

**P-Channel Enhancement Mode MOSFET****GENERAL DESCRIPTION**

The GP9435 P-channel MOSFET designed by advanced trench process technology provides the circuit designer with the best combination of very fast switching response, low on-resistance, and low cost.

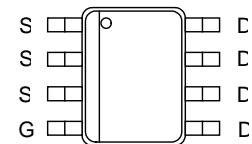
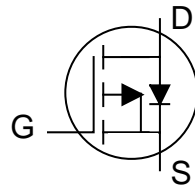
The SO-8 package is space saving surface mount for all commercial and industrial application, it is suitable for fast switching, low voltage and low loss applications such as DC/DC converters.

**FEATURES**

- -5.3A, -30V,  $R_{DS(ON)} = 50m\Omega @ V_{GS} = -10V$
- -5.3A, -30V,  $R_{DS(ON)} = 80m\Omega @ V_{GS} = -4.5V$
- Low gate charge
- Fast switching speed
- High performance trench technology for extremely low  $R_{DS(ON)}$
- Improved Shoot-Through FOM
- High Power and Current handling capability

**APPLICATIONS**

- DC/DC converters
- Load switch
- Motor Drive

**PACKAGE PIN OUT**

8-Pin Plastic S.O.I.C

**MARKING INFORMATION**

Part Number	Marking	Package
GP9435	xxww	SO8

xx: Year ww: Production date code

**ABSOLUTE MAXIMUM RATINGS (TA = 25°C unless otherwise noted)**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current $I_D @ T_A = 25^\circ C$	$I_D$	-5.3	A
Continuous Drain Current $I_D @ T_A = 70^\circ C$	$I_D$	-4.7	A
Pulsed Drain Current <sup>1</sup> $I_{DM}$	$I_{DM}$	-20	A
Total Power Dissipation $P_D @ T_A = 25^\circ C$	$P_D$	2.5	W
Linear Derating Factor		0.02	W/°C
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	$R_{thj-amb}$	50	°C/W
Thermal Resistance, Junction-to-Case	$R_{thj-c}$	30	°C/W

**ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)**

Parameter	Symbol	Test Conditions	GP9435			Units
			Min	Typ	Max	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-30			V
Breakdown Voltage Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>j</sub>	Reference to 25 °C, I <sub>D</sub> =-1mA		-0.037		V/°C
Static Drain-source On=Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-5.3A		50	60	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.2A		80	90	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1		-3	V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-5.3A	4	7		S
Drain-Source Leakage Current (T <sub>j</sub> =25°C)	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	μA
Drain-Source Leakage Current (T <sub>j</sub> =70°C)		V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V			-20	μA
Gate-Source Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V			±100	nA
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	I <sub>D</sub> =-5.3A		10		nC
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-15V		4		nC
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	V <sub>GS</sub> =-10V		2		nC
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> =-15V		10		ns
Turn-On Rise Time	t <sub>r</sub>	I <sub>D</sub> =-1A		7		ns
Turn-Off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> =6Ω, V <sub>GS</sub> =-10V		15		ns
Turn-Off Fall Time	t <sub>f</sub>	R <sub>D</sub> =15Ω		8		ns
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V		551		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-15V		90		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1.0MHz		60		pF

**SOURCE-DRAIN DIODE**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuous Source Current (Body Diode)	I <sub>S</sub>	V <sub>D</sub> =V <sub>G</sub> =0V, V <sub>S</sub> =-1.2V			-1.9	A
Pulsed Source Current (Body Diode)	I <sub>SM</sub>				-20	A
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	T <sub>j</sub> =25°C, I <sub>S</sub> =-2.6A, V <sub>GS</sub> =0V			-1.3	V

Notes:

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

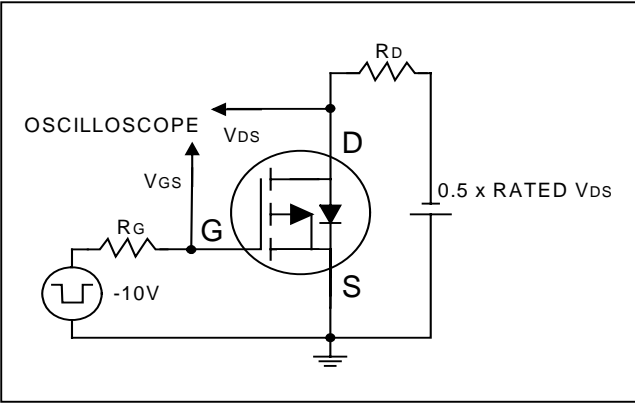


Fig 1. Switching Time Circuit

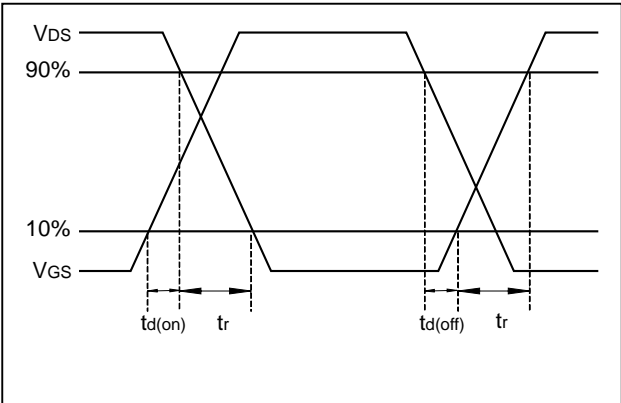


Fig 2. Switching Time Waveform

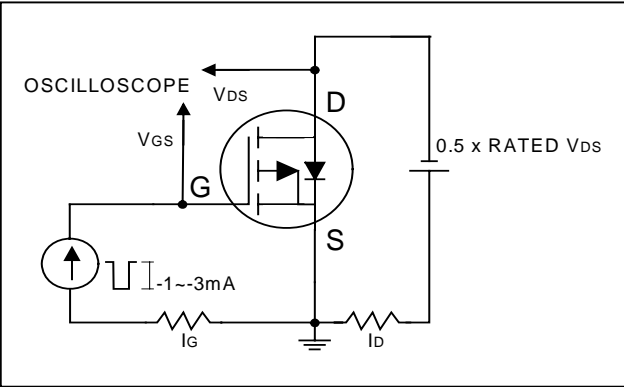


Fig 3. Gate Charge Circuit

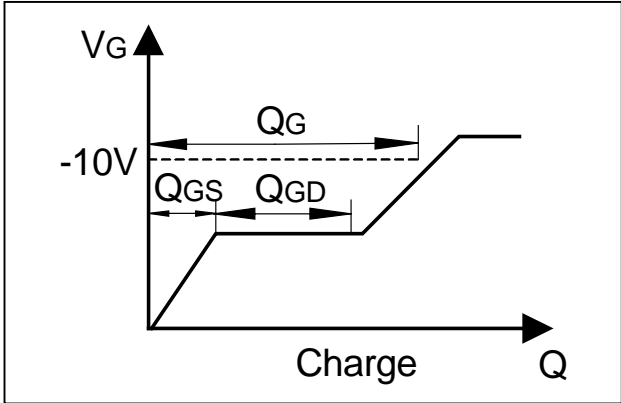
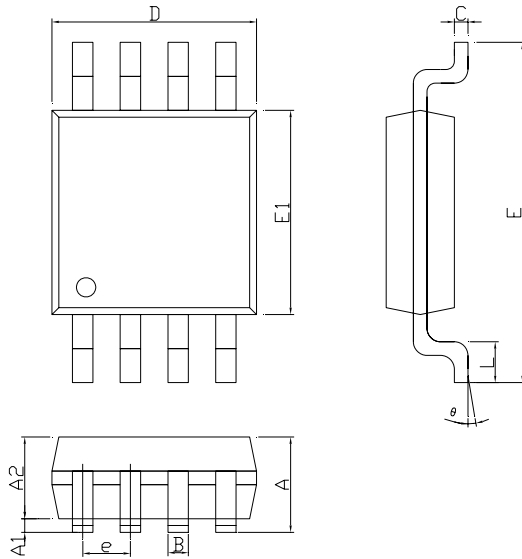


Fig 4. Gate Charge Waveform

Package Information

SO8 DIMENSION



Symbol	Dimensions in millimeters			Dimensions in inches		
	Min	Nom	Max	Min	Nom	Max
A	0.81	1.02	1.10	0.032	0.040	0.043
A1	0.05	---	0.15	0.002	---	0.006
A2	0.78	0.86	0.95	0.030	0.034	0.037
b	0.28	0.30	0.38	0.011	0.012	0.015
C	0.13	0.15	0.23	0.005	0.006	0.009
D	2.90	3.00	3.10	0.114	0.118	0.122
E	4.80	4.90	5.00	0.189	0.193	0.197
E1	2.90	3.00	3.10	0.114	0.118	0.122
e	---	0.85	---	---	0.026	---
L	0.40	0.53	0.66	0.018	0.021	0.025
θ	0°	3°	8°	0°	3°	8°

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North America  
Green Power Semiconductor, Inc.  
48780 Sedum Road  
Fremont, CA 94539, U.S.A  
Tel: +1.510.962.5206  
[sales\\_us@grnpowers.com](mailto:sales_us@grnpowers.com)

Asia  
Green Power Semiconductor, Inc.  
B316, 2, GaoXin 5 Rd.,  
XI'AN, P.R. China 710075  
Tel: +86.29.8833.6786  
[sales\\_asia@grnpowers.com](mailto:sales_asia@grnpowers.com)