

GSM2309

60V P-Channel Enhancement Mode MOSFET

Product Description

GSM2309, 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.

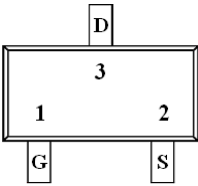
Features

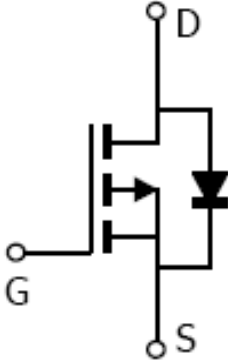
- $-60V/-1.8A, R_{DS(ON)}=305m\Omega@V_{GS}=-10V$
- $-60V/-1.4A, R_{DS(ON)}=320m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

Applications

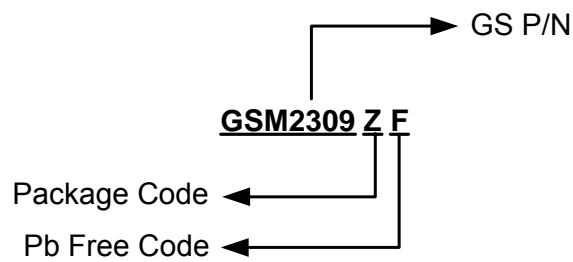
- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

Packages & Pin Assignments

GSM2309ZF (SOT-23-3L)	
	
Pin	Description
1	Gate
2	Source
3	Drain

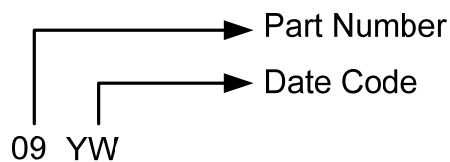


Ordering Information



Part Number	Package	Quantity Reel
GSM2309ZF	SOT-23-3L	3000 PCS

Marking Information



Absolute Maximum Ratings

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

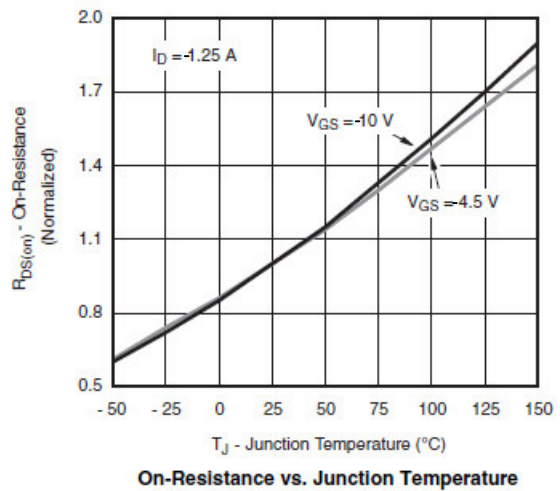
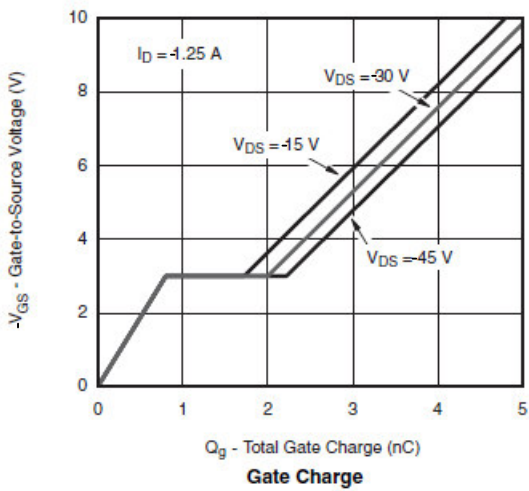
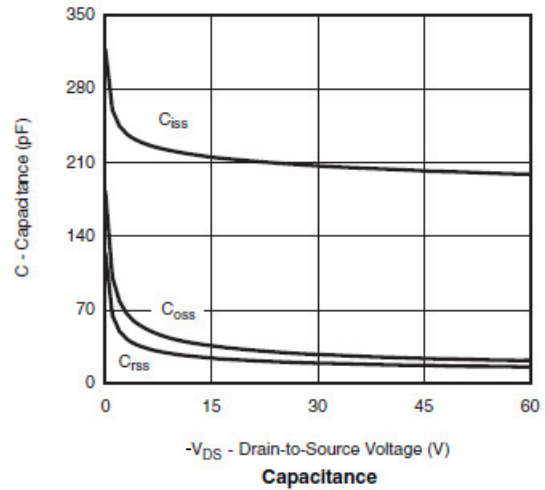
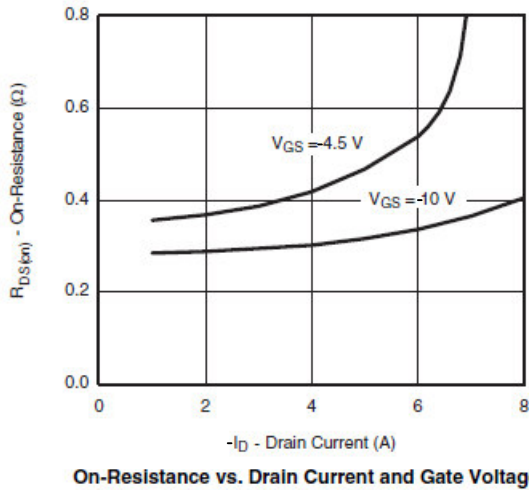
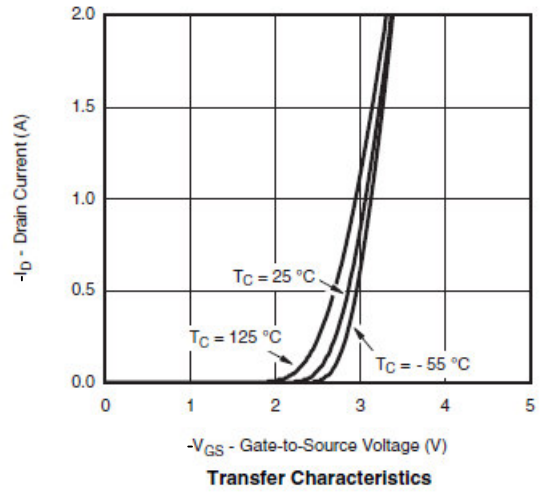
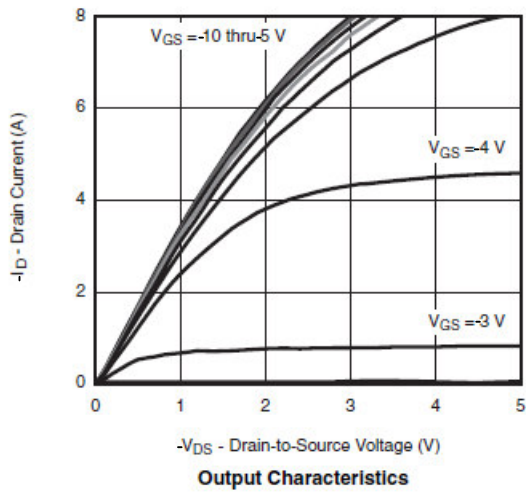
Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_A=25^{\circ}\text{C}$	-1.8
		$T_A=70^{\circ}\text{C}$	-1.4
I_{DM}	Pulsed Drain Current	-8	A
I_S	Continuous Source Current(Diode Conduction)	-1.5	A
P_D	Power Dissipation	$T_A=25^{\circ}\text{C}$	1.25
		$T_A=70^{\circ}\text{C}$	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

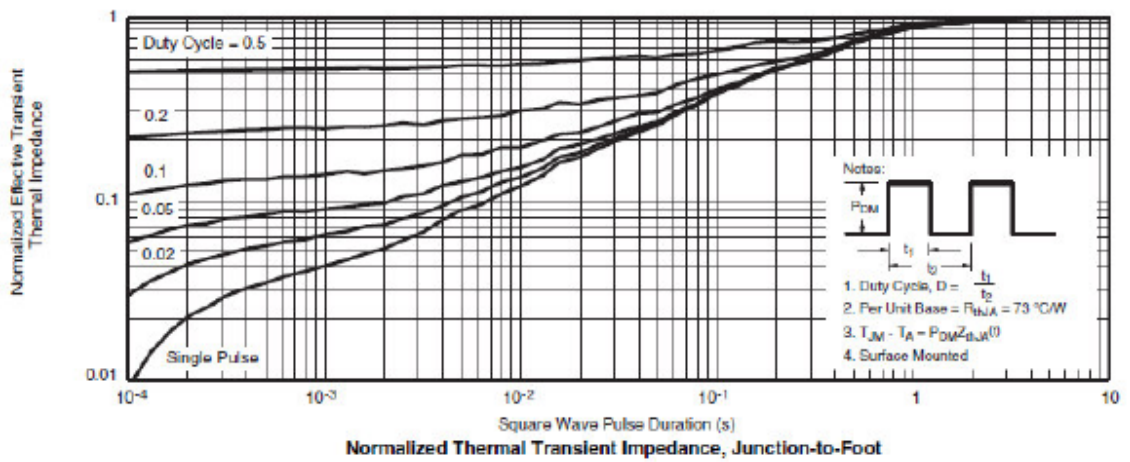
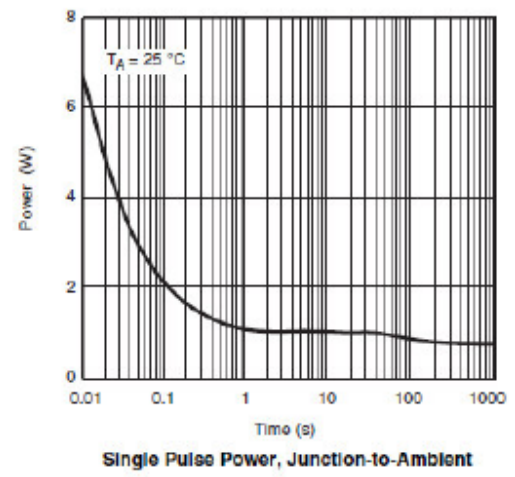
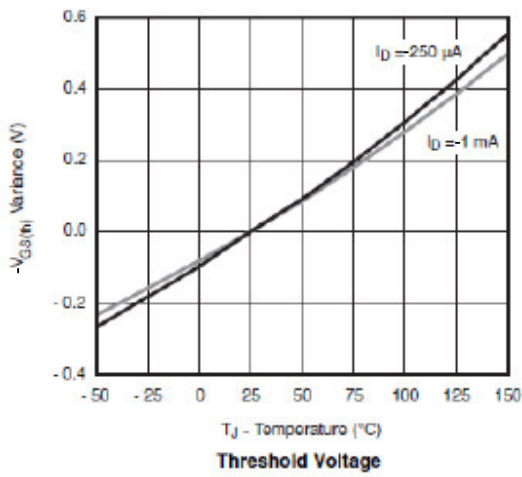
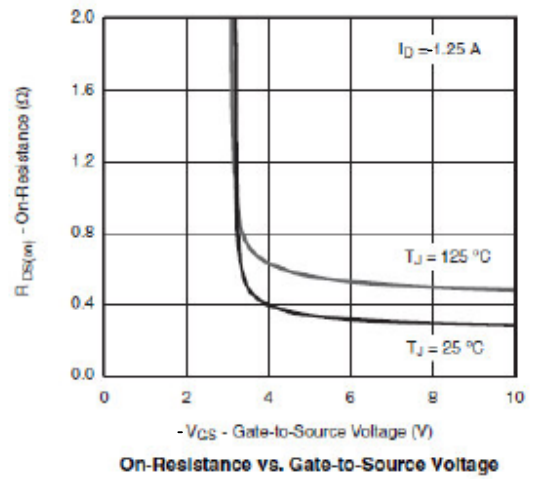
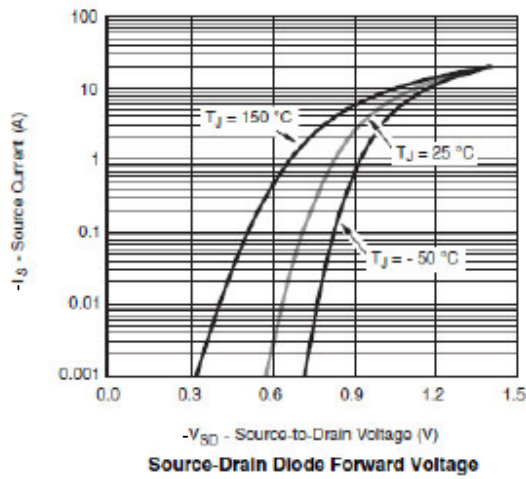
($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-2.0	
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-48V, V_{GS}=0V$			-1	uA
		$V_{DS}=-48V, V_{GS}=0V, T_J=85^\circ\text{C}$			-30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-4.5V$	-6			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-1.8A$		285	305	m Ω
		$V_{GS}=-4.5V, I_D=-1.6A$		300	320	
g_{FS}	Forward Transconductance	$V_{DS}=-10V, I_D=-1.0A$		2.8		S
V_{SD}	Diode Forward Voltage	$I_S=-1.0A, V_{GS}=0V$		-0.75	-1.3	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=-30V, V_{GS}=0V, f=1\text{MHz}$		210		pF
C_{oss}	Output Capacitance			25		
C_{rss}	Reverse Transfer Capacitance			18		
Q_g	Total Gate Charge	$V_{DS}=-30V, V_{GS}=-4.5V, I_D=-1.25A$		2.7	4.5	nC
Q_{gs}	Gate-Source Charge			0.7		
Q_{gd}	Gate-Drain Charge			1.2		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-30V, R_L=30\Omega, I_D=-1.0A, V_{GEN}=-10V, R_G=1.0\Omega$		5	10	ns
t_r				10	20	
$t_{d(off)}$	Turn-Off Time			15	30	
t_f				10	20	

Typical Performance Characteristics

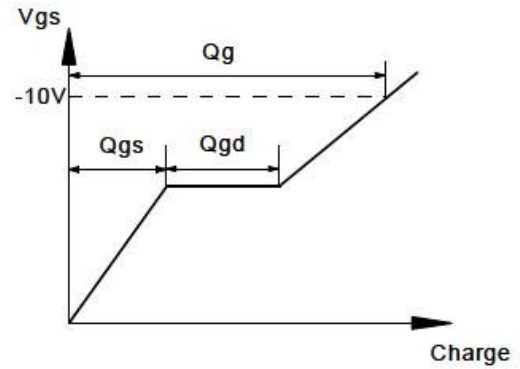
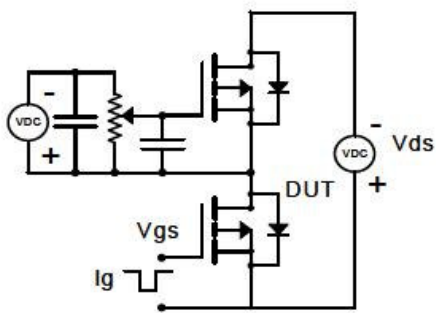


Typical Performance Characteristics (continue)

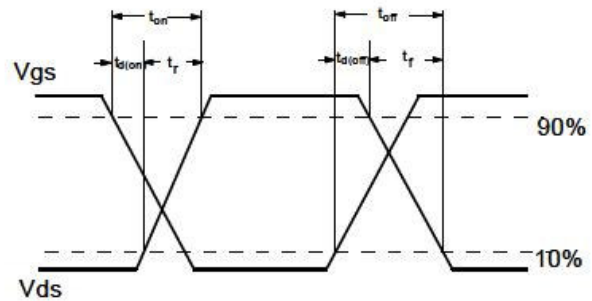
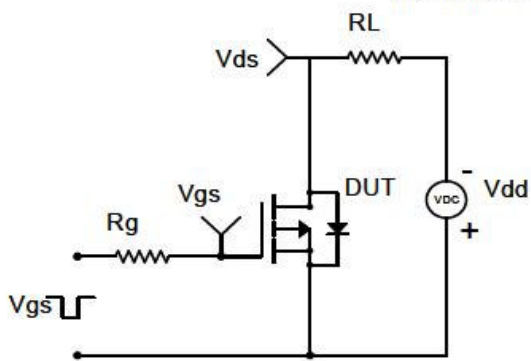


Typical Characteristics (continue)

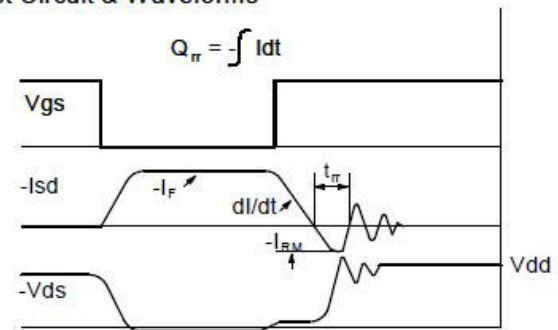
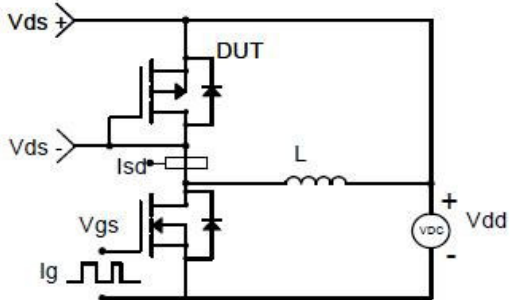
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

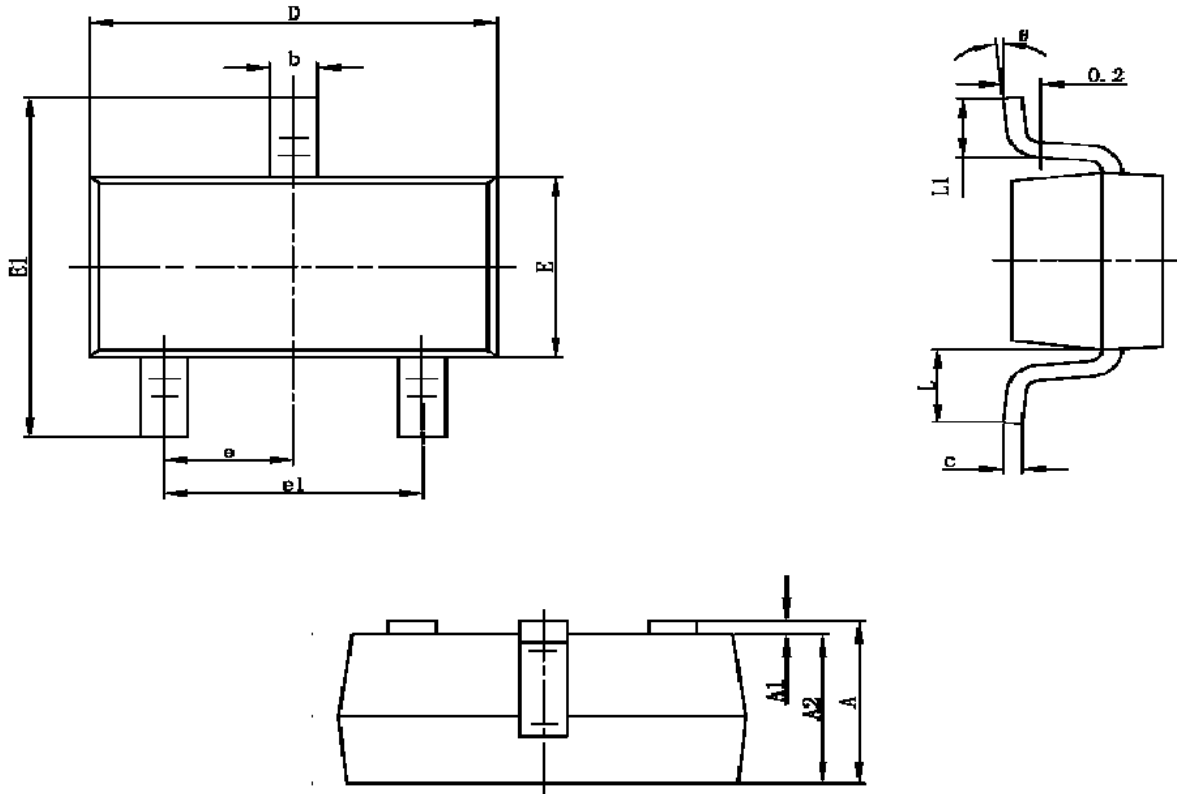


Diode Recovery Test Circuit & Waveforms



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	0.4	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
Q	0°	8°	0°	8°



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