

GSM2311

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM2311, 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.

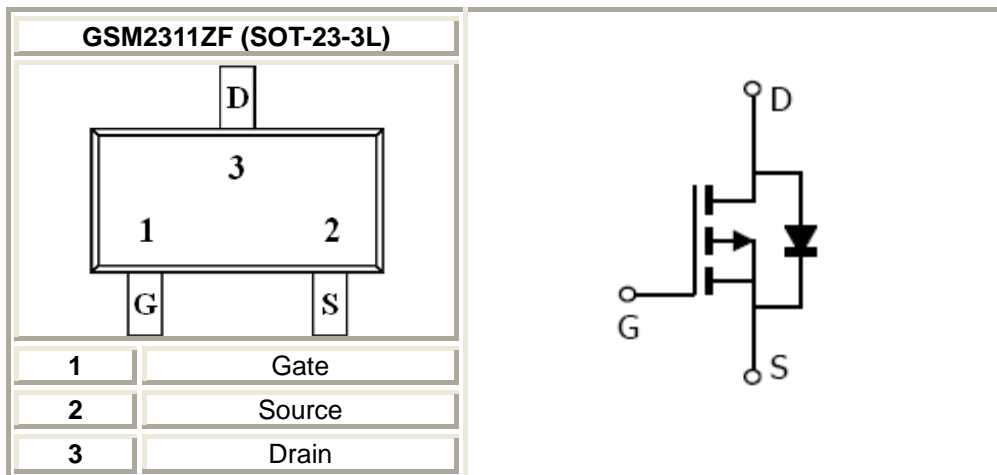
Features

- -20V/-4.0A, $R_{DS(ON)}=56m\Omega @ V_{GS}=4.5V$
- -20V/-3.2A, $R_{DS(ON)}=70m\Omega @ V_{GS}=2.5V$
- -20V/-2.8A, $R_{DS(ON)}=96m\Omega @ V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

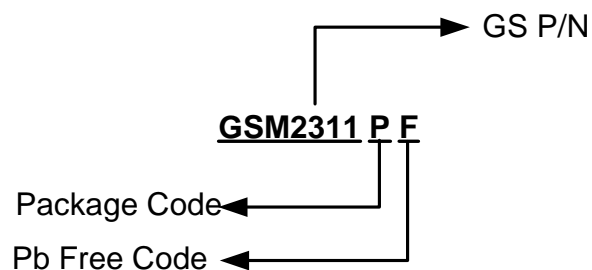
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

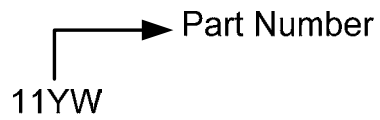
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM2311ZF	SOT-23-3L	11YW

Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

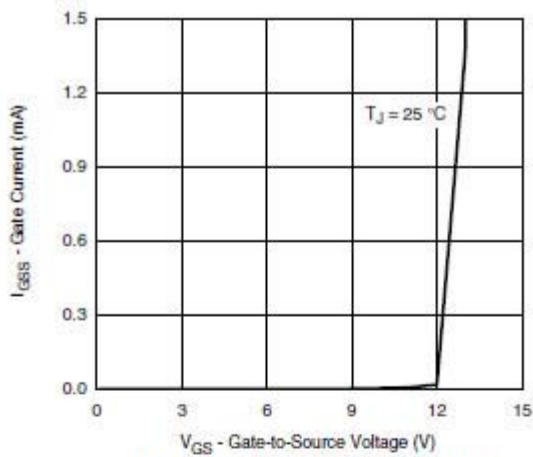
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	-20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	-4.0
		T _A =70°C	-2.8
I _{DM}	Pulsed Drain Current	-10	A
I _S	Continuous Source Current(Diode Conduction)	-1.6	A
P _D	Power Dissipation	T _A =25°C	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

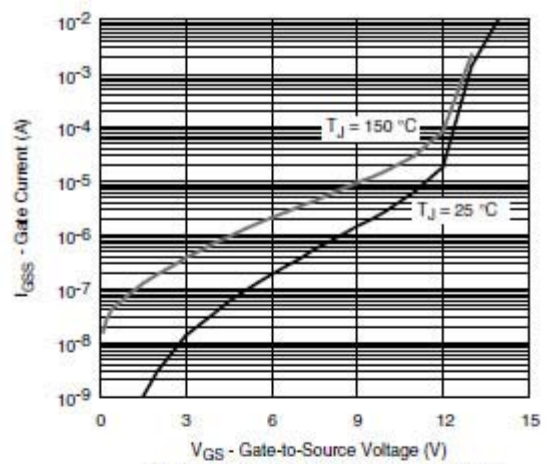
($T_A=25^{\circ}\text{C}$ unless otherwise noted)

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	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-0.8	
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
		$V_{DS}=-16V, V_{GS}=0V, T_J=85^{\circ}\text{C}$			-10	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq -5V, V_{GS}=-4.5V$	-6			A
		$V_{DS}\geq -5V, V_{GS}=-2.5V$	-4			
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-4.0A$		50	56	m Ω
		$V_{GS}=-2.5V, I_D=-3.2A$		60	70	
		$V_{GS}=-1.8V, I_D=2.8A$		80	96	
g_{fs}	Forward Transconductance	$V_{DS}=-5V, I_D=-3.6A$		10		S
V_{SD}	Diode Forward Voltage	$I_S=-1.6A, V_{GS}=0V$		-0.85	-1.2	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$		780		pF
C_{oss}	Output Capacitance			115		
C_{rss}	Reverse Transfer Capacitance			55		
Q_g	Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4.0A$		8.0	12	nC
Q_{gs}	Gate-Source Charge			0.9		
Q_{gd}	Gate-Drain Charge			3.0		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-10V, R_L=2.3\Omega, I_D=-4.0A, V_{GEN}=-4.5V, R_G=1\Omega$		0.2	0.3	ns
t_r				1.0	1.5	
$t_{d(off)}$	Turn-Off Time			4.0	6.0	
t_f				2.0	3.0	

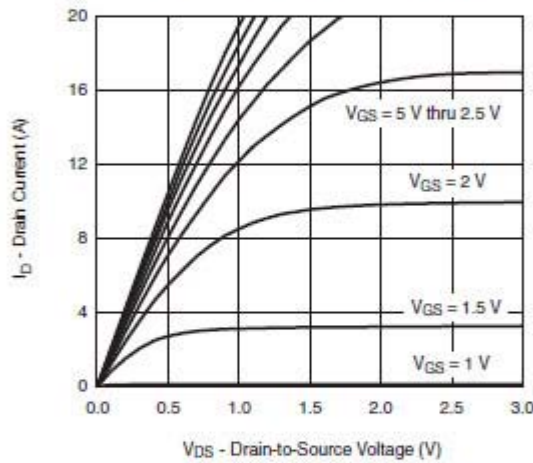
Typical Performance Characteristics



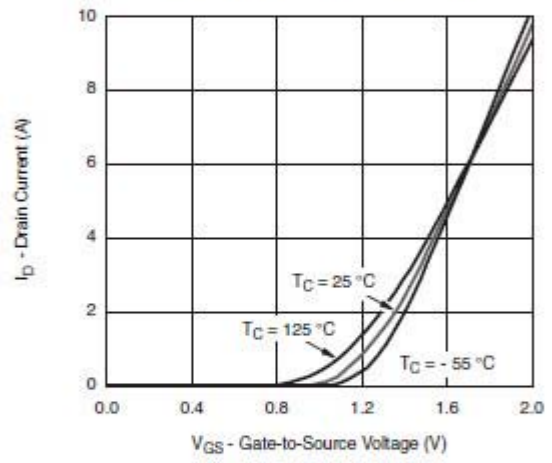
Gate Current vs. Gate-Source Voltage



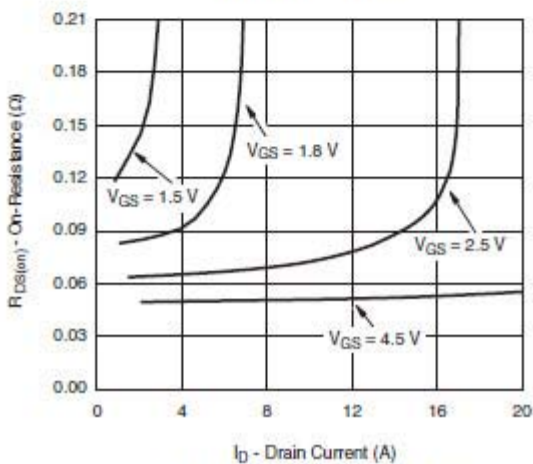
Gate Current vs. Gate-Source Voltage



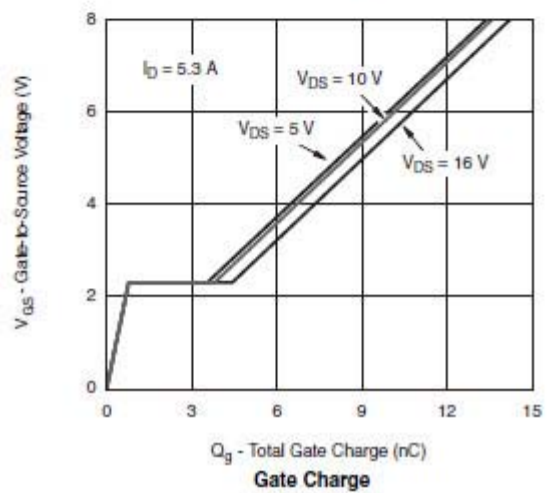
Output Characteristics



Transfer Characteristics

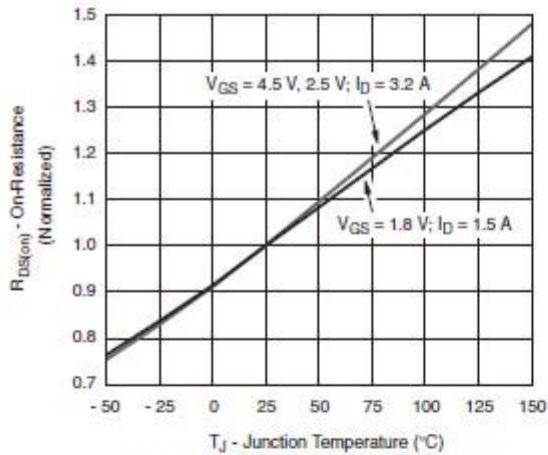


On-Resistance vs. Drain Current

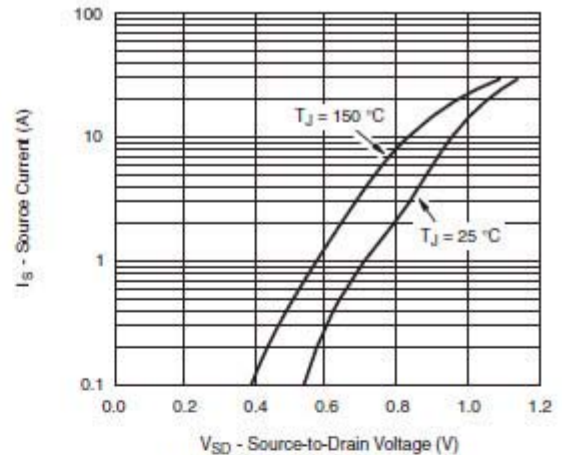


Gate Charge

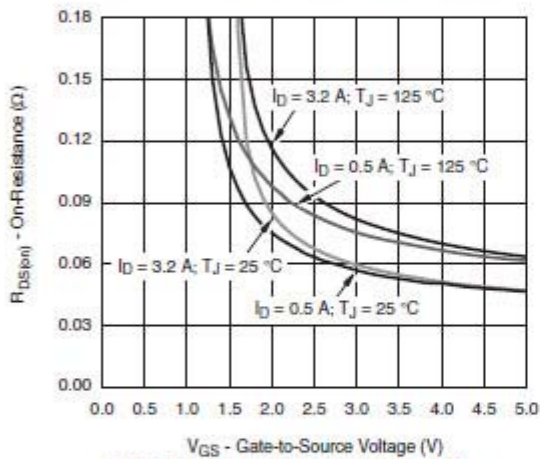
Typical Performance Characteristics (continue)



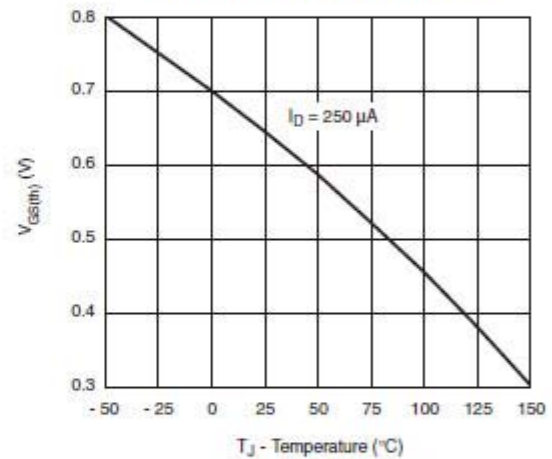
On-Resistance vs. Junction Temperature



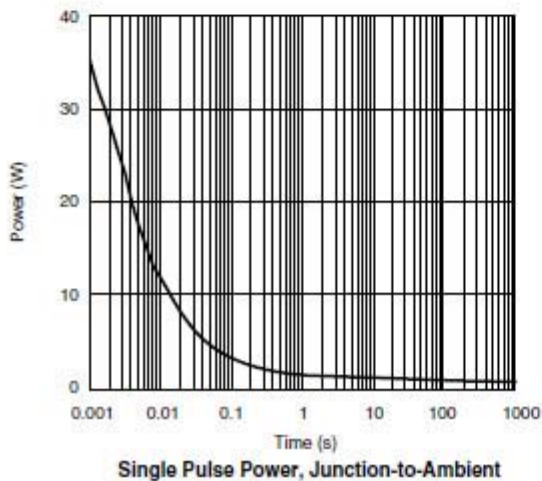
Source-Drain Diode Forward Voltage



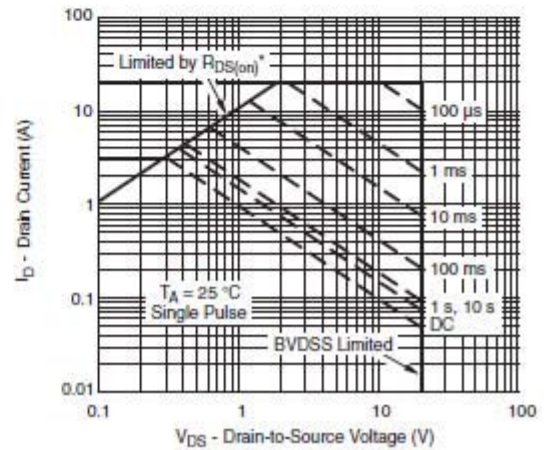
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



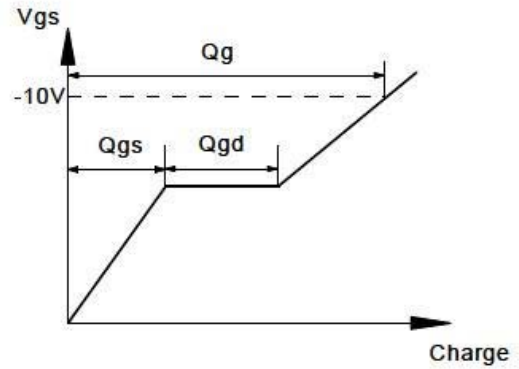
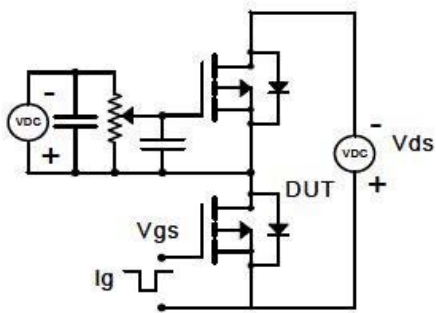
Single Pulse Power, Junction-to-Ambient



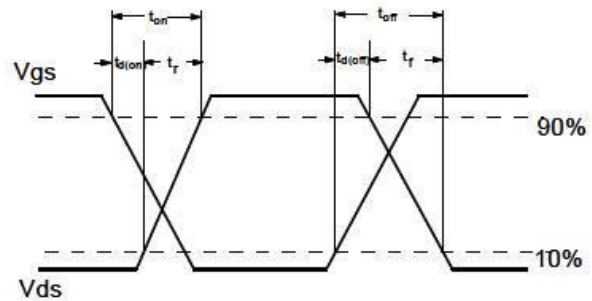
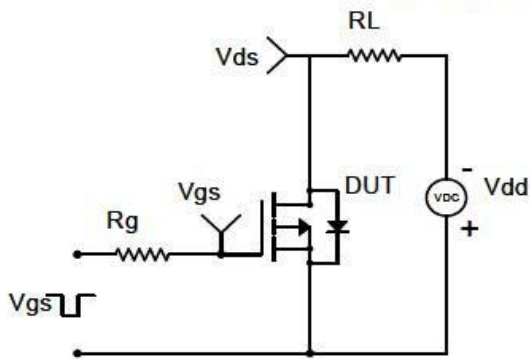
Safe Operating Area, Junction-to-Ambient
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Typical Characteristics

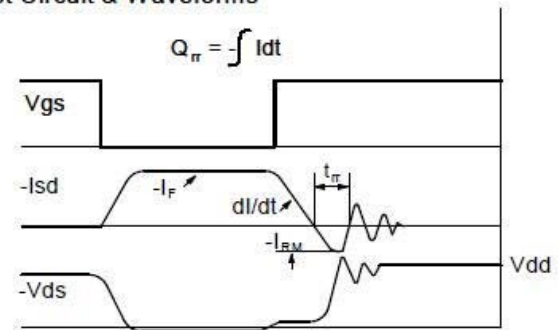
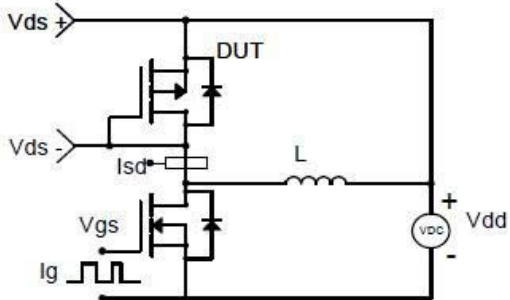
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

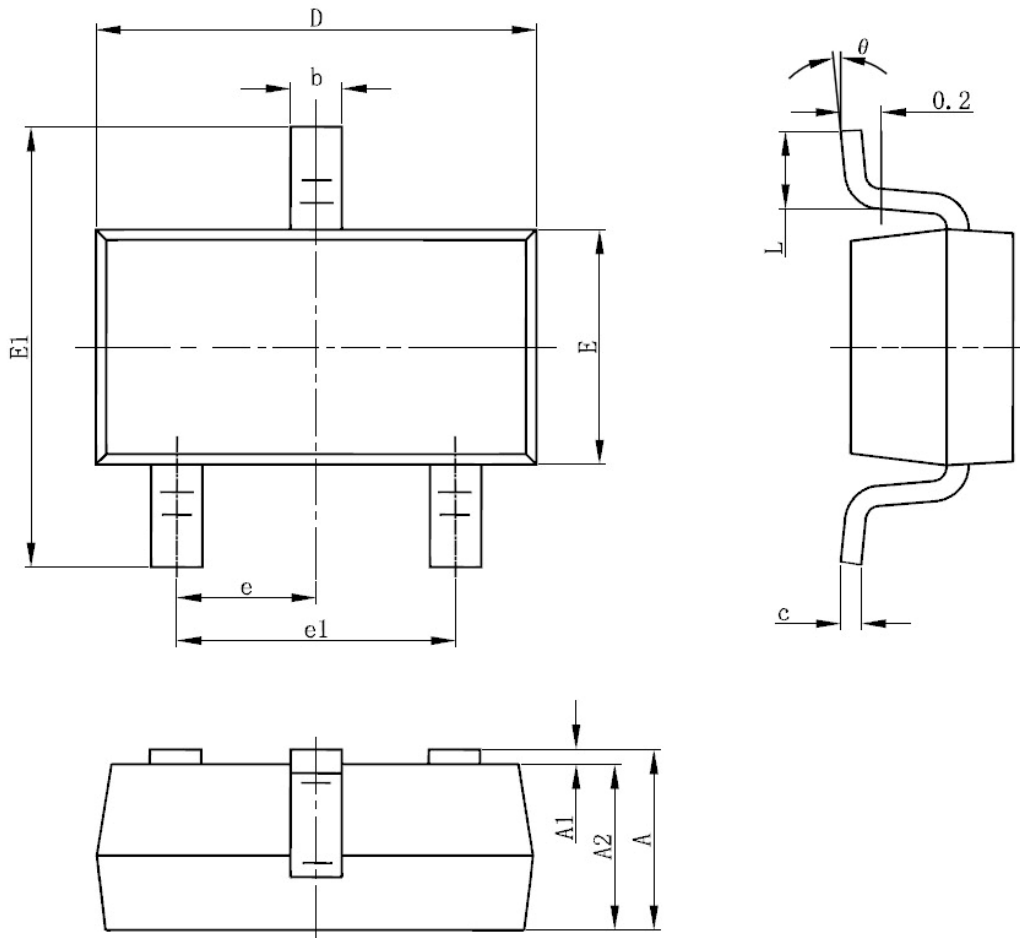


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-23-3L PLASTIC PACKAGE











Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	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	0.5	0.012	0.020
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	0.3	0.6	0.012	0.024
Q	0°	8°	0°	8°



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