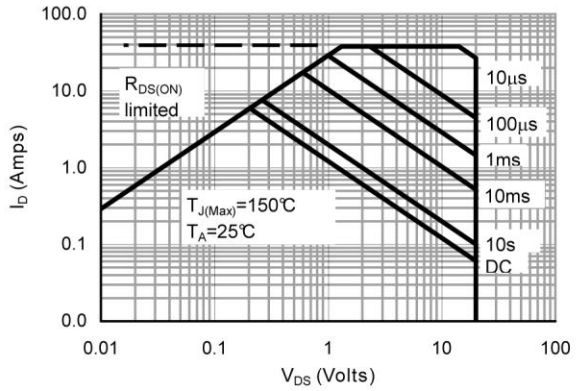


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

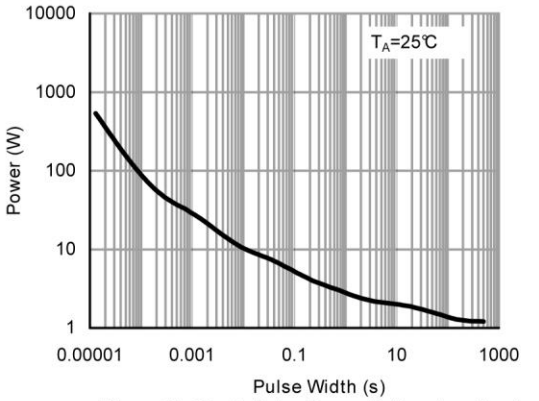


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

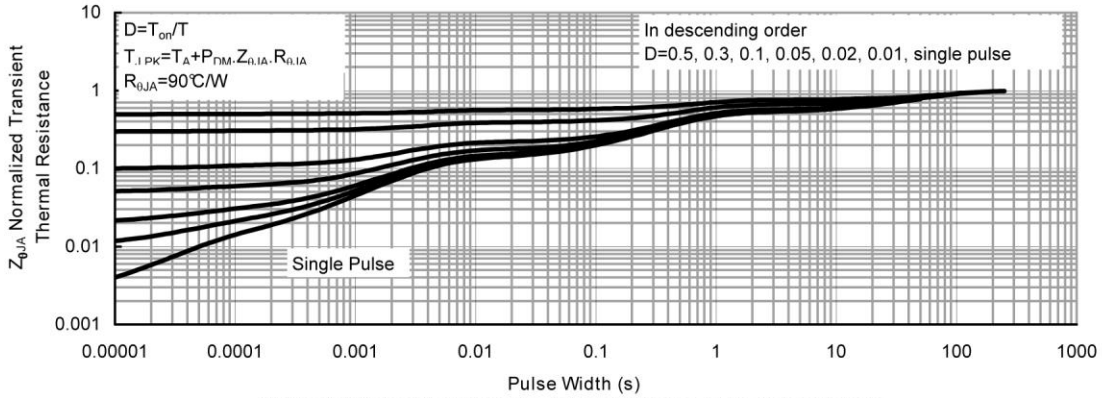
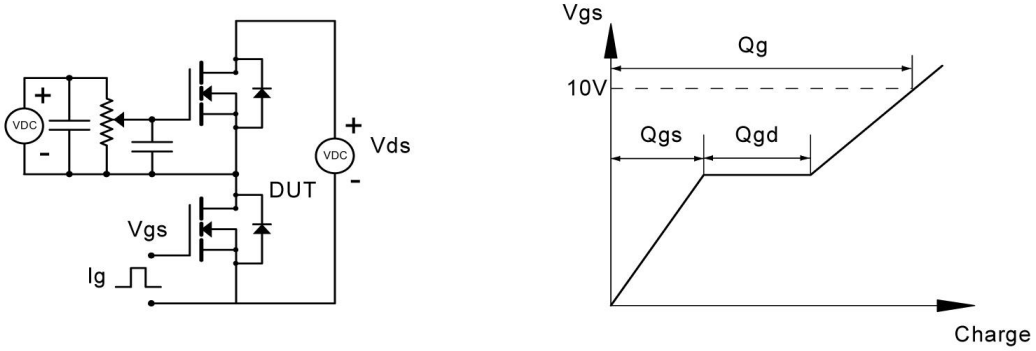
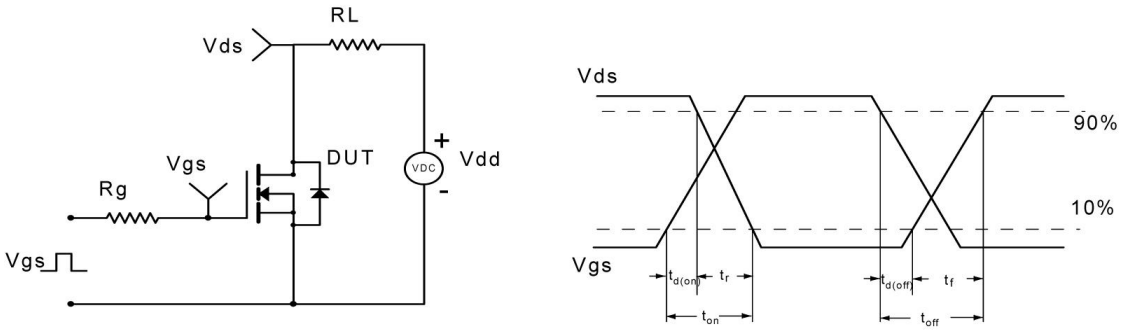


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

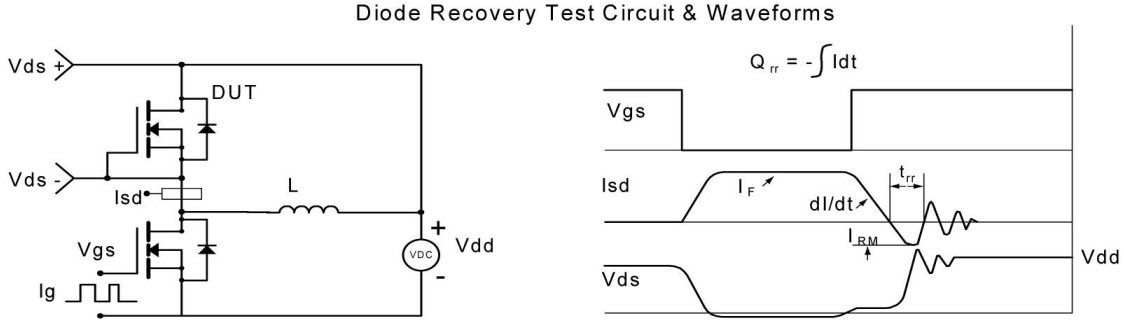
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

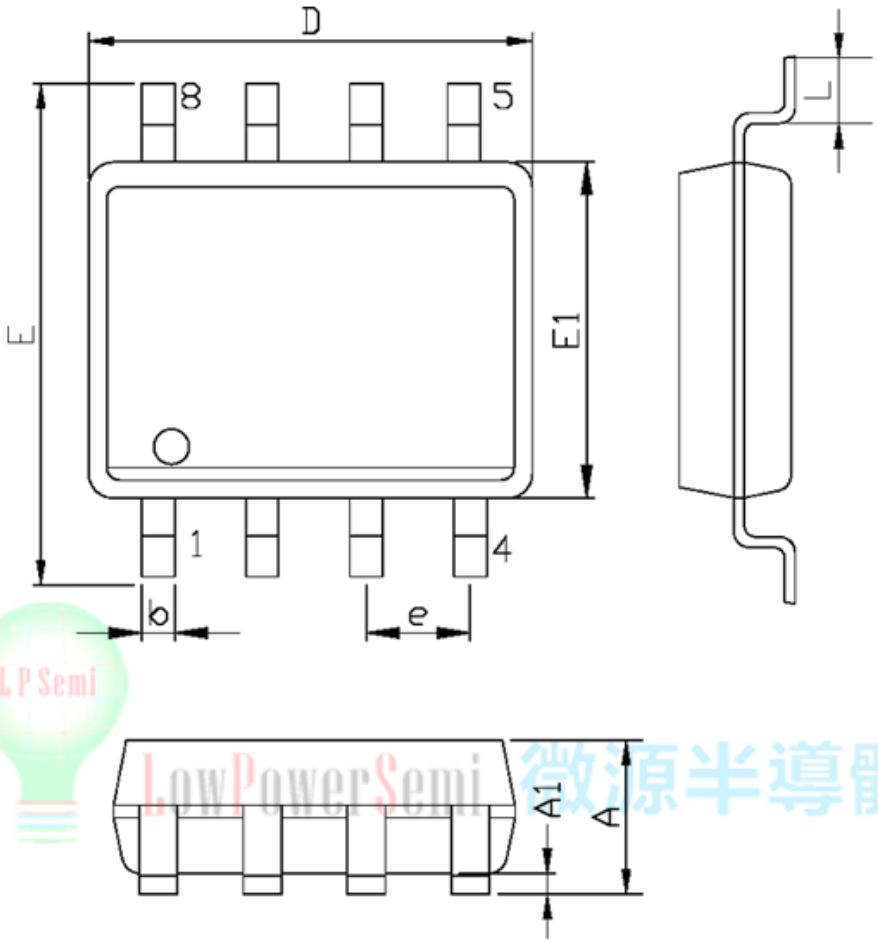


Diode Recovery Test Circuit & Waveforms



Packaging Information

SOP8



SYMBOLS	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.90		0.193	
E	5.80	6.20	0.228	0.244
E1	3.90		0.153	
L	0.40	1.27	0.016	0.050
b	0.31	0.51	0.012	0.020
e	1.27		0.050	