P-Channel Enhancement Mode Power MOSFET

Description

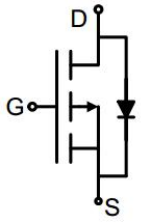
The G9435S uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

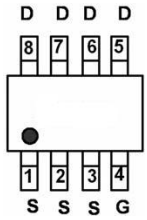
- V_{DS} -30V
- I_D (at V_{GS} = -10V) -5.1A
- $R_{DS(ON)}$ (at V_{GS} = -10V) < 45mΩ
- $R_{DS(ON)}$ (at V_{GS} = -4.5V) < 65mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters



Schematic diagram



pin assignment



SOP-8

Ordering Information

Device	Package	Marking	Packaging
G9435S	SOP-8	G9435	4000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-30	V
Continuous Drain Current	T_C = 25ºC	I_D	-5.1	A
	T_C = 100ºC		-3.2	
Pulsed Drain Current (note1)		I_{DM}	-20.4	A
Gate-Source Voltage		V_{GS}	±20	V
Power Dissipation		P_D	2.5	W
Single pulse avalanche energy （note2）		E_{AS}	10	mJ
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	50	ºC/W

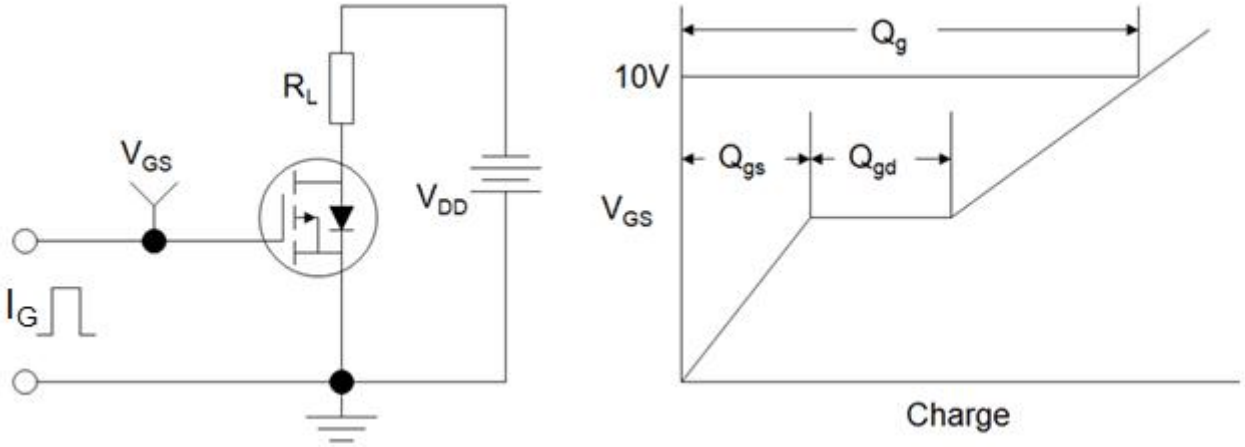
Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V	--	--	-1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.4	-3.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -4A	--	35	45	mΩ
		V_{GS} = -4.5V, I_D = -4A	--	50	65	
Forward Transconductance	g_{FS}	V_{DS} = -5V,I_D = -4A	--	6	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1.0MHz	--	720	--	pF
Output Capacitance	C_{oss}		--	160	--	
Reverse Transfer Capacitance	C_{rss}		--	110	--	
Total Gate Charge	Q_g	V_{DD} = -15V, I_D = -4A, V_{GS} = -10V	--	14	--	nC
Gate-Source Charge	Q_{gs}		--	3	--	
Gate-Drain Charge	Q_{gd}		--	2	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -15V, I_D = -4A, R_G = 3Ω	--	7.4	--	ns
Turn-on Rise Time	t_r		--	37	--	
Turn-off Delay Time	$t_{d(off)}$		--	31.6	--	
Turn-off Fall Time	t_f		--	42	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	-5.1	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = -4A, V_{GS} = 0V	--	--	-1.2	V
Reverse Recovery Charge	Q_{rr}	I_F = -4A, V_{GS} = 0V di/dt=-100A/us	--	5.3	--	nC
Reverse Recovery Time	T_{rr}		--	50	--	ns

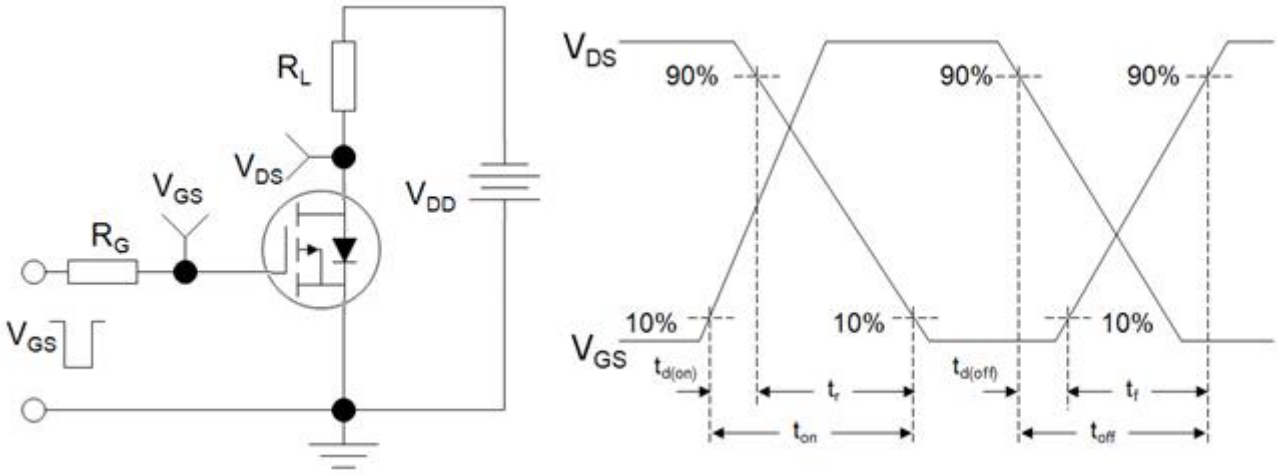
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition : Tj=25℃ ,VDD=-30V,VGS=-10V,L=0.5mH,Rg=25Ω
   The table shows the minimum avalanche energy, which is 30mJ when the device is tested until failure
3. Identical low side and high side switch with identical R_G

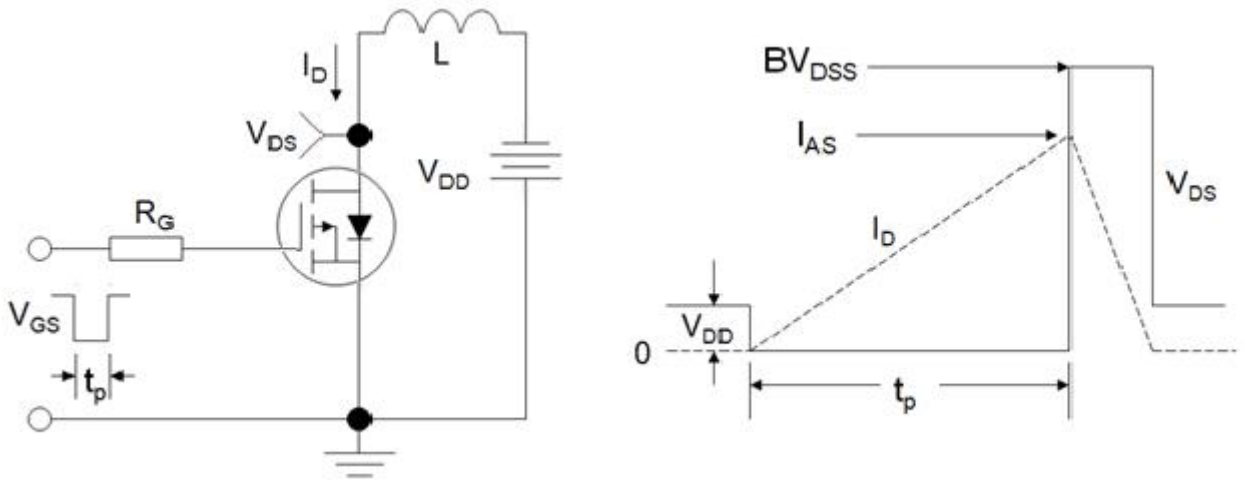
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

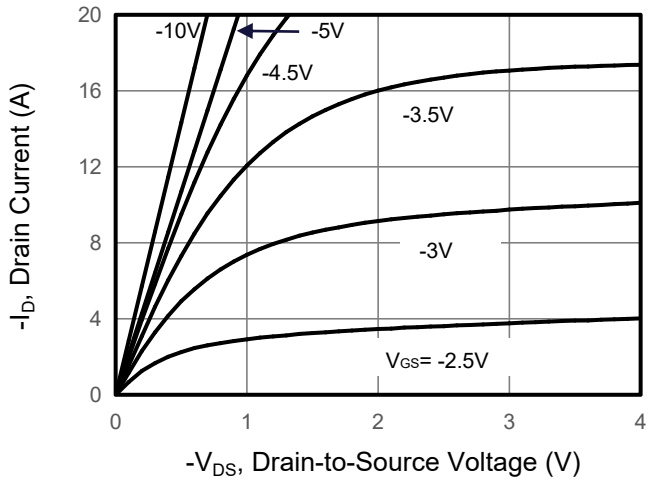


Figure 2. Transfer Characteristics

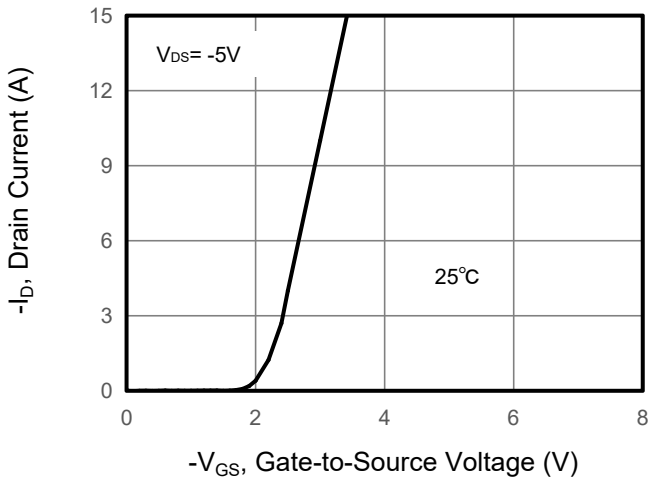


Figure 3.Drain Source On Resistance

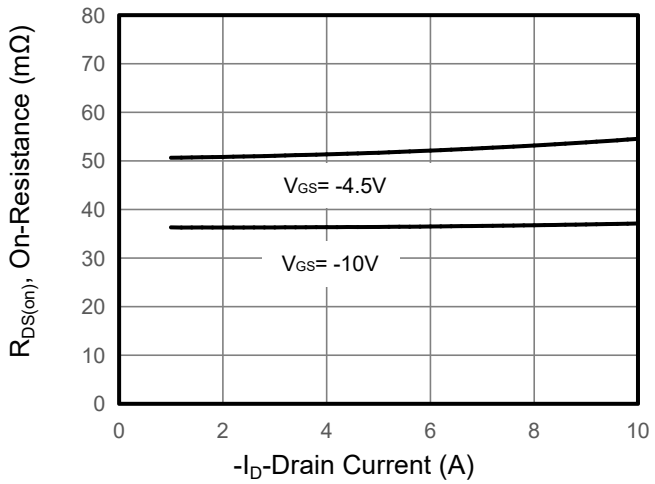


Figure 4. Gate Charge

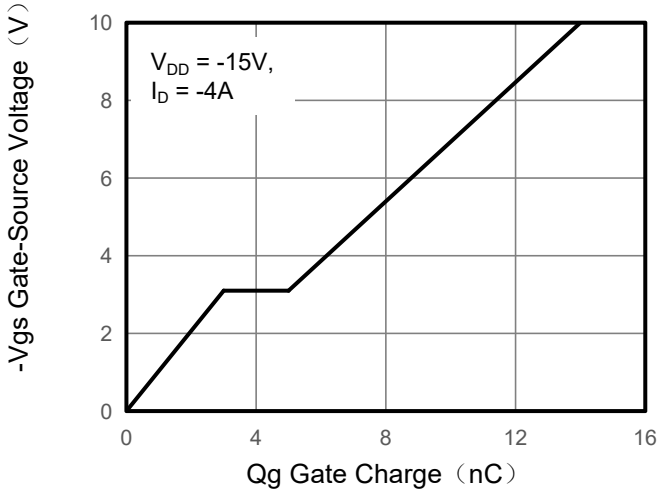


Figure 5. Capacitance

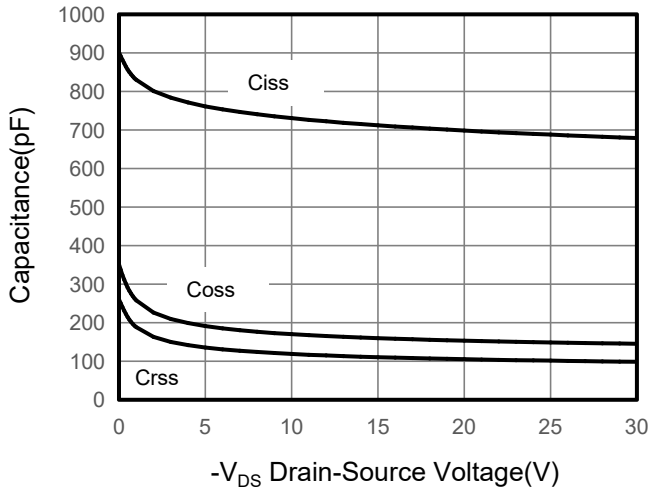
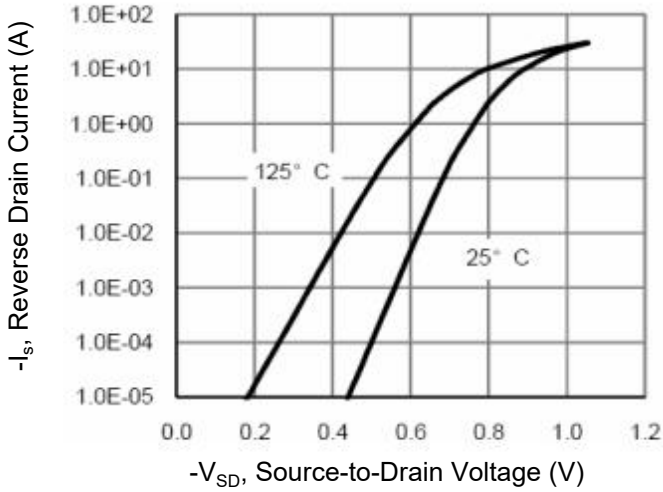


Figure 6. Source-Drain Diode Forward



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

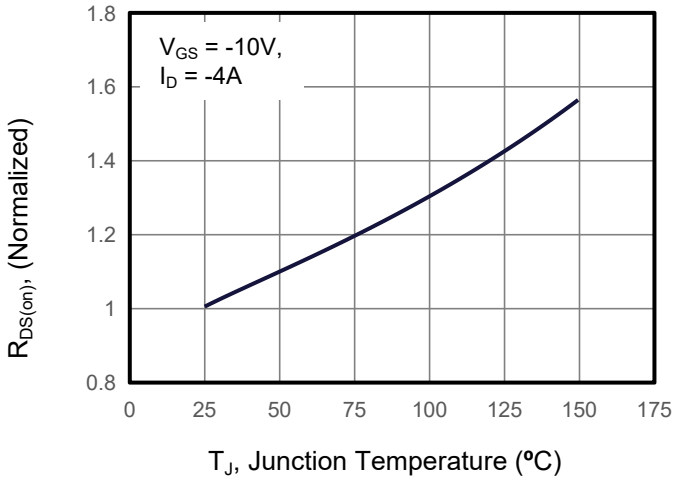


Figure 8. Safe Operation Area

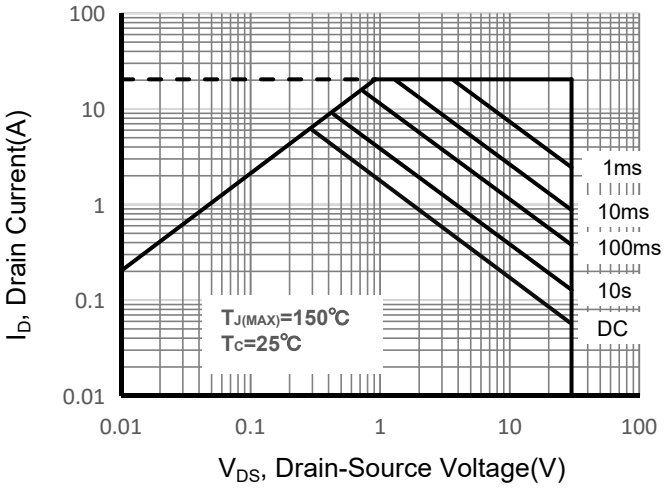


Figure 9. Maximum Continuous Drain Current vs Case Temperature

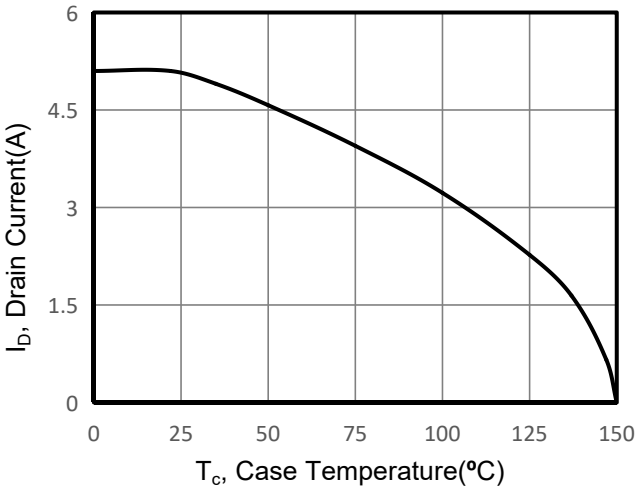
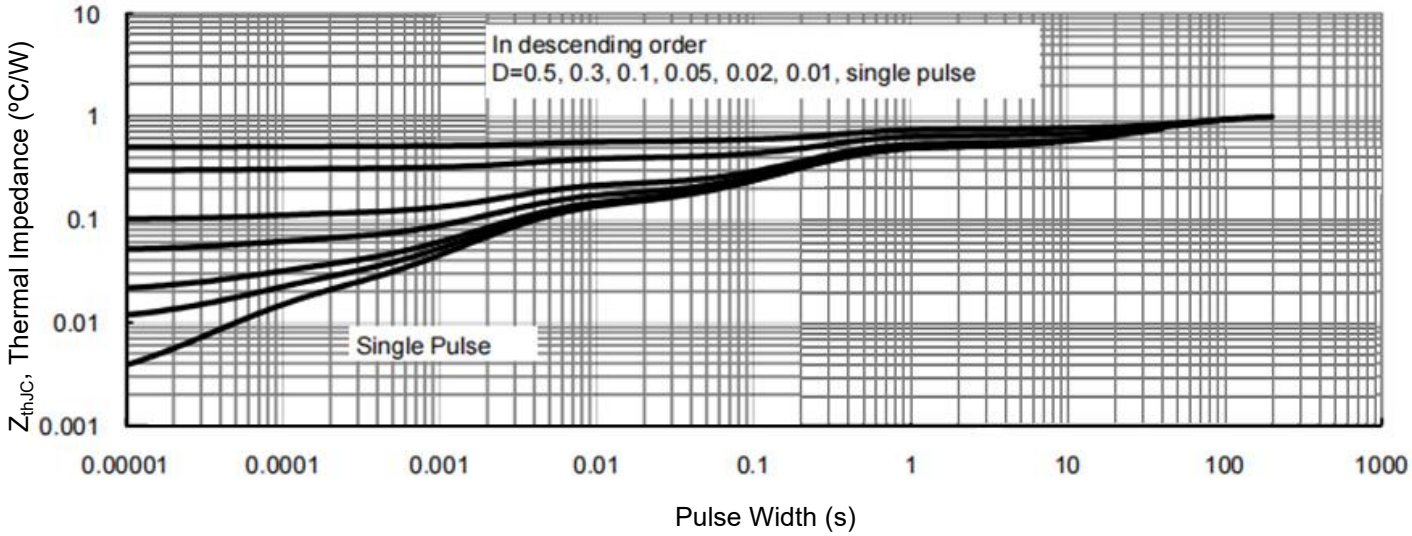


Figure 10. Normalized Maximum Transient Thermal Impedance



SOP-8 Package Information

