

Description

The LM9926 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 20V$ $I_D = 6.5A$

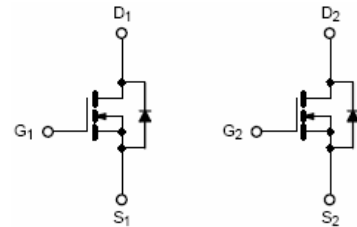
$R_{DS(ON)} < 28m\Omega$ @ $V_{GS}=10V$ (Type: 20m Ω)

Application

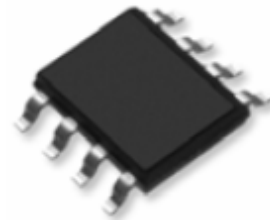
Battery protection

Load switch

Wireless charging



Schematic diagram



SOP-8 top view

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
LM9926	SOP-8	9926	3000

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	20	V
VGS	Gate-Source Voltage	± 12	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	6.5	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	4	A
IDM	Pulsed Drain Current ²	24	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ⁴	1.2	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	78	$^\circ\text{C/W}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20	22	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±12V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	1.2	V
RDS(on)	Static Drain-Source on-Resistance note3	V _{GS} =4.5V, I _D =6A	-	20	28	mΩ
		V _{GS} =2.5V, I _D =5A	-	25.5	38	
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1.0MHz	-	358	-	pF
C _{oss}	Output Capacitance		-	69.3	-	pF
C _{rss}	Reverse Transfer Capacitance		-	58.5	-	pF
Q _g	Total Gate Charge	V _{DS} =10V, I _D =3A, V _{GS} =4.5V	-	5.6	-	nC
Q _{gs}	Gate-Source Charge		-	0.8	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	1.0	-	nC
td(on)	Turn-on Delay Time	V _{DS} =10V, I _D =6A, R _G =3Ω, V _{GS} =4.5V	-	16	-	ns
t _r	Turn-on Rise Time		-	51	-	ns
td(off)	Turn-off Delay Time		-	21	-	ns
t _f	Turn-off Fall Time		-	18	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	24	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	-	1.2	V

Notes:

- 1、 Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2、 EAS condition : T_J =25°C, V_{DD} =30V, V_G =10V, L=0.5mH, R_G=25Ω, I_{AS} =3.5A
- 3、 Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

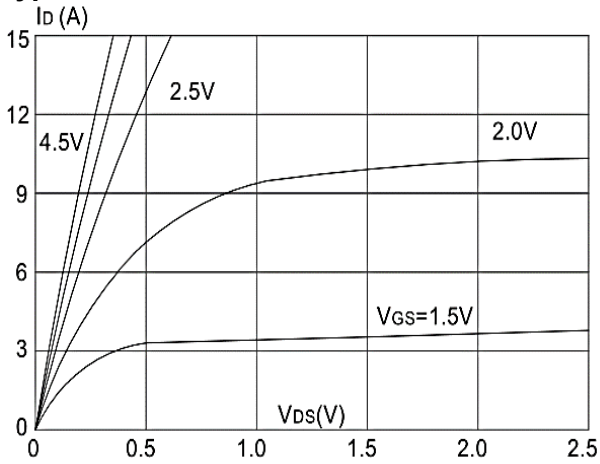


Figure 1: Output Characteristics

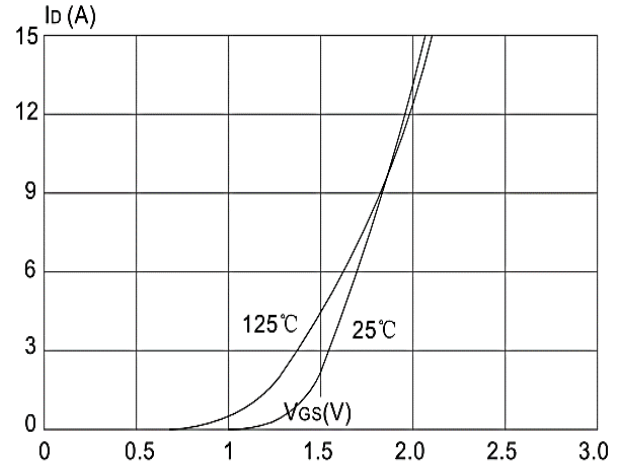


Figure 2: Typical Transfer Characteristics

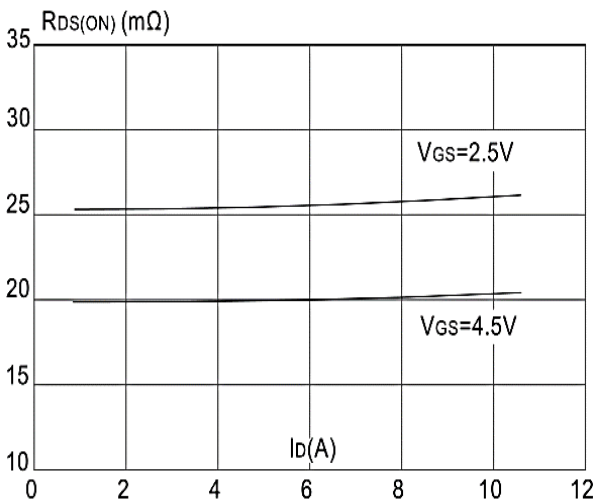


Figure 3: On-resistance vs. Drain Current

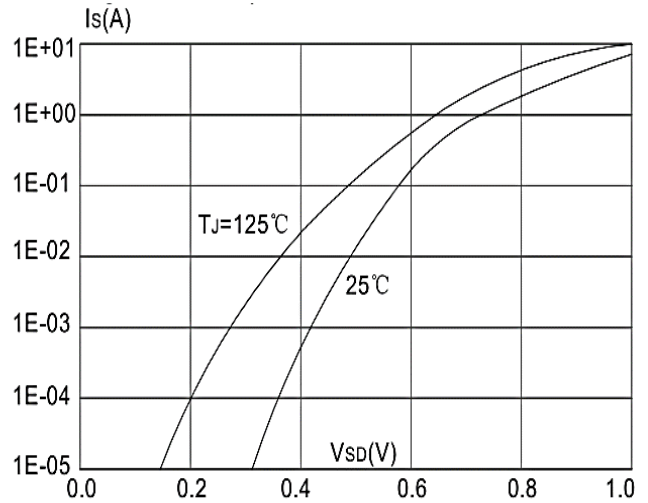


Figure 4: Body Diode Characteristics

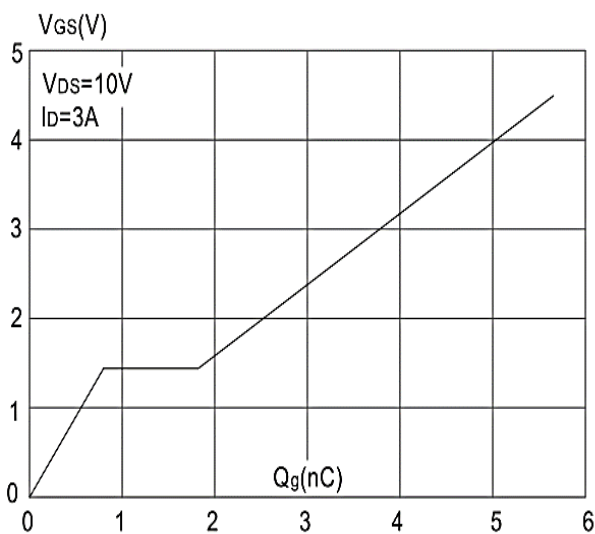


Figure 5: Gate Charge Characteristics

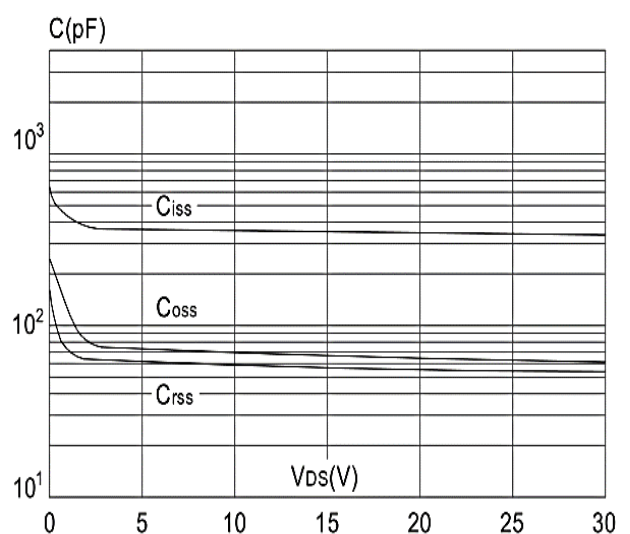


Figure 6: Capacitance Characteristics

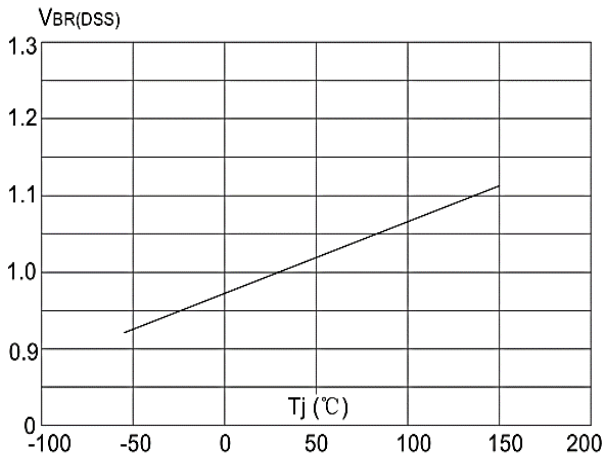


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

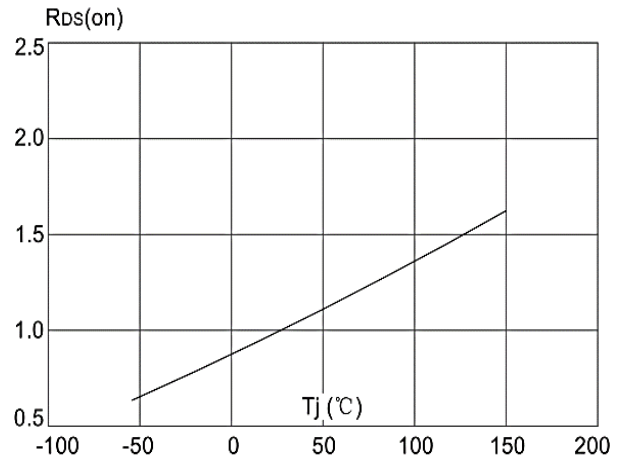


Figure 8: Normalized on Resistance vs. Junction Temperature

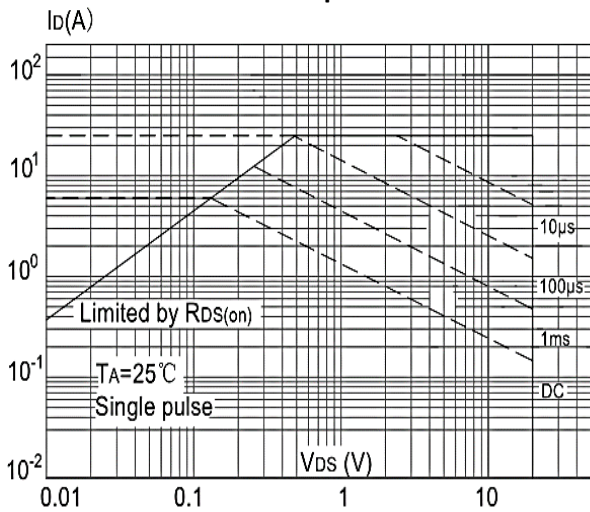


Figure 9: Maximum Safe Operating Area vs. Case Temperature

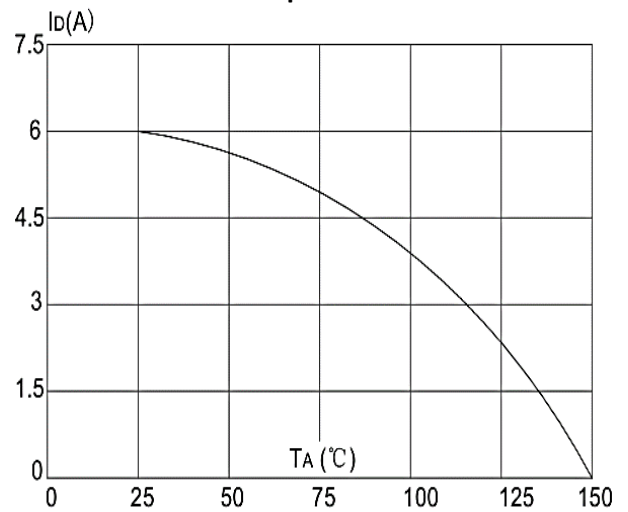


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

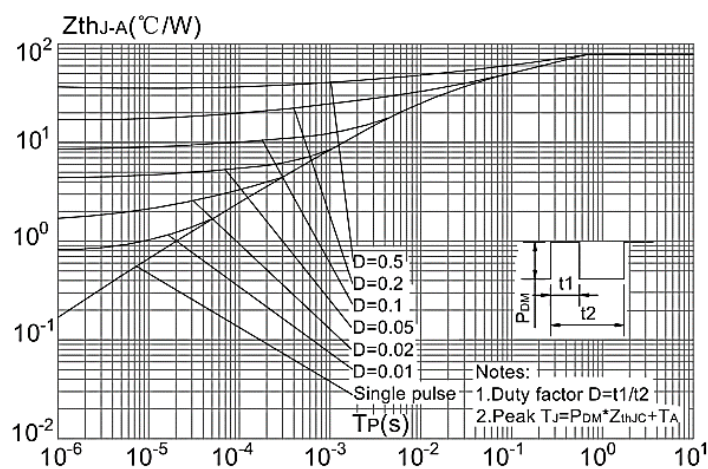
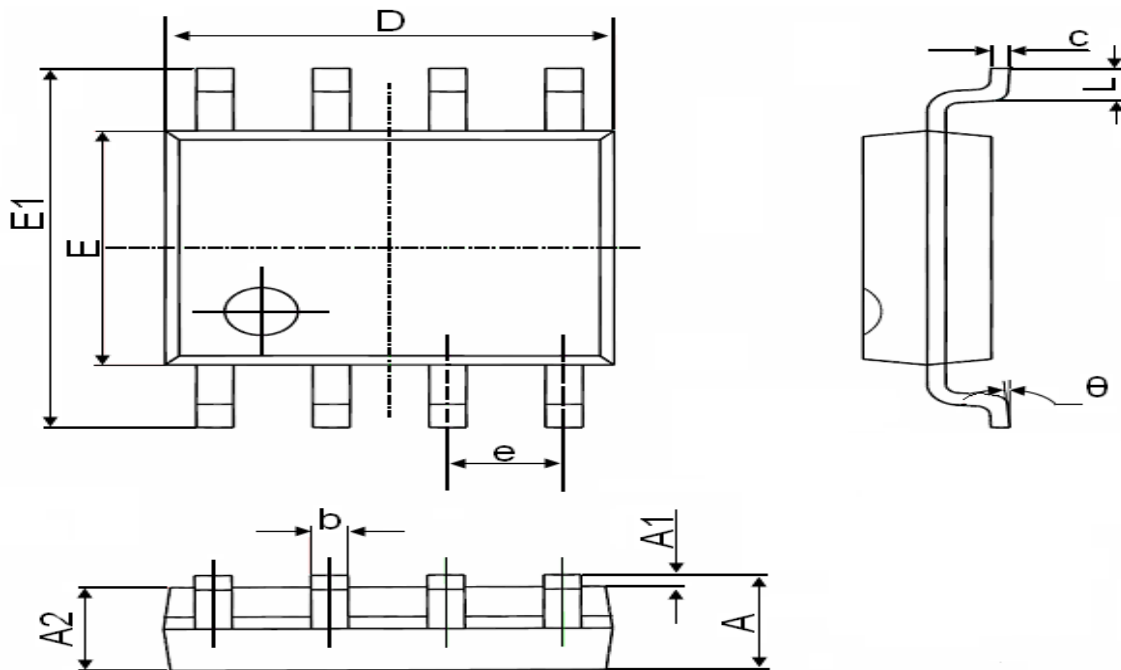


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°