

GSM9106

20V N-Channel Enhancement Mode MOSFET

JAN. 2010

Product Description

The GSM9106 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching, and low in-line power loss are needed in a very small outline surface mount package.

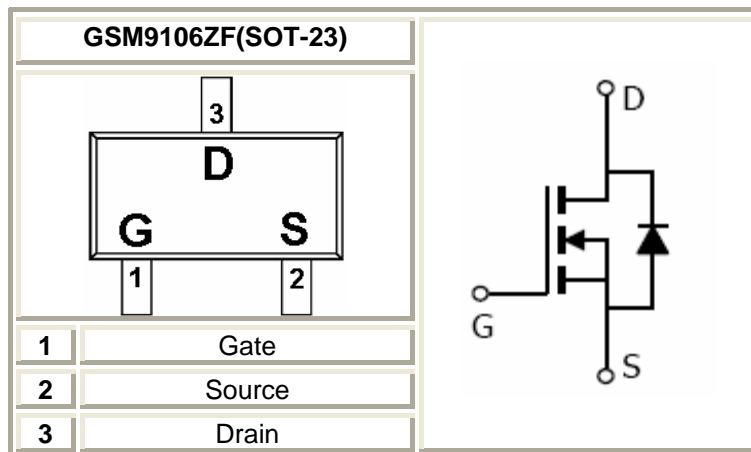
Features

- 20V / 4.0A, $R_{DS(ON)}=55m\Omega @ V_{GS}=4.5V$
- 20V / 3.4A, $R_{DS(ON)}=70m\Omega @ V_{GS}=2.5V$
- 20V / 2.8A, $R_{DS(ON)}=90m\Omega @ V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

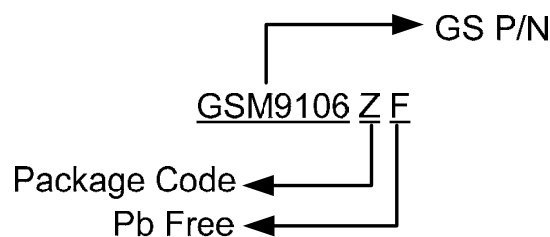
Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

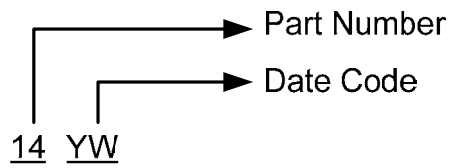
Packages & Pin Assignments & Block Diagram



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM9106ZF	SOT-23-3L	14YW

Absolute Maximum Ratings

T_A=25 °C Unless otherwise noted

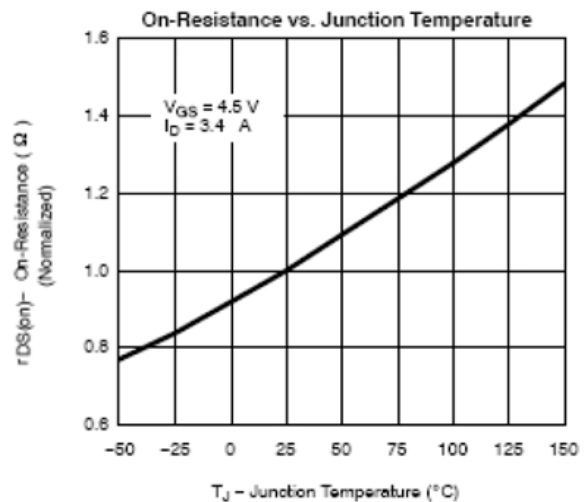
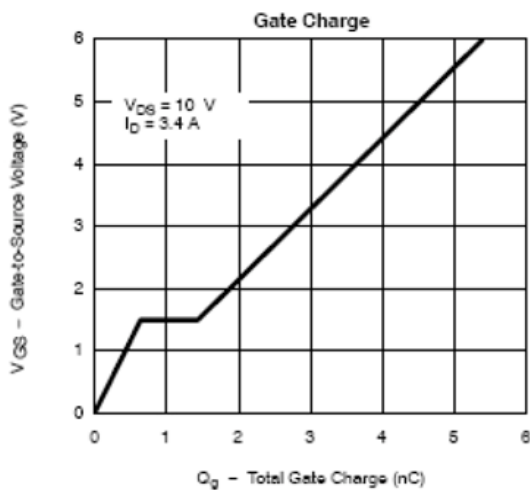
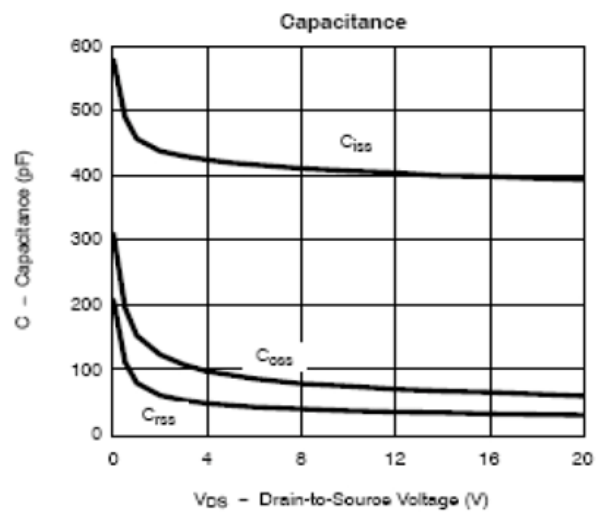
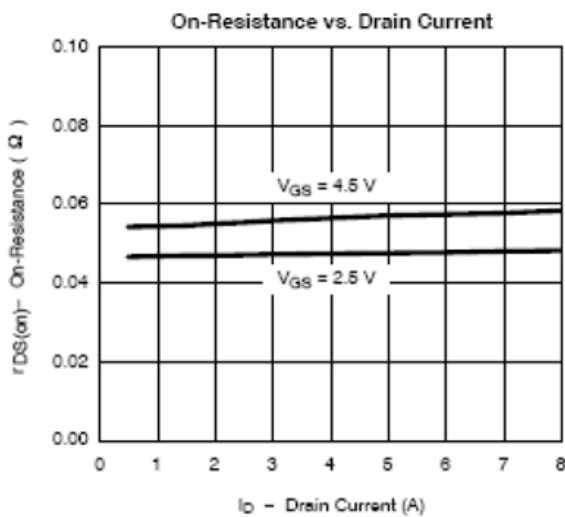
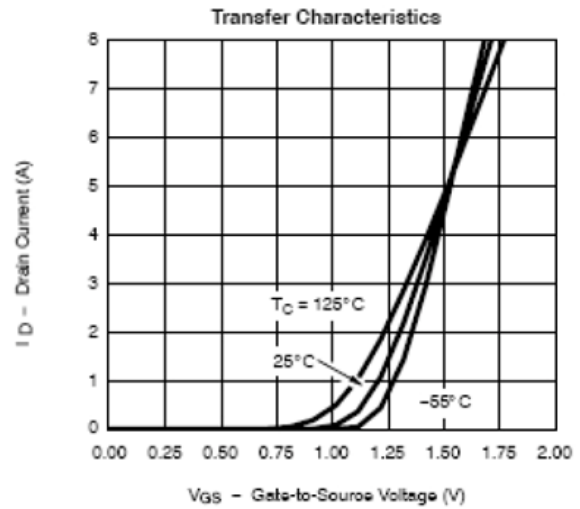
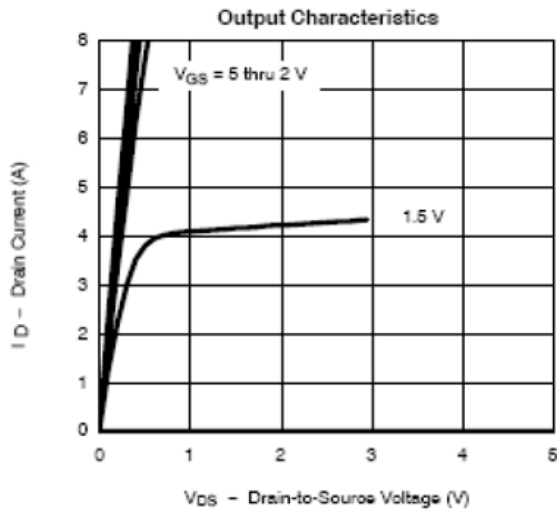
Symbol	Parameter	Typical	Unit	
V _{DSS}	Drain-Source Voltage	20	V	
V _{GSS}	Gate –Source Voltage	±12	V	
I _D	Continuous Drain Current(T _J =150°C)	T _A =25 °C	4.0	A
		T _A =70 °C	3.4	
I _{DM}	Pulsed Drain Current	10	A	
I _S	Continuous Source Current(Diode Conduction)	1.6	A	
PD	Power Dissipation	T _A =25 °C	1.25	W
		T _A =70 °C	0.8	
T _J	Operating Junction Temperature	-55/150	°C	
T _{STG}	Storage Temperature Range	-55/150	°C	
R _{θJA}	Thermal Resistance-Junction to Ambient	105	°C/W	

Electrical Characteristics

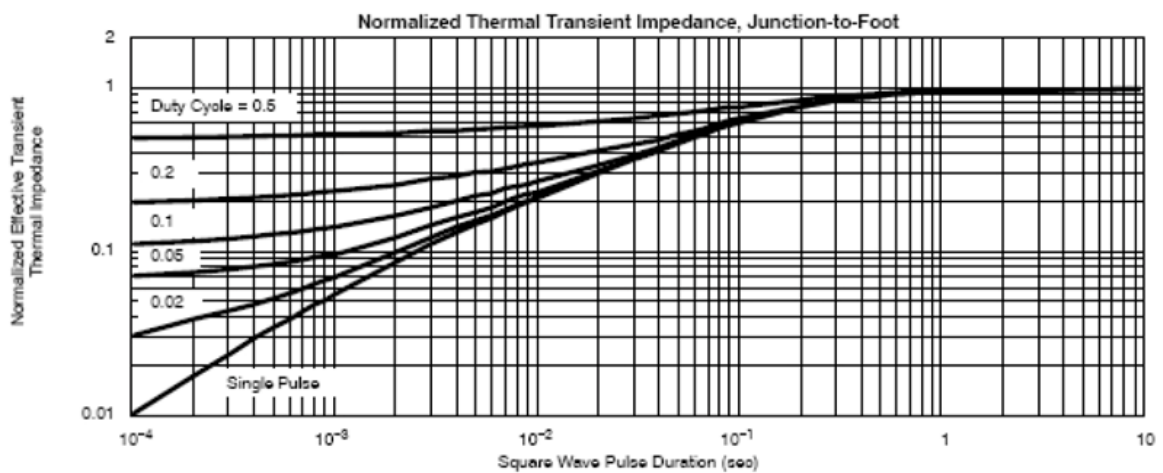
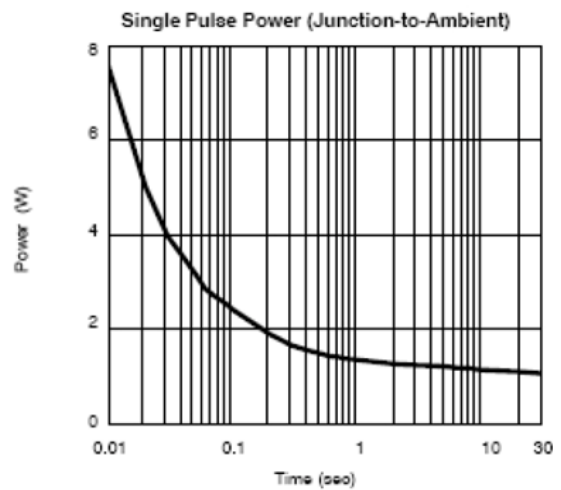
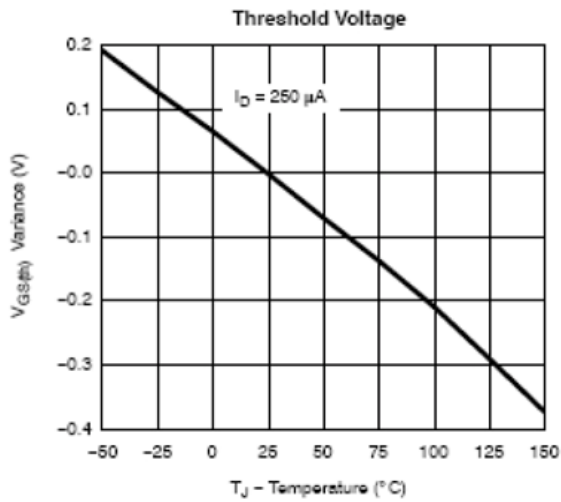
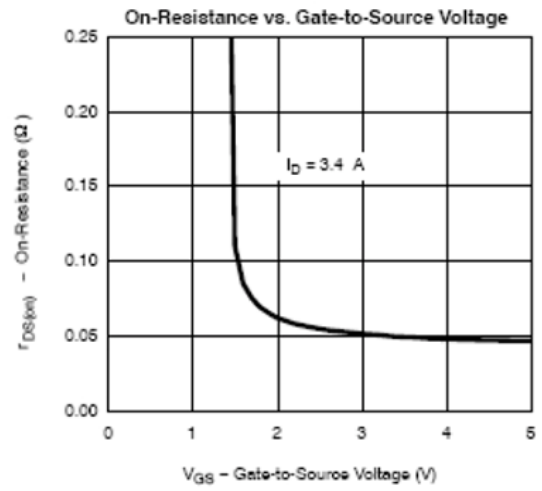
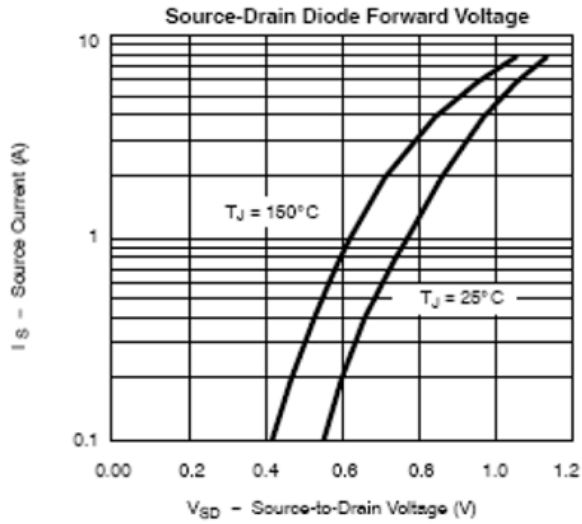
TA=25 °C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		1.0	
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			1	uA
		$V_{DS}=20V, V_{GS}=0V$ $T_J=55^\circ C$			5	
$I_{D(on)}$	On-State Drain Current	$V_{DS} \leq 5V, V_{GS}=4.5V$	6			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=4.0A$		0.040	0.055	Ω
		$V_{GS}=2.5V, I_D=3.4A$		0.055	0.070	
		$V_{GS}=1.8V, I_D=2.8A$		0.075	0.090	
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=-3.6A$		10		S
V_{SD}	Diode Forward Voltage	$I_S=1.6A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Q_g	Total Gate Charge	$V_{DS}=6V, V_{GS}=4.5V$ $I_D=2.8A$		4.8	8	nC
Q_{gs}	Gate-Source Charge			1.0		
Q_{gd}	Gate-Drain Charge			1.0		
C_{iss}	Input Capacitance	$V_{DS}=6V, V_{GS}=0V$ $f=1MHz$		485		pF
C_{oss}	Output Capacitance			85		
C_{rss}	Reverse Transfer Capacitance			40		
$t_{d(on)}$	Turn-On Time	$V_{DD}=6V, R_L=6\Omega$ $I_D=1.0A, V_{GEN}=4.5V$ $R_G=6\Omega$		8	14	ns
t_r				12	18	
$t_{d(off)}$	Turn-Off Time			30	35	
t_f				12	16	

Typical Performance Characteristics

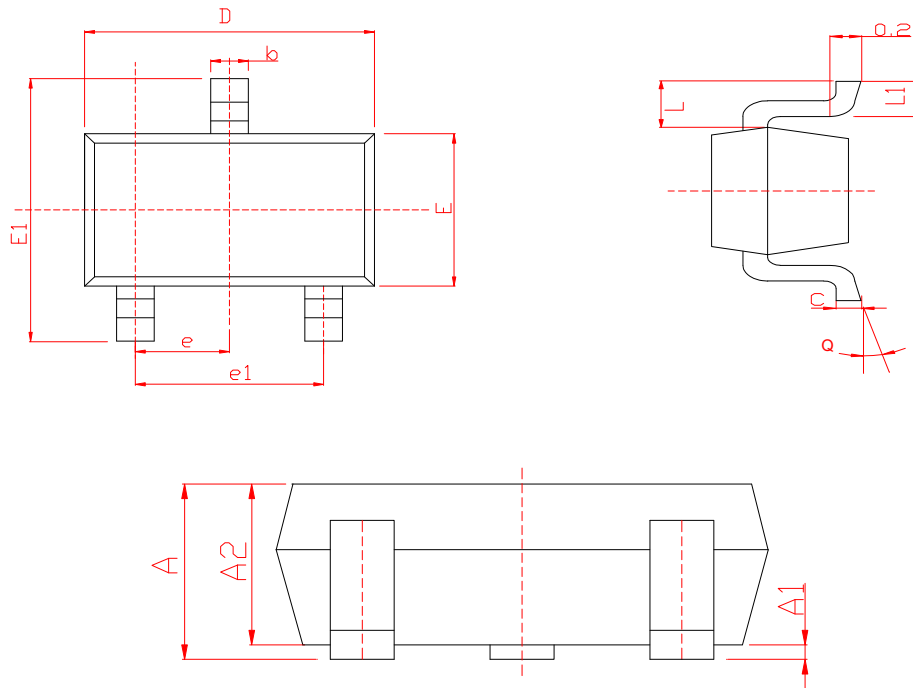


Typical Performance Characteristics(Continue)



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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