

GSM2301S

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM2301S, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

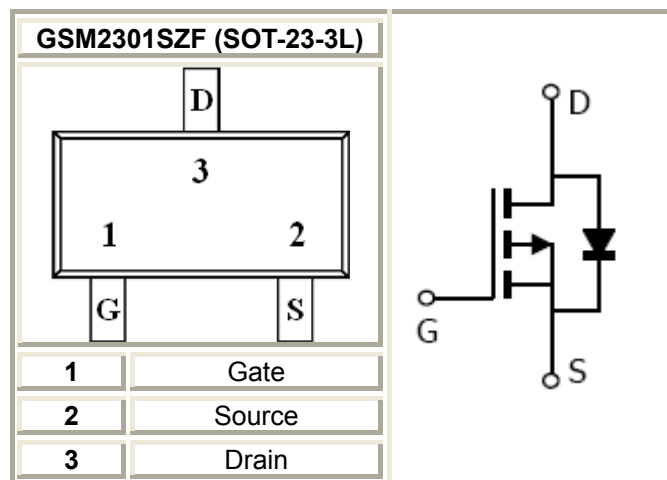
Features

- -20V/-2.8A, $R_{DS(ON)}=120m\Omega@V_{GS}=-4.5V$
- -20V/-2.0A, $R_{DS(ON)}=170m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design
- RoHS Compliant, 100%Pb & Halogen Free

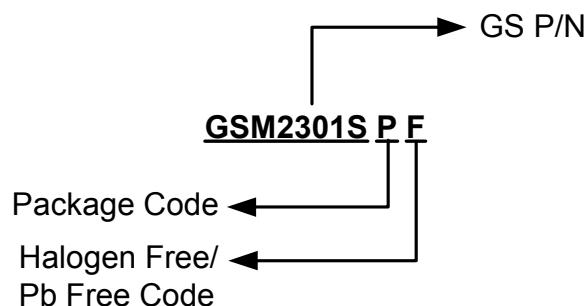
Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Net Working System

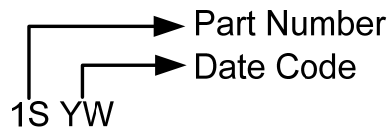
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM2301SZF	SOT-23-3L	1SYW

Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

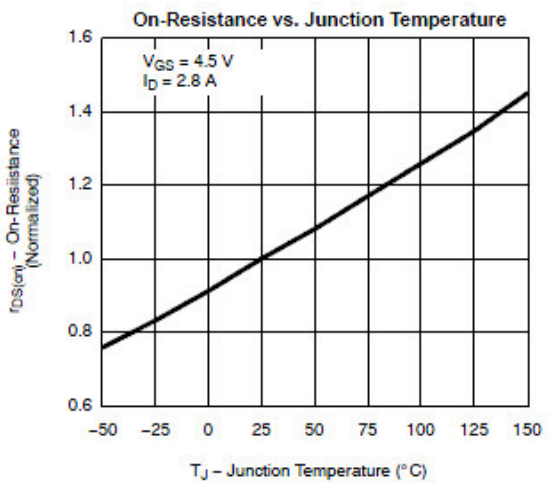
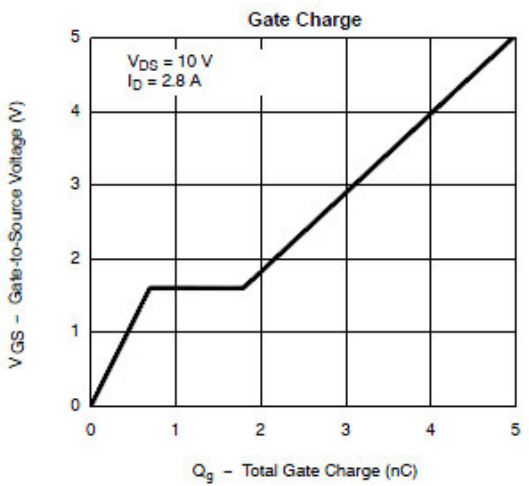
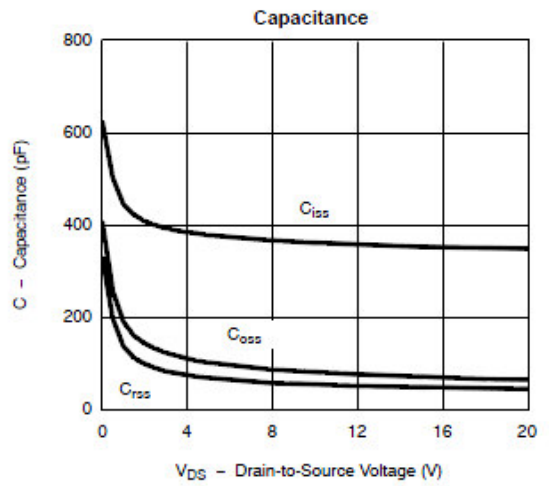
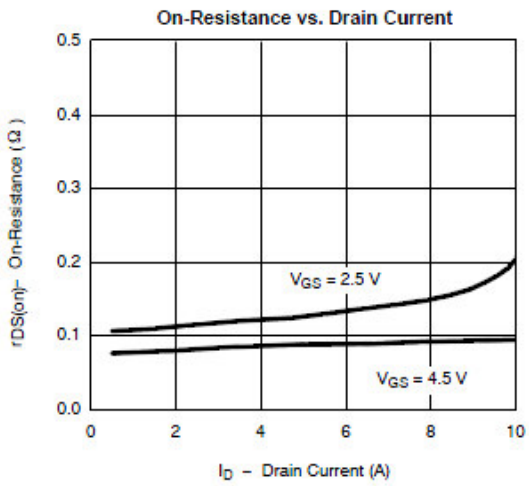
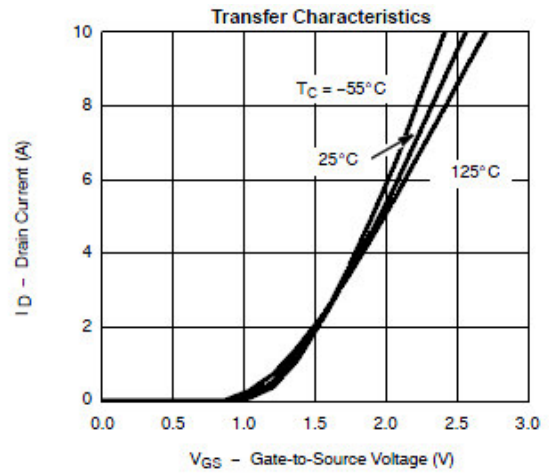
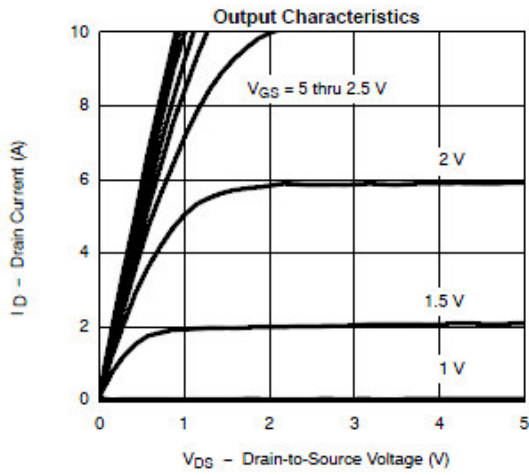
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	-20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	-3.0
		T _A =70°C	-2.0
I _{DM}	Pulsed Drain Current	-10	A
I _S	Continuous Source Current(Diode Conduction)	-1.6	A
P _D	Power Dissipation	T _A =25°C	1.25
		T _A =70°C	0.8
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	120	°C/W

Electrical Characteristics

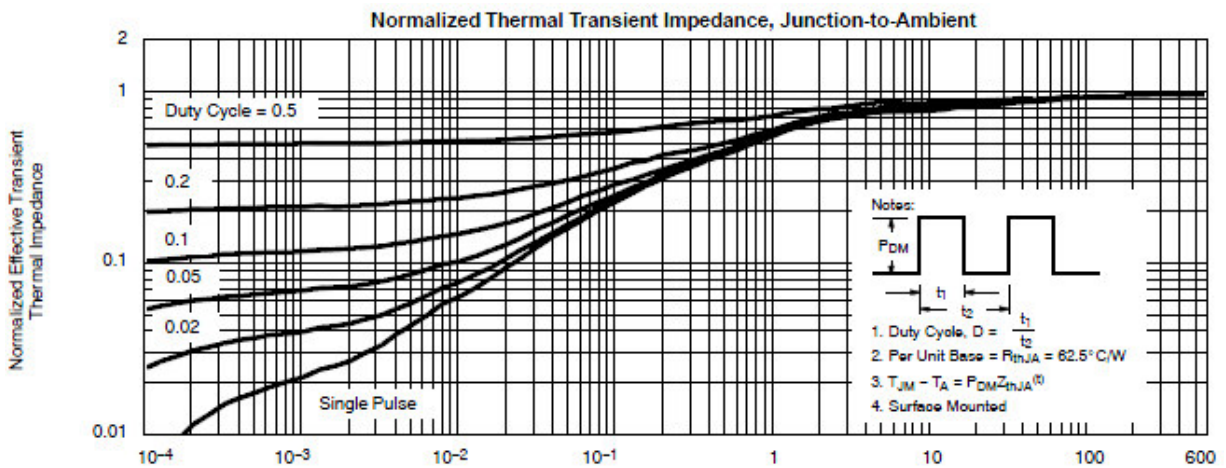
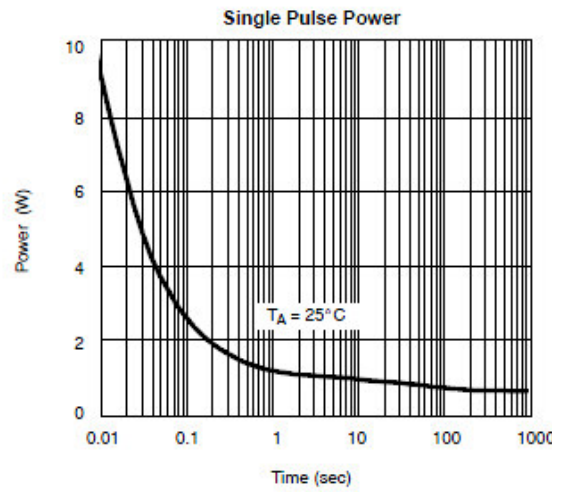
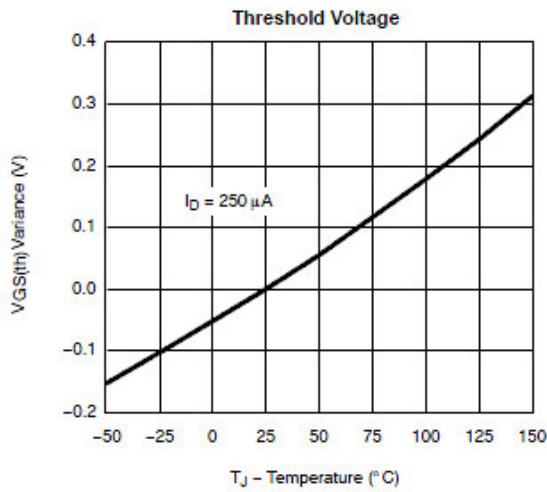
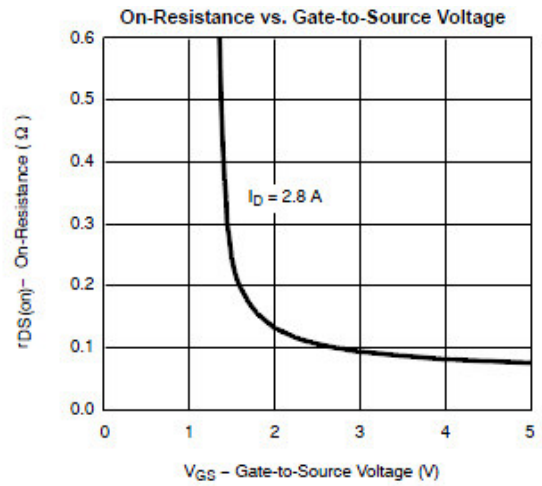
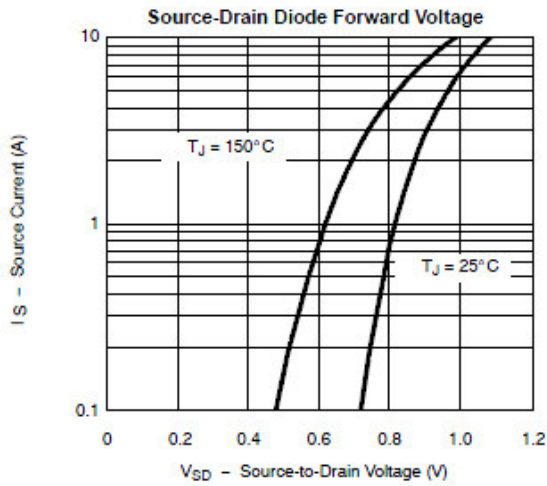
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5		-1.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -16V, V _{GS} =0V			-1	μA
		V _{DS} = -16V, V _{GS} =0V, T _J =85°C			-30	
I _{D(on)}	On-State Drain Current	V _{DS} ≤-5V, V _{GS} =-4.5V	-6			A
		V _{DS} ≤-5V, V _{GS} =-2.5V	-3			
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-3.0A		90	120	mΩ
		V _{GS} =-2.5V, I _D =-2.0A		130	170	
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-2.8A		6.5		S
V _{SD}	Diode Forward Voltage	I _S =-1.25A, V _{GS} =0V		-0.75	-1.3	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-6V, V _{GS} =0V F=1MHz		415		pF
C _{oss}	Output Capacitance			223		
C _{rss}	Reverse Transfer Capacitance			87		
Q _g	Total Gate Charge	V _{DS} =-6V, V _{GS} =-4.5V, I _D =-2.8A		5.8	10	nC
Q _{gs}	Gate-Source Charge			0.85		
Q _{gd}	Gate-Drain Charge			1.7		
td(on)	Turn-On Time	V _{DD} =-6V, R _L =6Ω, I _D =-1.0A V _{GEN} =-4.5V, R _G =6Ω		13	25	ns
tr				36	60	
td(off)	Turn-Off Time			42	70	
tf				34	60	

Typical Performance Characteristics

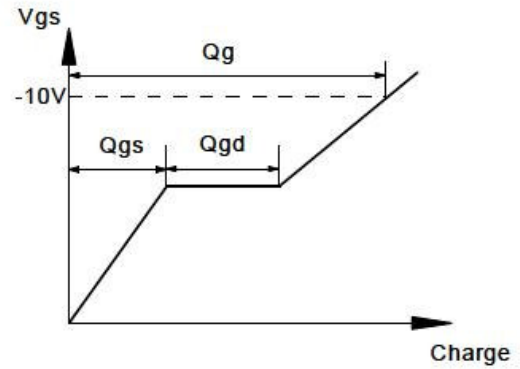
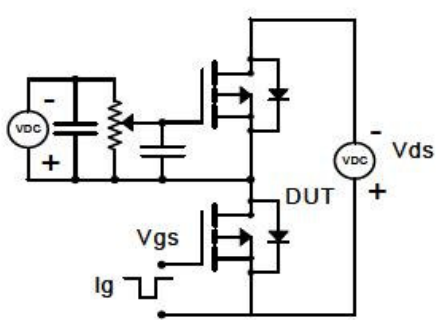


Typical Performance Characteristics (continue)

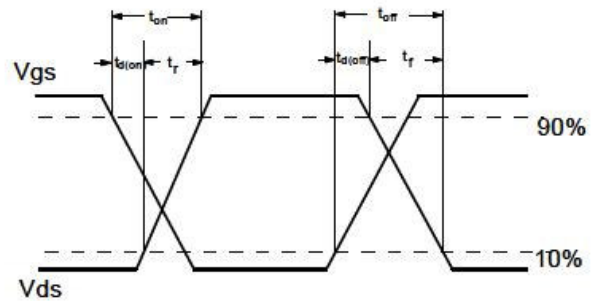
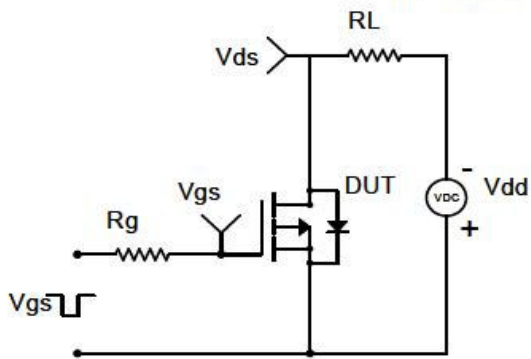


Typical Characteristics

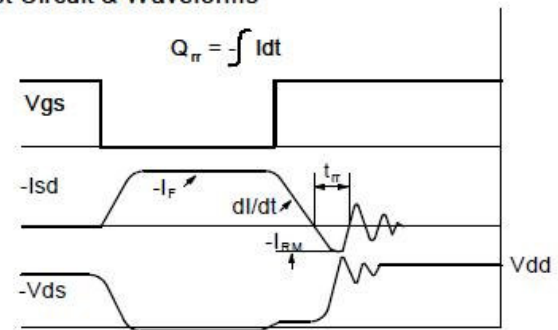
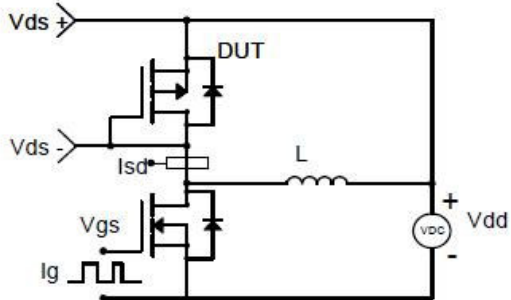
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

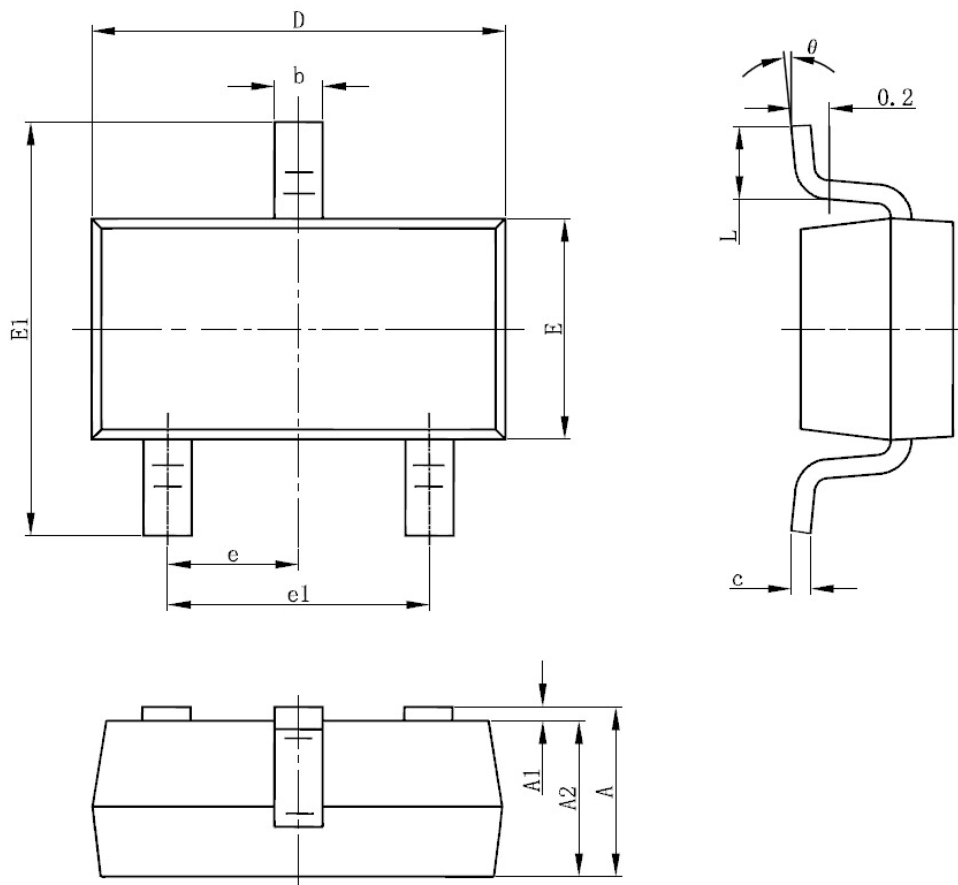


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-23-3L







Dimensions





SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.4	0.012	0.016
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 (TYP)		0.037 (TYP)	
e1	1.8	2	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°



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