Dual N–channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The GP9926 is Dual N-channel enhancement mode MOSFET designed by advanced trench process technology provides the designer with the best combination of fast switching response, low on-resistance, and low cost.

The TSSOP8 package is space saving surface mount for all commercial and industrial applications. It is suitable for low voltage, low loss and fast switching applications such as Li-ion battery pack applications.

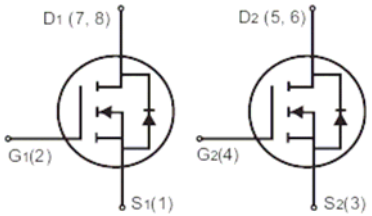
FEATURES

- **5.2A, 20V, $R_{DS(ON)}$ = 45mΩ @ V_{GS} = 2.5V**
- **6.0A, 20V, $R_{DS(ON)}$ = 30mΩ @ V_{GS} = 4.5V**
- **High performance trench technology for extremely low $R_{DS(ON)}$**
- **Low gate charge**
- **Fast switching speed**
- High Power and Current handling capability

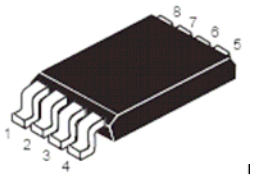
APPLICATIONS

- Li-ion Battery Pack

PACKAGE PIN OUT



TSSOP-8



MARKING INFORMATION

Part Number	Marking	Package
GP9926	xxww	TSSOP-8

xx: Year ww: Production date code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current I_D@ T_A = 25°C	I_D	6	A
Pulsed Drain Current [1] I_{DM}	I_{DM}	30	A
Total Power Dissipation P_D@ T_A = 25°C	P_D	2.0	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operation Junction Temperature Range	T_J	-55 to +150	°C
THERMAL CHARACTERISTICS			
Thermal Resistance, Junction-to-Ambient	Rthj-amb	62.5	°C/W
Thermal Resistance, Junction-to-Case	Rthj-c	30	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	GP9926			Units
			Min	Typ	Max	
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=500μA	20			V
Static Drain-source On=Resistance	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=5.2A		24	45	mΩ
		V_{GS}=4.5V, I_D=6.0A		17	30	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=500μA	0.6	0.8		V
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=6.0A	7	13		S
Drain-Source Leakage Current (Tj=25°C)	I_{DSS}	V_{DS}=20V, V_{GS} =0V			1	μA
Gate-Source Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Total Gate Charge [2]	Q_g	I_D=6.0A		7.6		nC
Gate-Source Charge	Q_{gs}	V_{DS}=10V		1.2		nC
Gate-Drain (“Miller”) Charge	Q_{gd}	V_{GS}=4.5V		2.4		nC
Turn-On Delay Time [2]	$t_{d(on)}$	V_{DS}=10V		10		ns
Turn-On Rise Time	t_r	I_D=1A		12		ns
Turn-Off Delay Time	$t_{d(off)}$	R_G=6Ω, V_{GS}=4.5V		18		ns
Turn-Off Fall Time	t_f	R_D=10Ω		8		ns
Input Capacitance	C_{iss}	V_{GS}=0V		860		pF
Output Capacitance	C_{oss}	V_{DS}=8V		160		pF
Reverse Transfer Capacitance	C_{rss}	f=1.0MHz		110		pF

SOURCE-DRAIN DIODE						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuous Source Current (Body Diode)	I_S	V_D=V_G=0V, V_S=1.2V			1.7	A
Pulsed Source Current (Body Diode)	I_{SM}				16	A
Forward On Voltage [2]	V_{SD}	Tj=25°C, I_S=1.7A, V_{GS}=0V			1.1	V

Notes:
1. Pulse width limited by safe operating area.
2. Pulse width ≦300μs, duty cycle ≦2%.

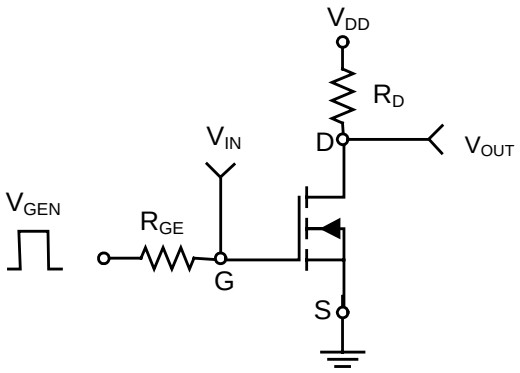


Fig 1. Switching Time Circuit

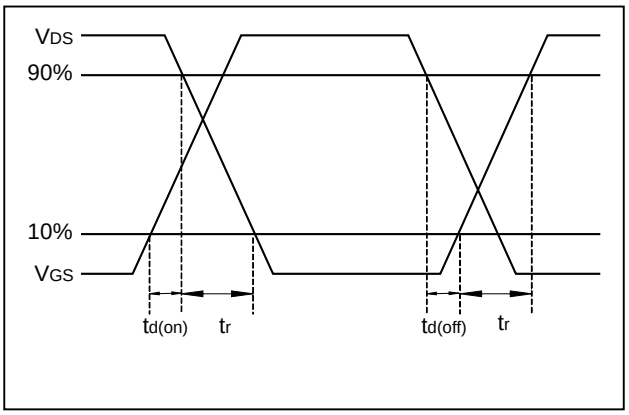
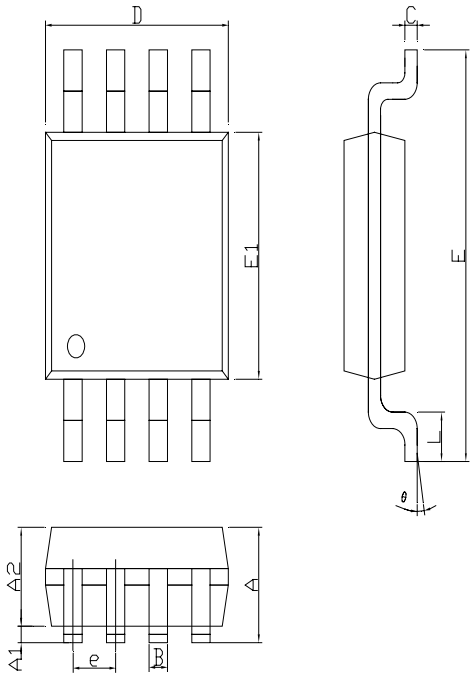


Fig 2. Switching Time Waveform

Package Information

TSSOP- 8 DIMENSION



Symbol	Dimensions in milimeters		Dimensions in inches	
	Min	Max	Min	Max
A	1.05	1.20	0.041	0.047
A1	0.05	0.15	0.002	0.006
A2	——	1.05	——	0.04
B	0.20	0.28	0.008	0.011
C	0.127		0.005	
D	2.90	3.20	0.114	0.125
E	6.20	6.60	0.244	0.260
E1	4.30	4.50	0.169	0.177
e	0.65BSC		0.025BSC	
L	0.50	0.70	0.020	0.028
θ	0°	8°	0°	8°

Green Power Semiconductor Inc. (GPS) reserves the right to make changes to its products specification without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is specification.
Some applications using integrated circuit products may involve potential risks of death, personal injury, or severe property or environmental damage. GPS integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of GPS products in such applications is understood to be fully at the risk of the customer. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.
GPS assumes no liability to customer product design or application support. GPS warrants the performance of its products to the specifications applicable at the time of sale.