

# GSM9110

## 40V N-Channel Enhancement Mode MOSFET

### Product Description

The GSM9110 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, and low in-line power loss are needed in a very small outline surface mount package.

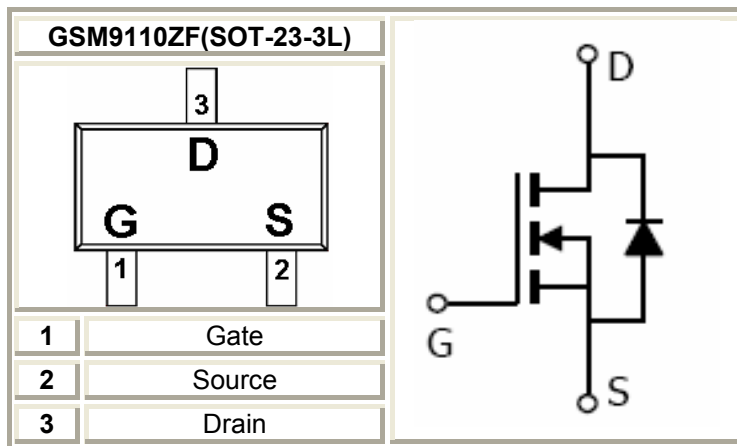
### Features

- 40V/3.9A,  $R_{DS(ON)} = 56m\Omega @ V_{GS} = 10V$
- 40V/3.5A,  $R_{DS(ON)} = 62m\Omega @ V_{GS} = 4.5V$
- 40V/2.0A,  $R_{DS(ON)} = 95m\Omega @ V_{GS} = 2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

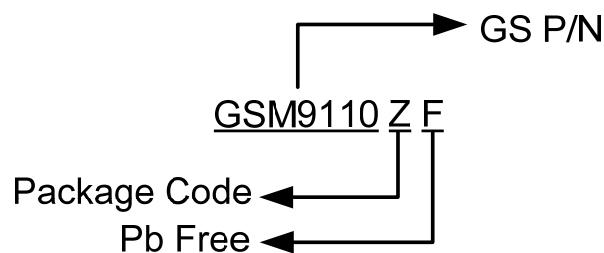
### Applications

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

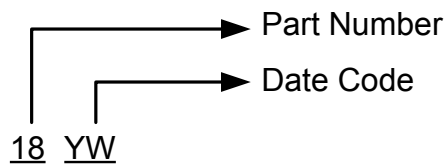
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM9110ZF	SOT-23-3L	18YW

## Absolute Maximum Ratings

TA=25°C Unless otherwise noted

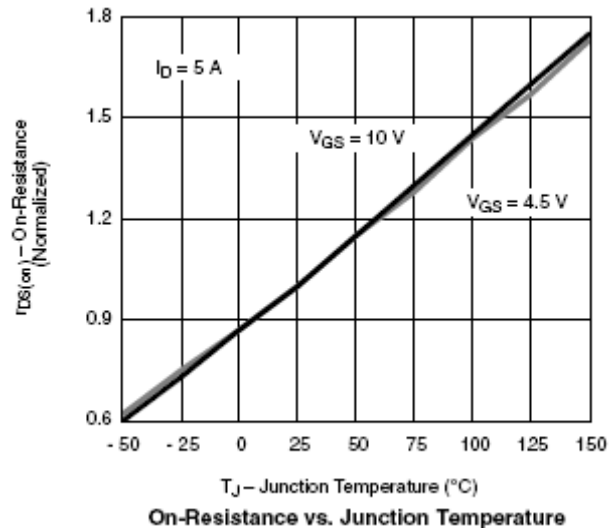
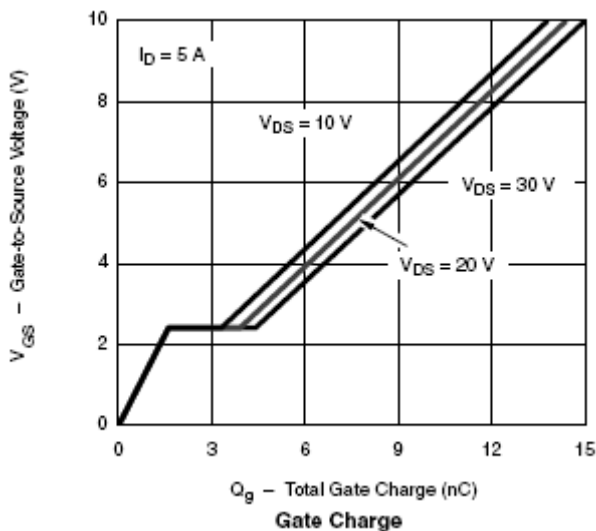
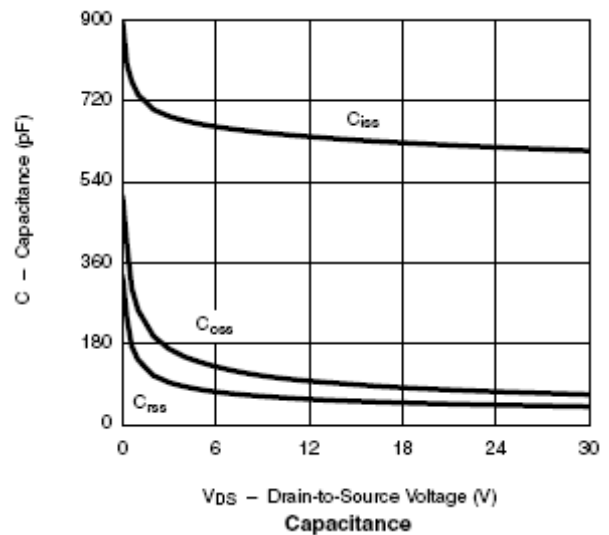
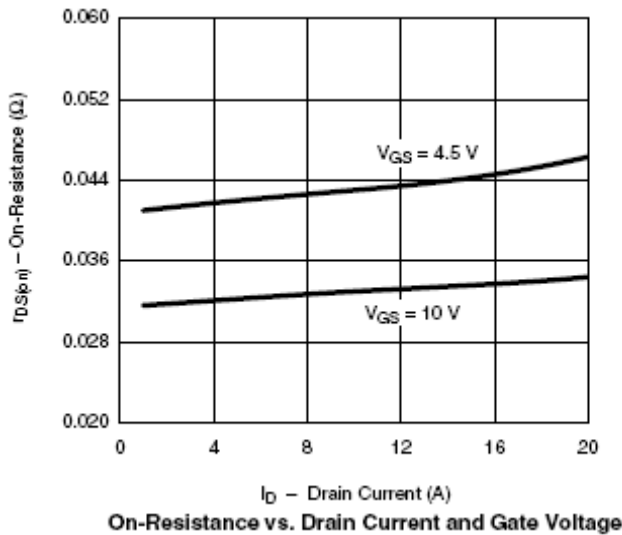
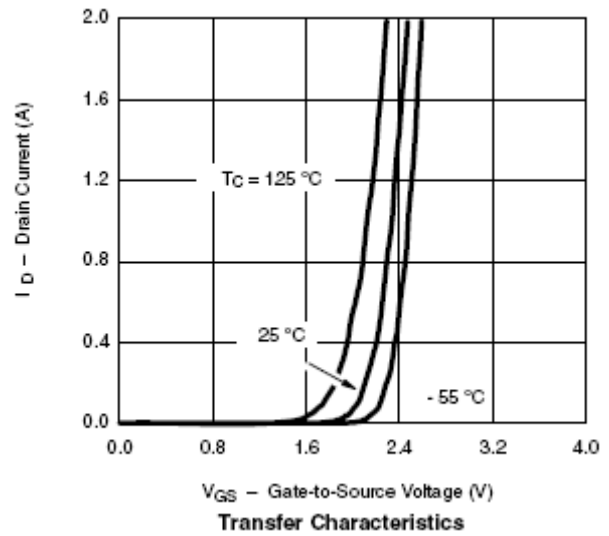
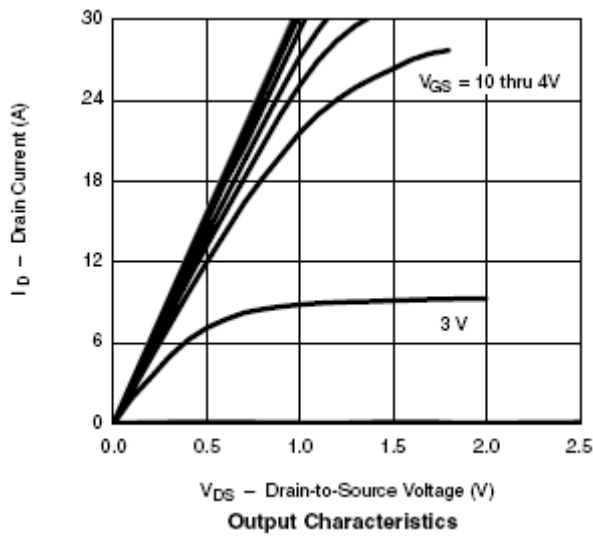
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	40	V	
V <sub>GSS</sub>	Gate –Source Voltage	±12	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	TA =25°C	4.0	A
		TA =70°C	3.0	
I <sub>DM</sub>	Pulsed Drain Current	10	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	1.25	A	
PD	Power Dissipation	TA =25°C	1.25	W
		TA =70°C	0.8	
T <sub>J</sub>	Operating Junction Temperature	150	°C	
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	100	°C/W	

## Electrical Characteristics

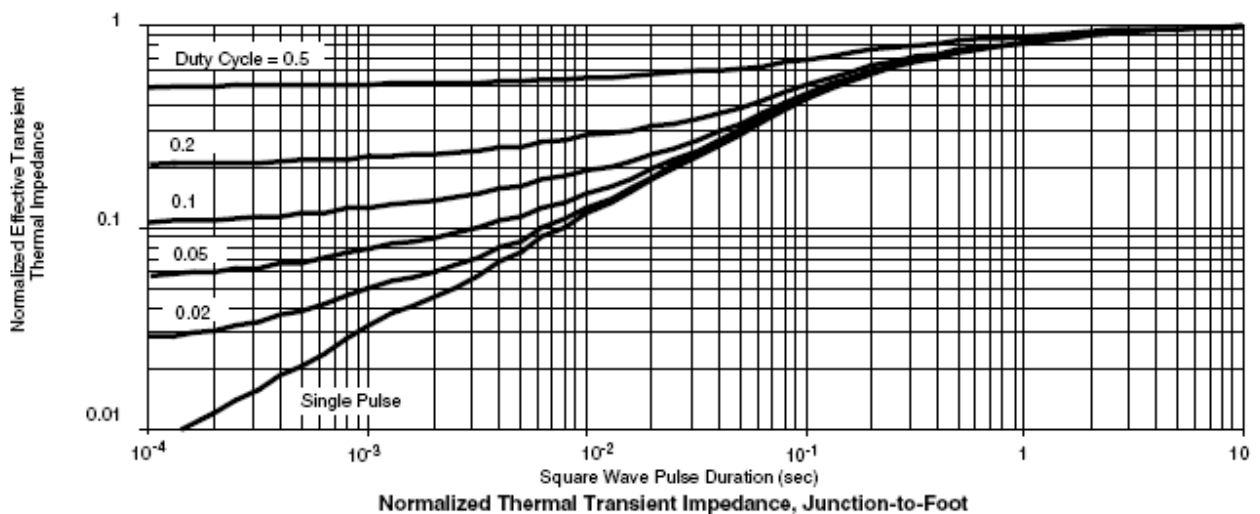
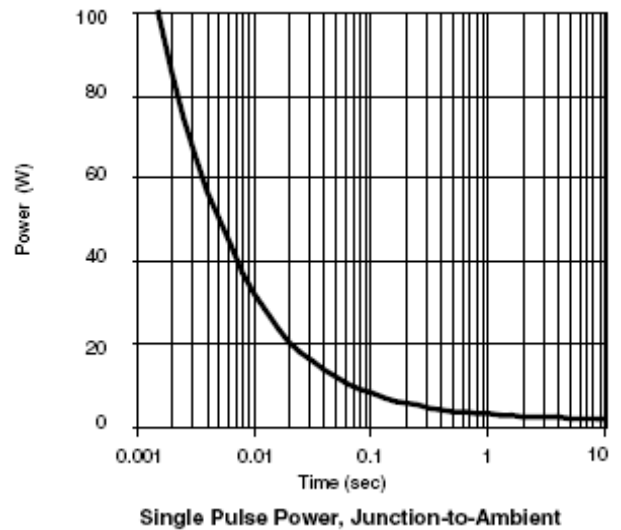
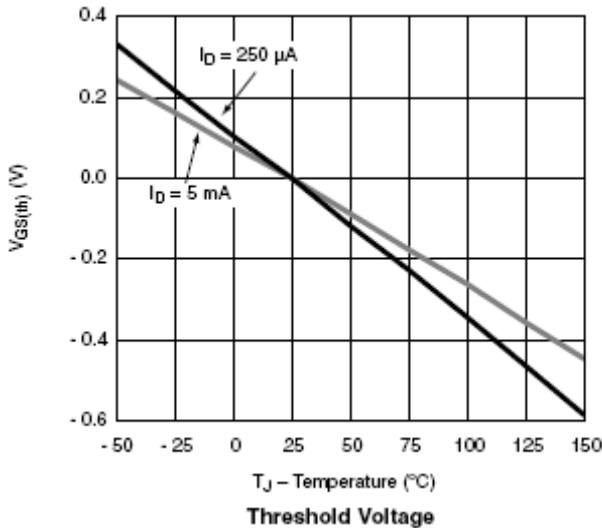
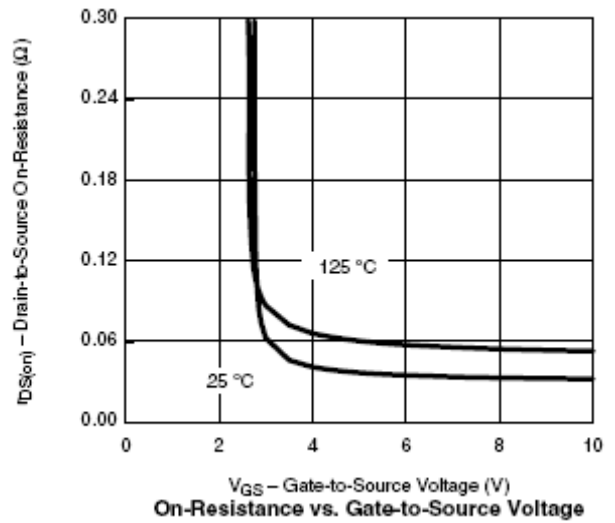
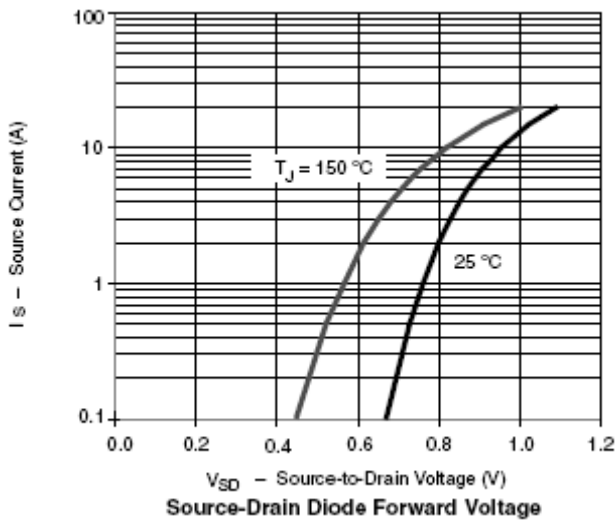
TA=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
<b>Static</b>							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1.2		
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	uA	
		$V_{DS}=40V, V_{GS}=0V, T_J=85^\circ C$			5		
$I_{D(on)}$	On-State Drain Current	$V_{DS}=5V, V_{GS}=4.5V$	10			A	
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=3.9A$		50	56	mΩ	
		$V_{GS}=4.5V, I_D=3.5A$		56	62		
		$V_{GS}=2.5V, I_D=2.0A$		88	95		
$g_{fs}$	Forward Transconductance	$V_{DS}=15V, I_D=6.2A$		13		S	
$V_{SD}$	Diode Forward Voltage	$I_S=2.3A, V_{GS}=0V$		0.8	1.2	V	
<b>Dynamic</b>							
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D\cong 2A$		10	15	nC	
$Q_{gs}$	Gate-Source Charge			1.6			
$Q_{gd}$	Gate-Drain Charge			2.0			
$C_{iss}$	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		500		pF	
$C_{oss}$	Output Capacitance			80			
$C_{rss}$	Reverse Transfer Capacitance			45			
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=15\Omega, I_D\cong 1.0A, V_{GEN}=10V, R_G=6\Omega$		15	20	ns	
$t_r$				6	12		
$t_{d(off)}$			Turn-Off Time		10		20
$t_f$					40		80

## Typical Performance Characteristics

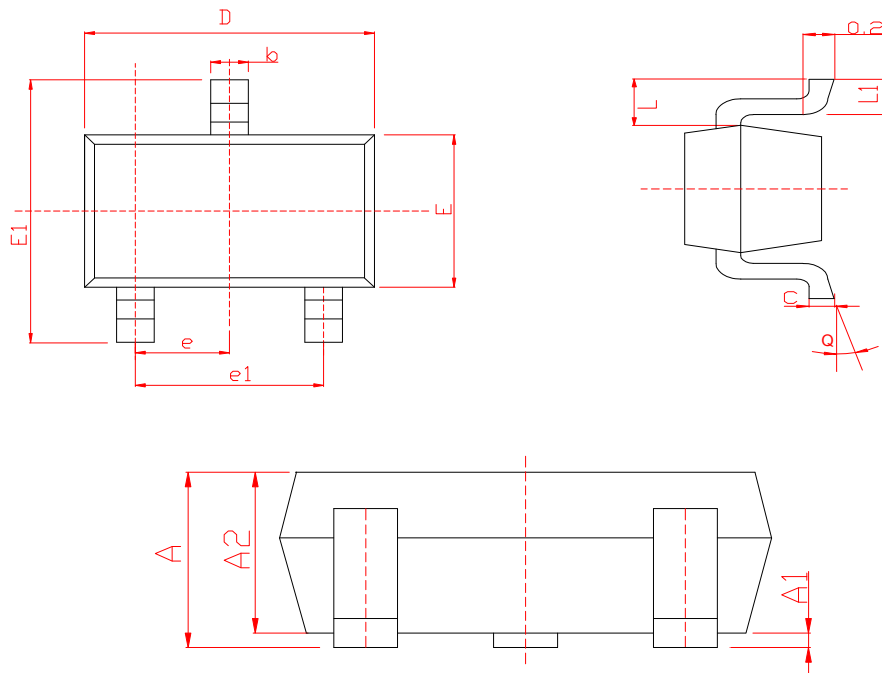


## Typical Performance Characteristics(Continue)



## Package Dimension

# SOT-23-3L








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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