

GSM2301

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM2301, 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.

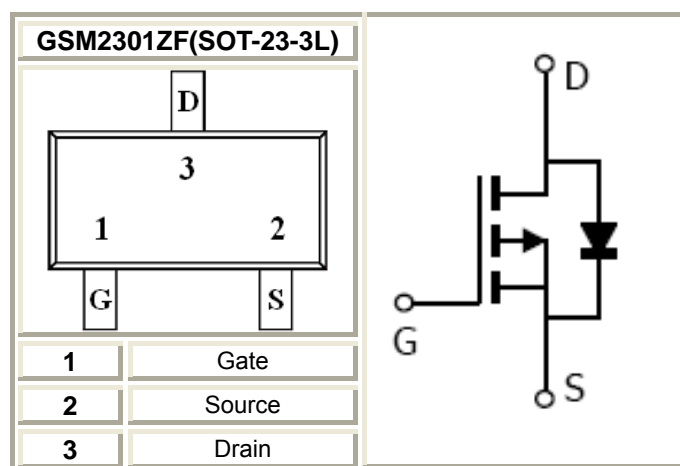
Features

- $-20V/-3.0A, R_{DS(ON)}=105m\Omega@V_{GS}=-4.5V$
- $-20V/-2.4A, R_{DS(ON)}=155m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

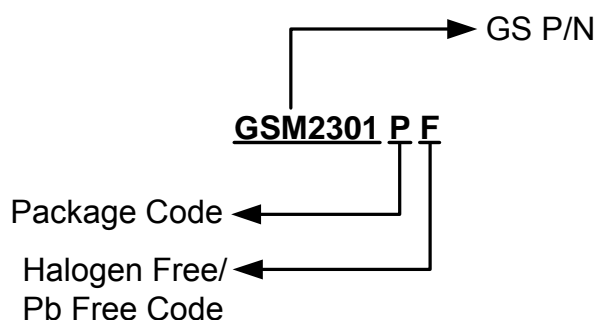
Applications

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

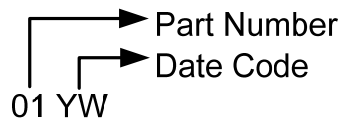
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM2301ZF	SOT-23-3L	01YW

Absolute Maximum Ratings

($T_A=25^\circ\text{C}$ unless otherwise noted)

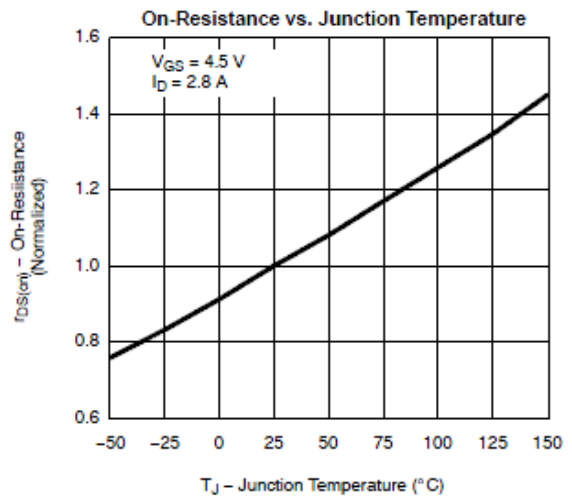
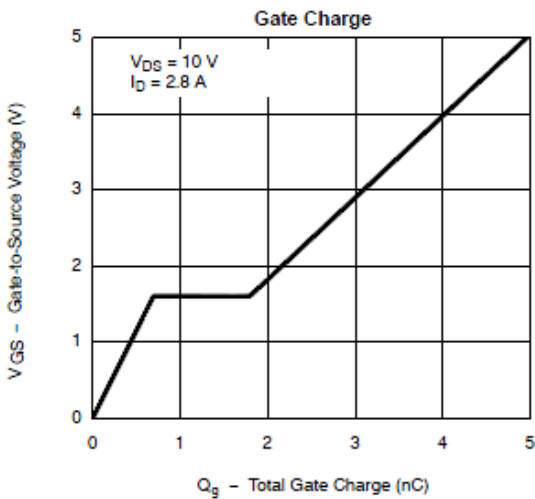
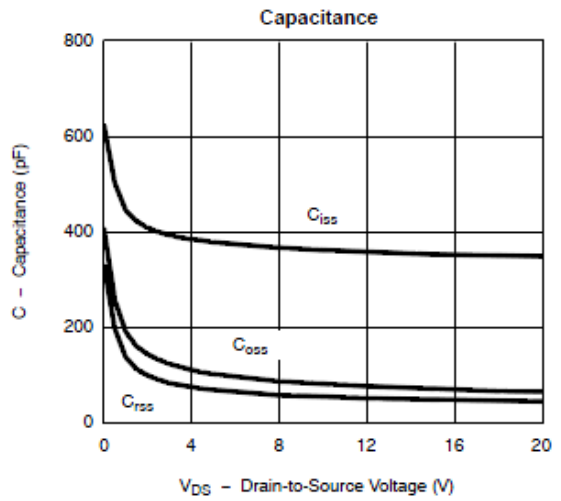
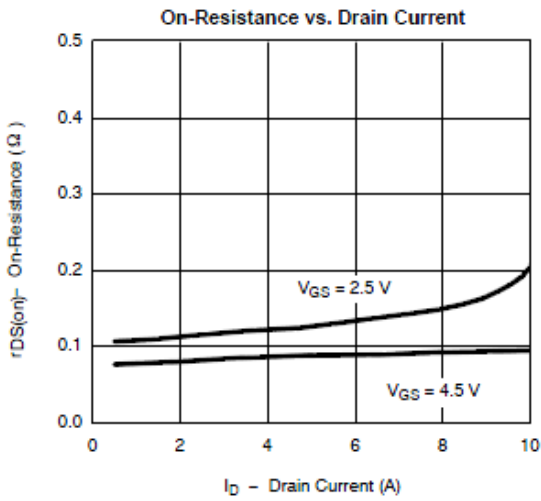
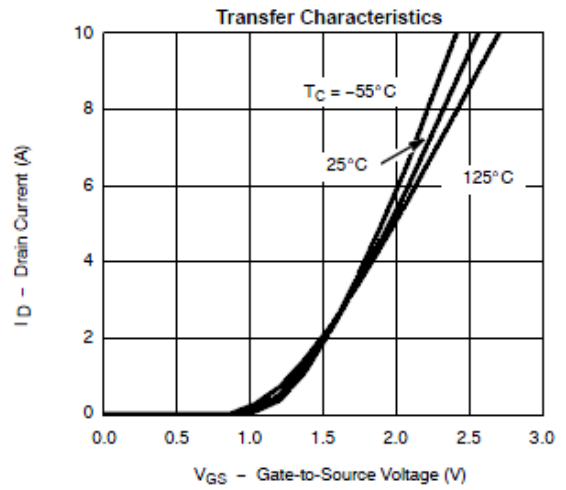
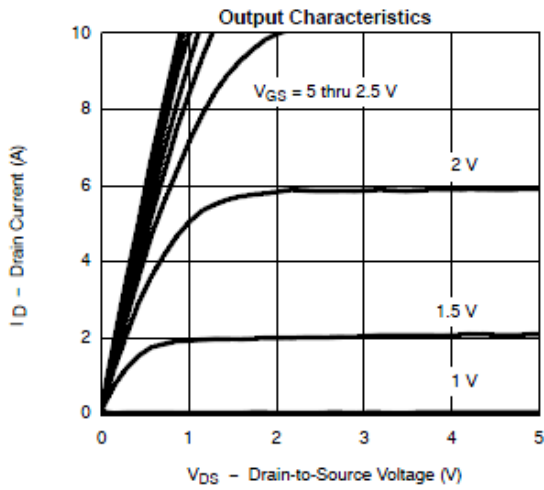
Symbol	Parameter	Typical	Unit	
V_{DSS}	Drain-Source Voltage	-20	V	
V_{GSS}	Gate -Source Voltage	± 12	V	
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_A=25^\circ\text{C}$	-3.0	A
		$T_A=70^\circ\text{C}$	-2.0	
I_{DM}	Pulsed Drain Current	-10	A	
I_S	Continuous Source Current(Diode Conduction)	-1.6	A	
P_D	Power Dissipation	$T_A=25^\circ\text{C}$	1.25	W
		$T_A=70^\circ\text{C}$	0.8	
T_J	Operating Junction Temperature	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-55/150	$^\circ\text{C}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	120	$^\circ\text{C}/\text{W}$	

Electrical Characteristics

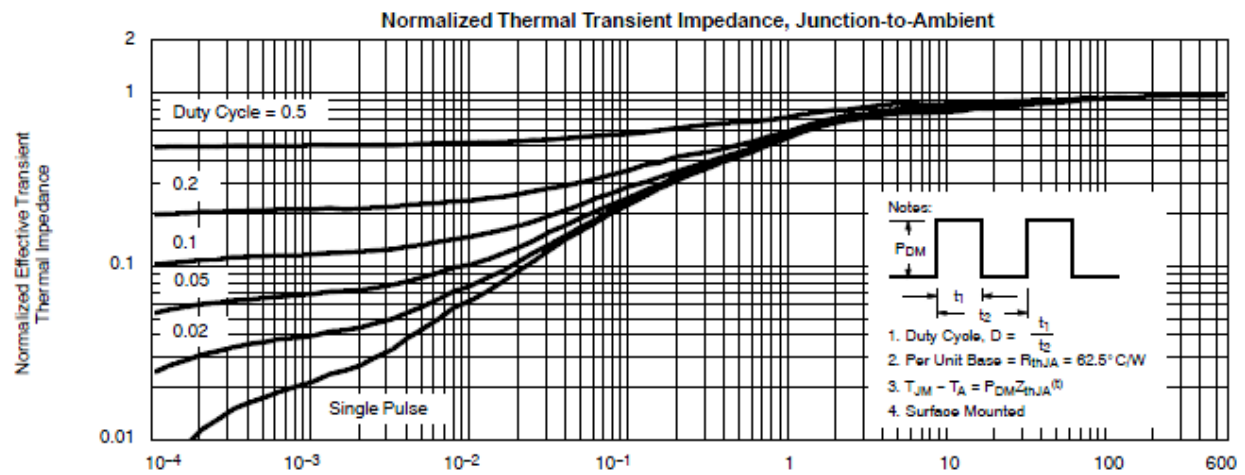
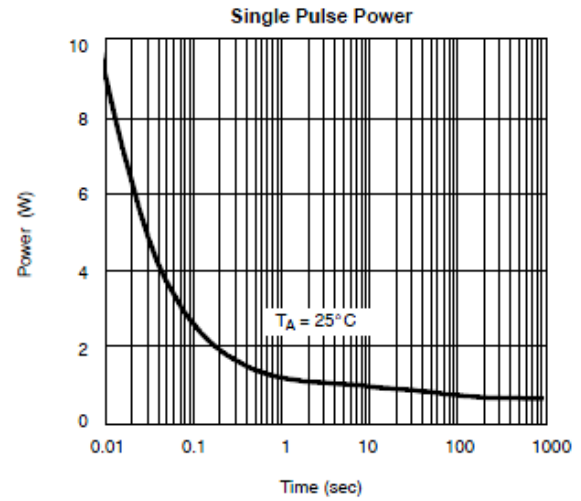
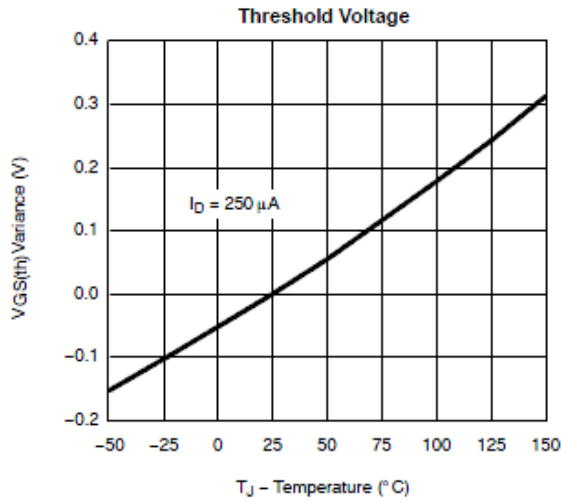
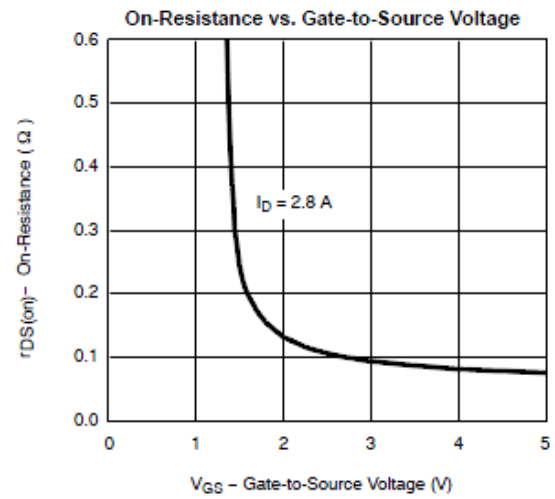
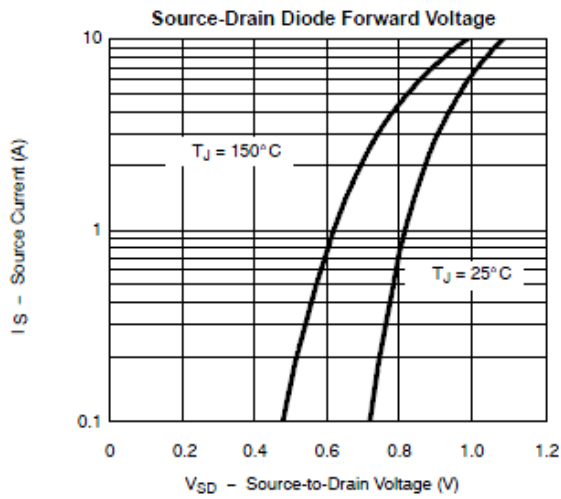
($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5		-1.0	
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$			-1	uA
		$V_{DS}=-16V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			-30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-4.5V$	-6			A
		$V_{DS}\leq -5V, V_{GS}=-2.5V$	-3			
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-3.0A$		96	105	m Ω
		$V_{GS}=-2.5V, I_D=-2.4A$		138	155	
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						
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		
C_{iss}	Input Capacitance	$V_{DS}=-6V, V_{GS}=0V$ $f=1\text{MHz}$		415		pF
C_{oss}	Output Capacitance			223		
C_{rss}	Reverse Transfer Capacitance			87		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-6V, R_L=6\Omega$ $I_D=-1.0A, V_{GEN}=-4.5V$ $R_G=6\Omega$		13	25	ns
t_r				36	60	
$t_{d(off)}$	Turn-Off Time			42	70	
t_f				34	60	

Typical Performance Characteristics

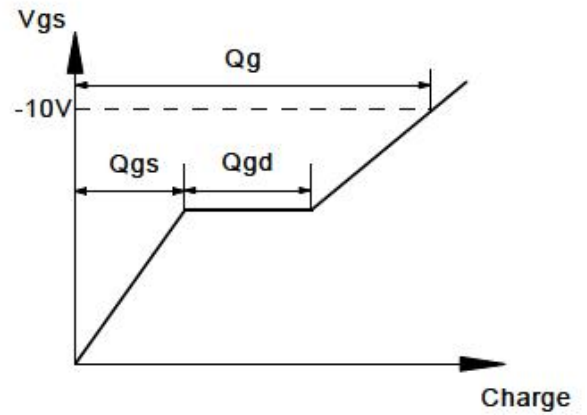
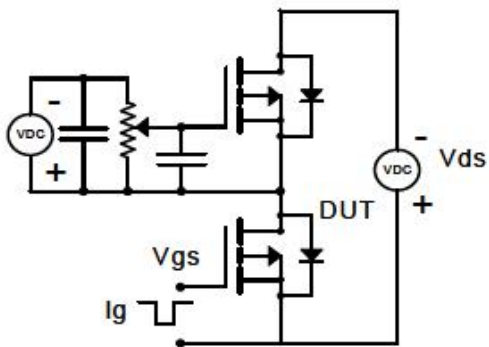


Typical Performance Characteristics (continue)

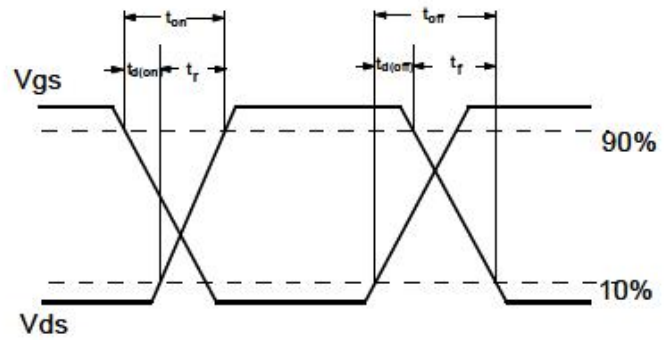
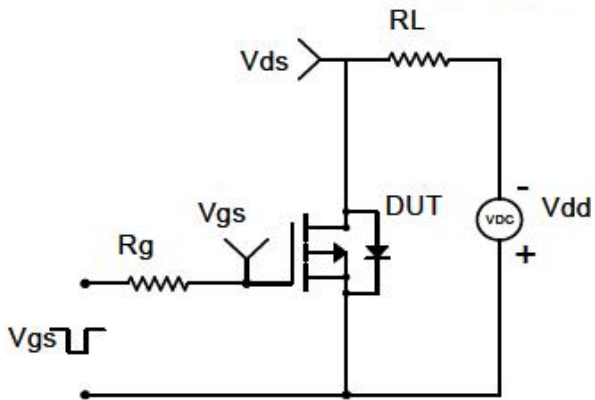


Typical Characteristics

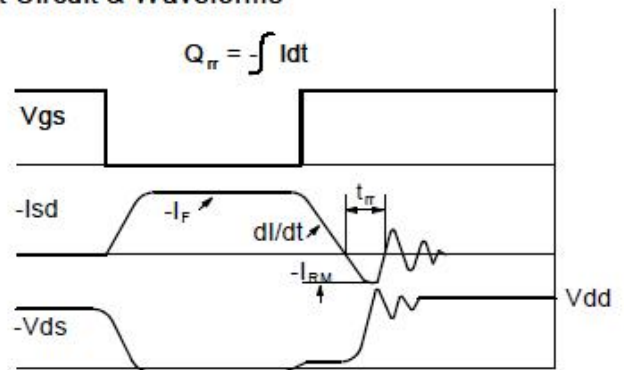
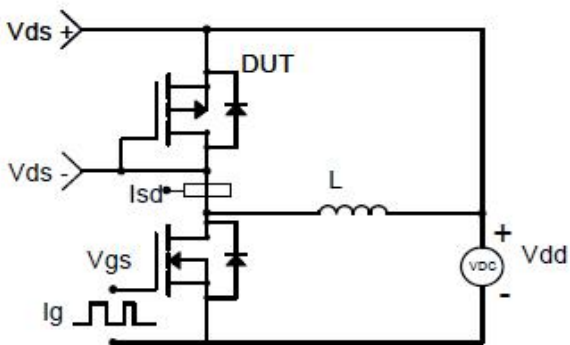
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

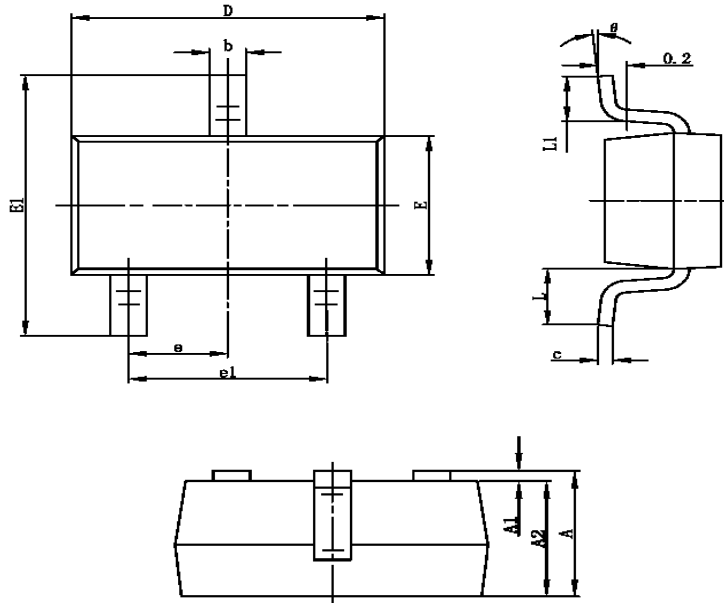


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-23-3L PLASTIC PACKAGE











Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
	sales_cn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587