

GSMDL0910

100V N-Channel MOSFETs

Product Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

These devices are well suited for high efficiency fast switching applications.

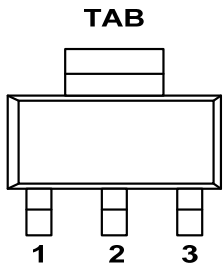
Features

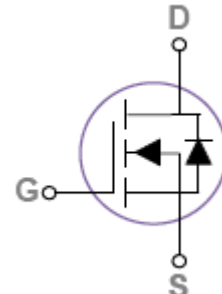
- 100V, 3A, $R_{DS(ON)}=185m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- SOT-223 package design

Applications

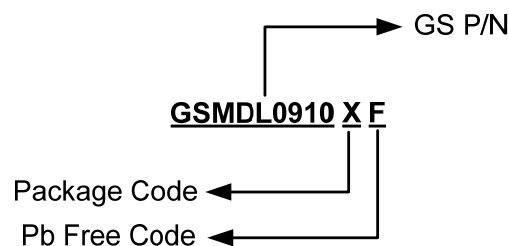
- Notebook
- Load Switch
- LED applications

Packages & Pin Assignments

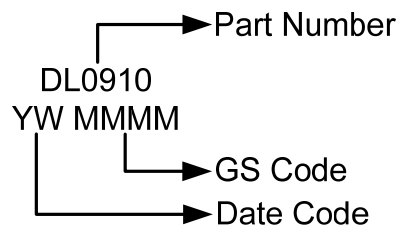
GSMDL0910XF (SOT-223)	
	
Pin	Description
1	Gate
2	Drain
3	Source



Ordering Information



Marking Information



Part Number	Package	Quantity
GSMDL0910XF	SOT-223	2500pcs

Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _A =25°C	3
		T _A =100°C	1.8
I _{DM}	Pulsed Drain Current	12	A
P _D	Power Dissipation (T _A =25°C)	1.78	W
	Power Dissipation (Derate above 25°C)	0.014	W/°C
T _J	Operating Junction Temperature Range	-50 to +150	°C
T _{STG}	Storage Temperature Range	-50 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	70	°C/W
R _{θJC}	Thermal Resistance-Junction to Case	30	°C/W

Electrical Characteristics

T_A=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA		0.10		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.2	1.8	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			-4		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			3	A
I _{SM}	Pulsed Source Current				6	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =2A		160	185	mΩ
		V _{GS} =4.5V, I _D =1A		170	195	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =1A		5		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =2A		13.4	21	nC
Q _{gs}	Gate-Source Charge			2.9	6	
Q _{gd}	Gate-Drain Charge			1.7	4	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz		820	1190	pF
C _{oss}	Output Capacitance			35	55	
C _{rss}	Reverse Transfer Capacitance			20	30	
t _{d(on)}	Turn-On Time	V _{DD} =30V, I _D =1A, V _{GS} =10V, R _G =3.3Ω		1.6	3	ns
t _r				6.6	13	
t _{d(off)}	Turn-Off Time			11.5	22	
t _f				3.6	7	
R _g	Gate Resistance		V _{DS} =0V, V _{GS} =0V, f=1MHz		1.3	

Typical Performance Characteristics

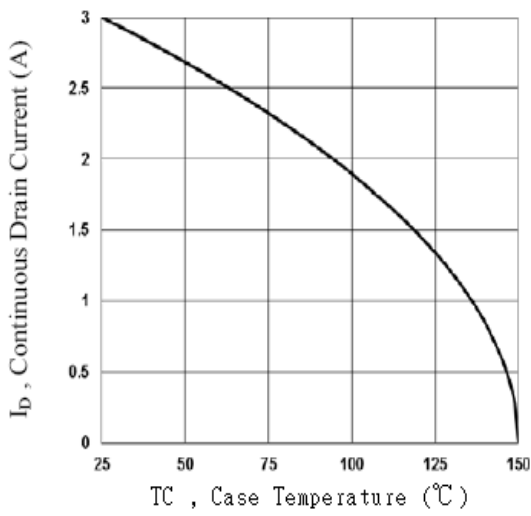


Fig.1 Continuous Drain Current vs. T_c

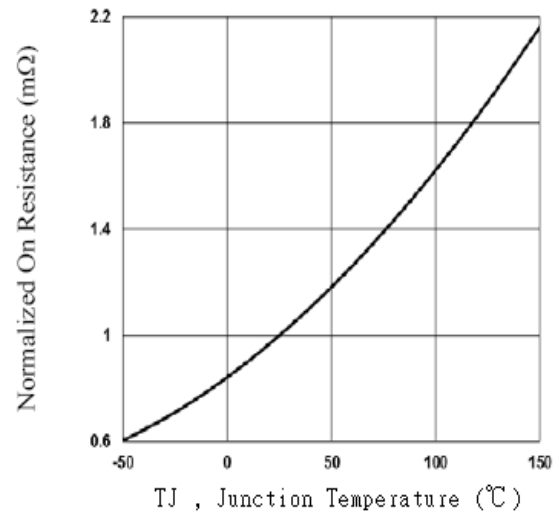


Fig.2 Continuous Drain Current vs. T_c

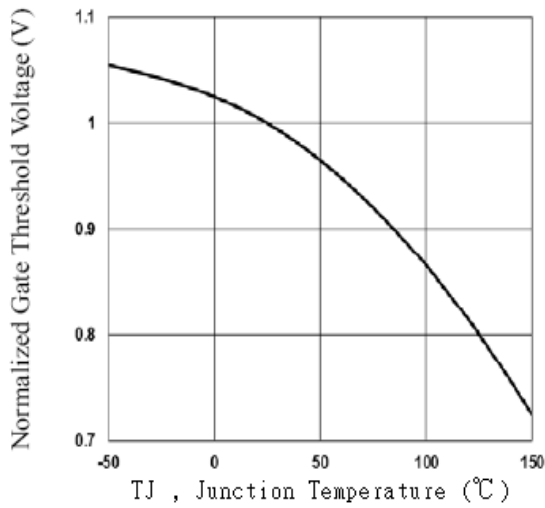


Fig.3 Normalized V_{th} vs. T_j

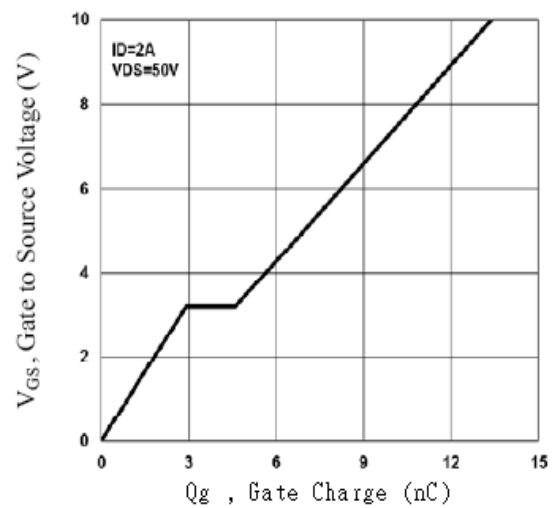


Fig.4 Gate Charge Waveform

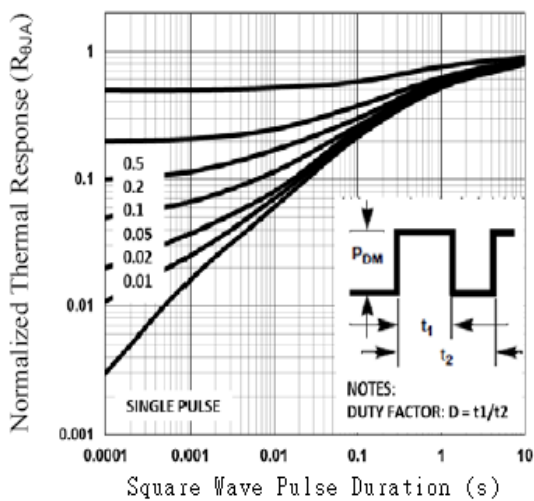


Fig.5 Normalized Transient Impedance

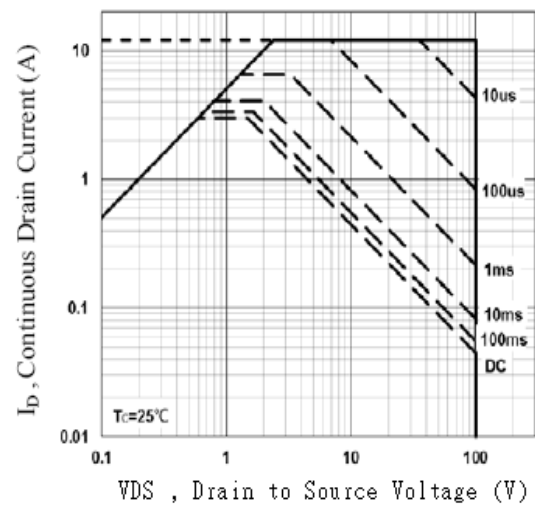
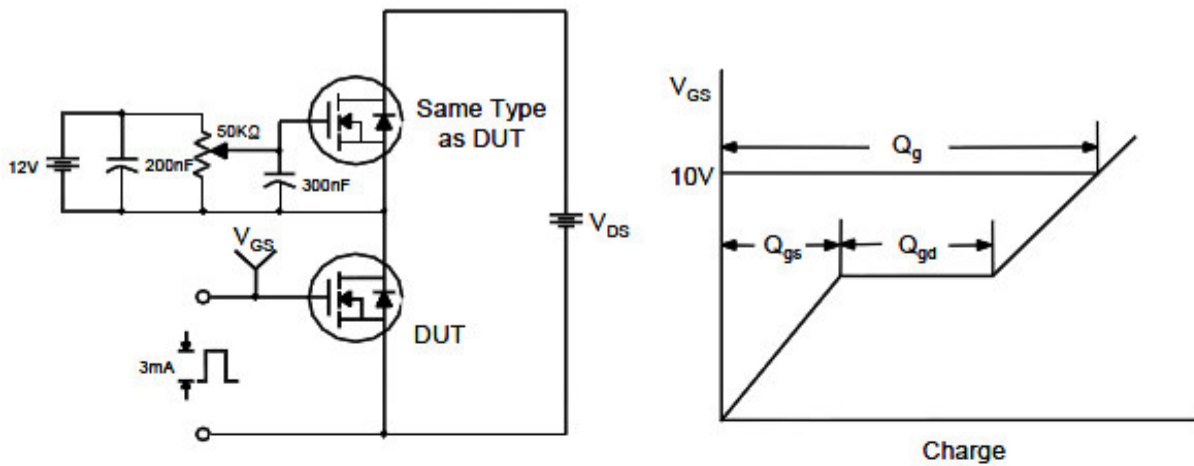


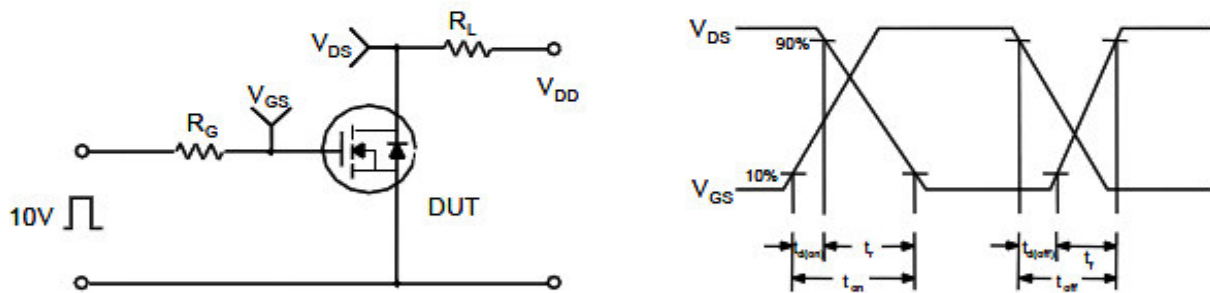
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

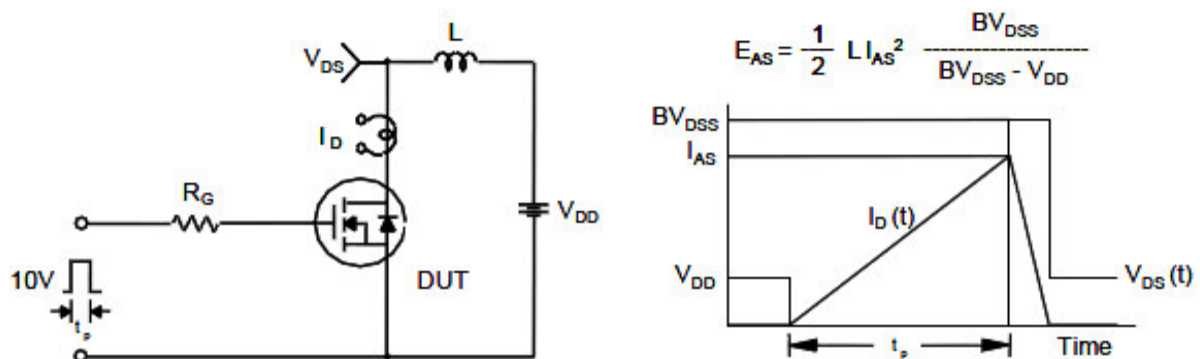
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

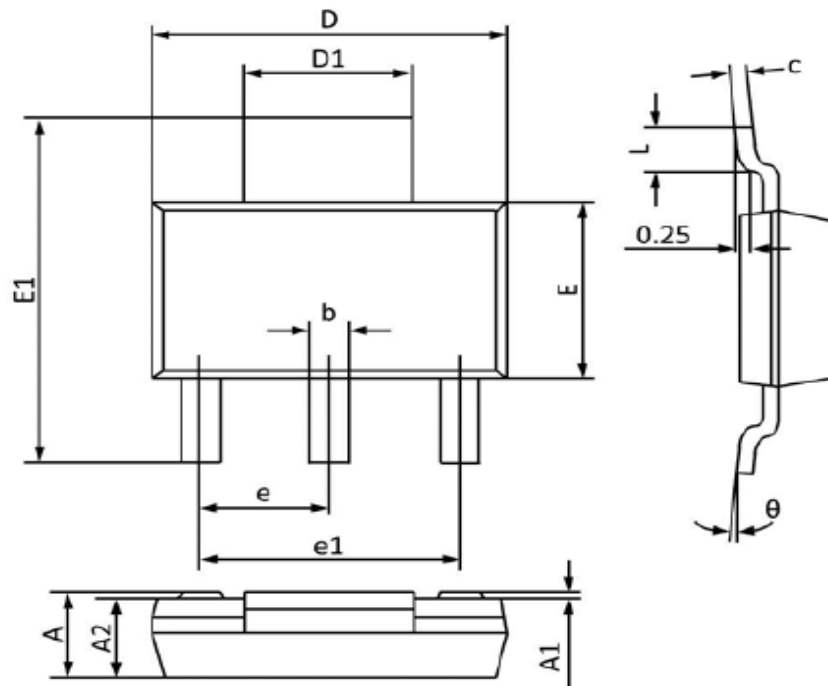


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-223



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300 (BSC)		0.091 (BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

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