



## 20V Dual N-Channel MOSFET

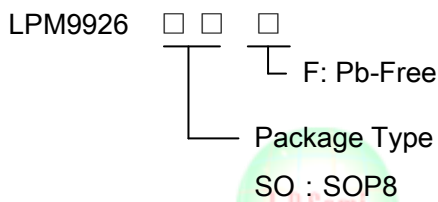
### General Description

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



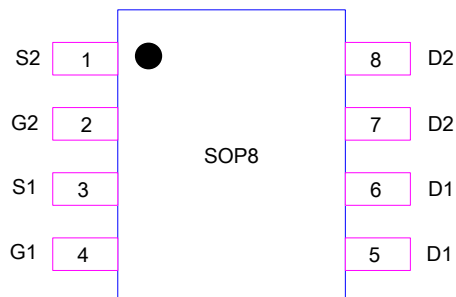
### Applications

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

### Pin Description

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

### Pin Configurations



### Marking Information

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

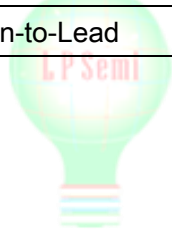


## Absolute Maximum Ratings

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

## Thermal resistance ratings

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





## Electrical Characteristics

Electrical Characteristics ( $T_J=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>STATIC PARAMETERS</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	20			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$ $T_J=55^\circ\text{C}$			1 5	$\mu\text{A}$
$I_{GSS}$	Gate-Body leakage current	$V_{DS}=0\text{V}$ , $V_{GS}=12\text{V}$			$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	0.4	0.75	1.1	V
$I_{D(ON)}$	On state drain current	$V_{GS}=10\text{V}$ , $V_{DS}=5\text{V}$	38			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10\text{V}$ , $I_D=7.6\text{A}$ $T_J=125^\circ\text{C}$		16.5 25	23 30	m $\Omega$
		$V_{GS}=4.5\text{V}$ , $I_D=7\text{A}$		18.5	28	
		$V_{GS}=2.5\text{V}$ , $I_D=6\text{A}$		24	38	
$g_{FS}$	Forward Transconductance	$V_{DS}=5\text{V}$ , $I_D=7.6\text{A}$		25		S
$V_{SD}$	Diode Forward Voltage	$I_S=1\text{A}$ , $V_{GS}=0\text{V}$		0.7	1	V
$I_S$	Maximum Body-Diode Continuous Current				2.5	A
<b>DYNAMIC PARAMETERS</b>						
$C_{iss}$	Input Capacitance			525		pF
$C_{oss}$	Output Capacitance	$V_{GS}=0\text{V}$ , $V_{DS}=15\text{V}$ , $f=1\text{MHz}$		95		pF
$C_{rss}$	Reverse Transfer Capacitance			75		pF
$R_g$	Gate resistance	$V_{GS}=0\text{V}$ , $V_{DS}=0\text{V}$ , $f=1\text{MHz}$		1.7		$\Omega$
<b>SWITCHING PARAMETERS</b>						
$Q_g(10\text{V})$	Total Gate Charge	$V_{GS}=10\text{V}$ , $V_{DS}=15\text{V}$ , $I_D=7.6\text{A}$		12.5		nC
$Q_g(4.5\text{V})$	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	$V_{GS}=10\text{V}$ , $V_{DS}=20\text{V}$ , $R_L=2\Omega$ , $R_{GEN}=3\Omega$		3		ns
$t_r$	Turn-On Rise Time			7.5		ns
$t_{D(off)}$	Turn-Off DelayTime			20		ns
$t_f$	Turn-Off Fall Time			6		ns
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=7.6\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		14		ns
$Q_{rr}$	Body Diode Reverse Recovery Charge	$I_F=7.6\text{A}$ , $dI/dt=100\text{A}/\mu\text{s}$		6		nC

## Typical Characteristics

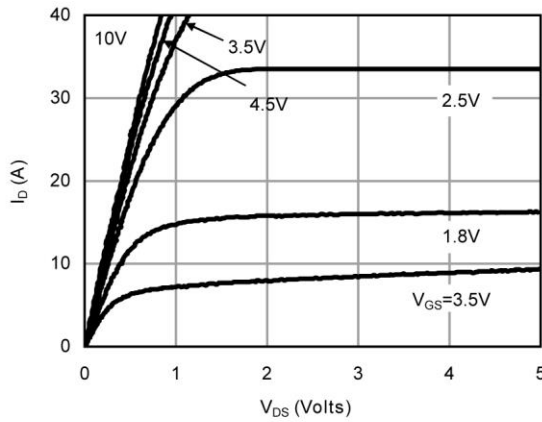


Fig 1: On-Region Characteristics (Note E)

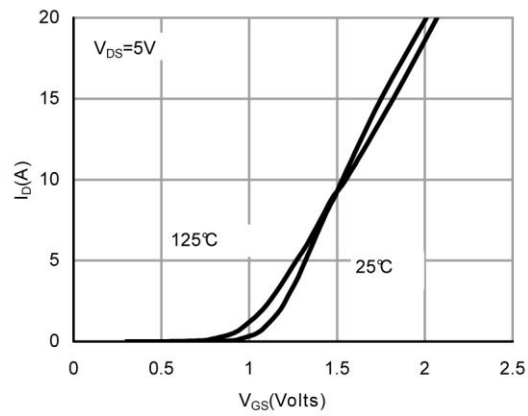


Figure 2: Transfer Characteristics (Note E)

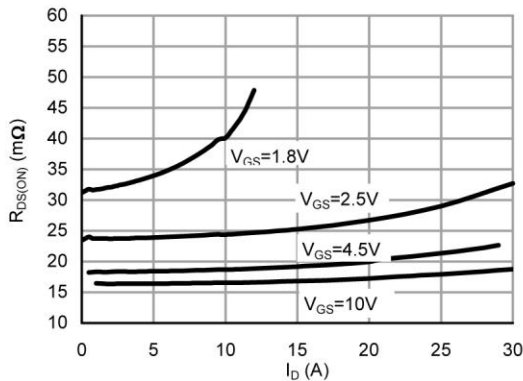


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

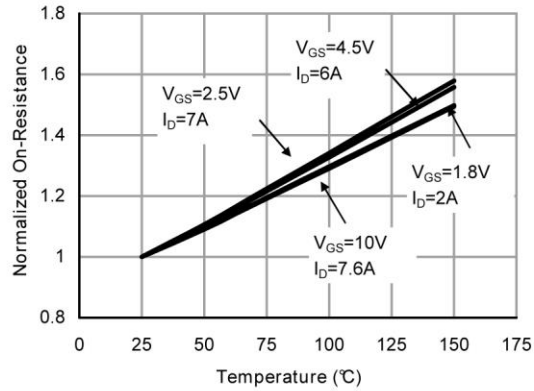


Figure 4: On-Resistance vs. Junction Temperature (Note E)

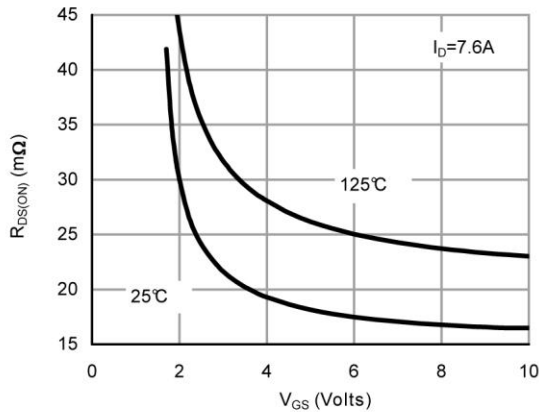


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

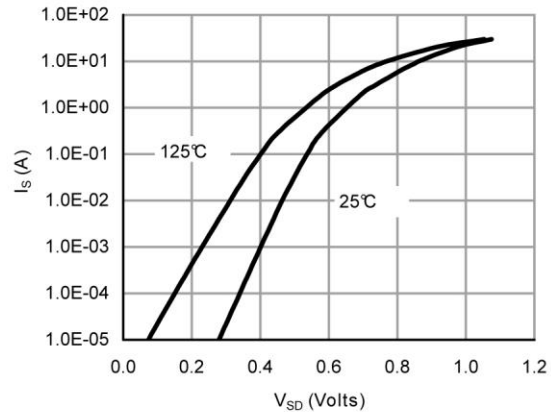


Figure 6: Body-Diode Characteristics (Note E)

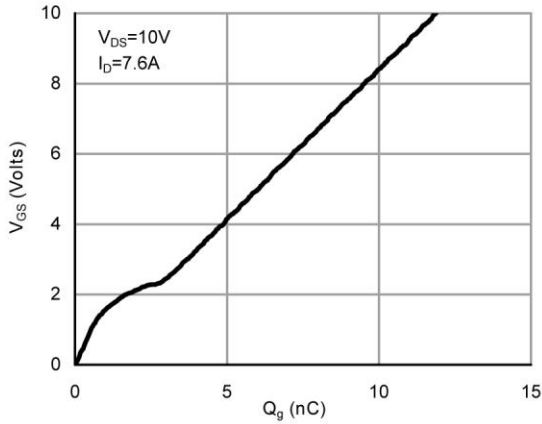


Figure 7: Gate-Charge Characteristics

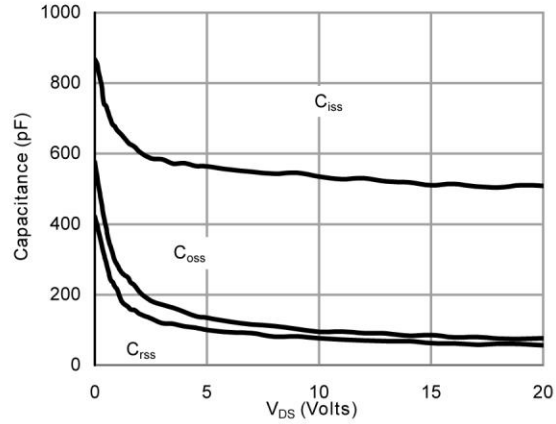


Figure 8: Capacitance Characteristics

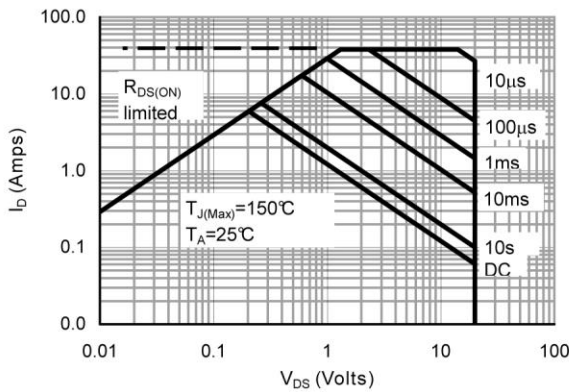


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

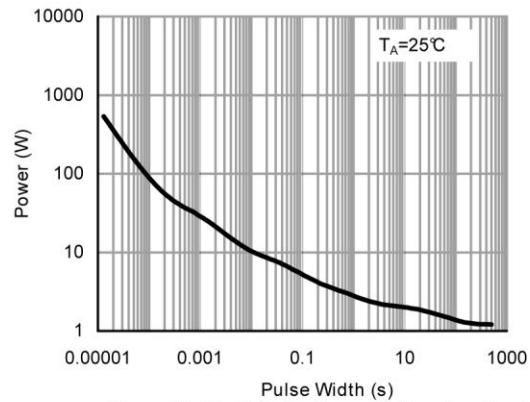


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

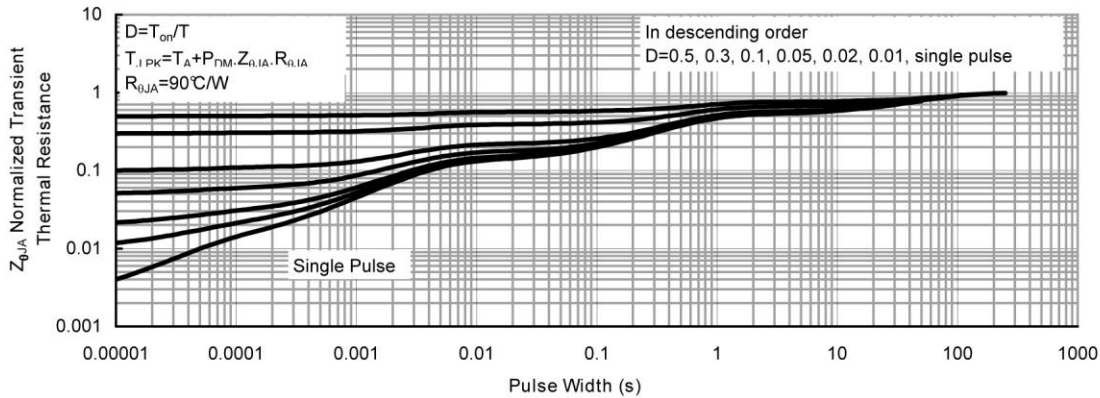
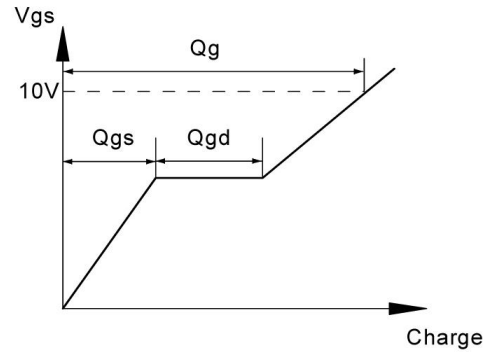
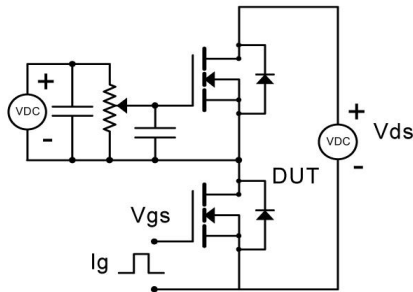


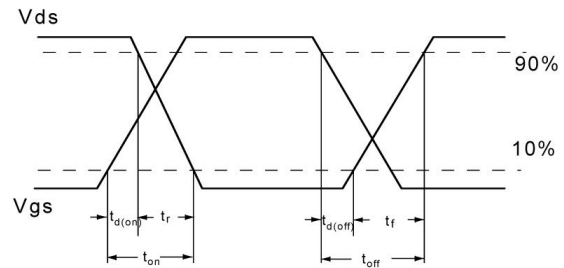
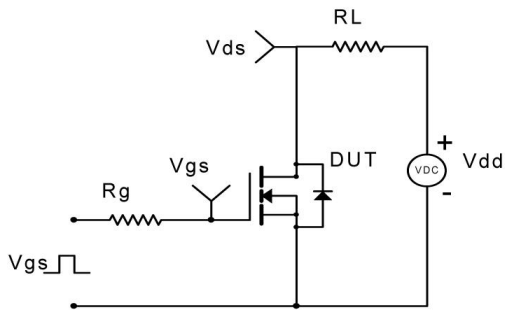
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)



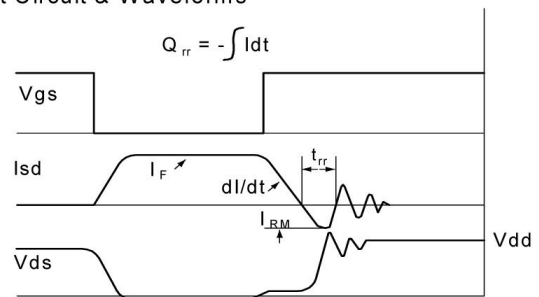
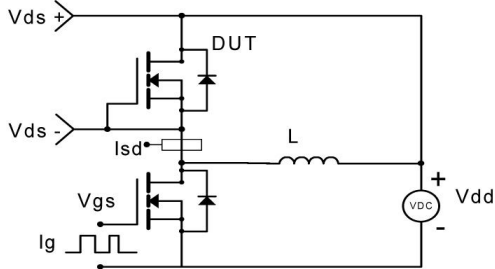
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



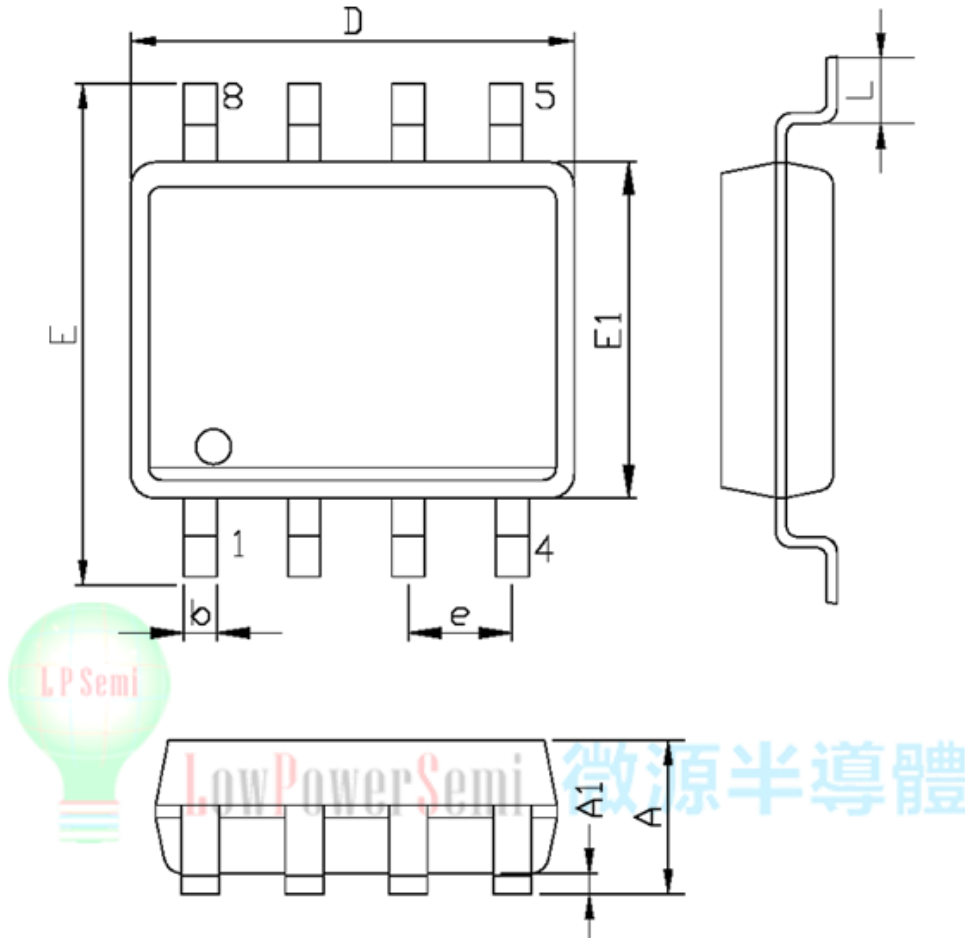
Diode Recovery Test Circuit & Waveforms





### 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	