

# GSM3112Z

## 30V N-Channel MOSFETs

### Product Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

These devices are well suited for high efficiency fast switching applications.

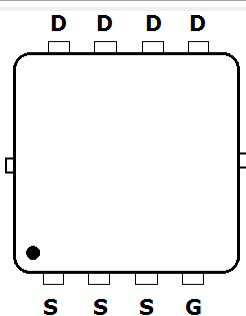
### Features

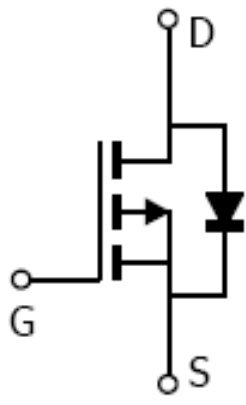
- 30V, 12.6A,  $R_{DS(ON)}=10m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

### Applications

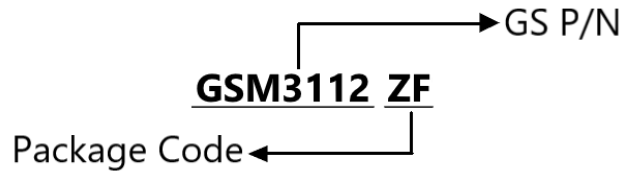
- MB / VGA / Vcore
- DC-DC Converters
- Power Management Functions

### Packages & Pin Assignments

GSM3112ZF (DFN3X3-8L)	
	
Top View	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

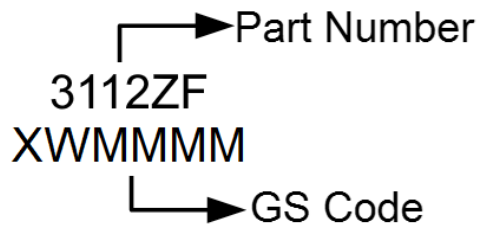


## Ordering Information



Part Number	Package	Quantity
GSM3112ZF	DFN3x3-8L	5000pcs

## Marking Information



## Absolute Maximum Ratings

T<sub>c</sub>=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current	T <sub>A</sub> =25°C	12.6
		T <sub>A</sub> =70°C	10
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	45	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	21	mJ
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	2.3
		T <sub>A</sub> =70°C	1.5
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	53	°C/W
R <sub>θJC</sub>	Thermal Resistance-Junction to Case	4.7	°C/W

## Electrical Characteristics

T<sub>J</sub>=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.2		2.5	V
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	uA
R <sub>DS(on)</sub>	Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =10A		7.9	10	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A,		13	16	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =3A			10	S
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A		0.7	1	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge <sup>3,4</sup>	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =12.5A		8		nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3,4</sup>			4		
Q <sub>gd</sub>	Gate-Drain Charge <sup>3,4</sup>			2		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		1040		pF
C <sub>oss</sub>	Output Capacitance			445		
C <sub>rss</sub>	Reverse Transfer Capacitance			40		
t <sub>d(on)</sub>	Turn-On Time <sup>3,4</sup>	V <sub>DD</sub> =15V, I <sub>D</sub> =12.5A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω		10		ns
t <sub>r</sub>	Rise Time <sup>3,4</sup>			9		
t <sub>d(off)</sub>	Turn-Off Time <sup>3,4</sup>			24		
t <sub>f</sub>	Fall Time <sup>3,4</sup>			8		
R <sub>g</sub>	Gate Resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.1		Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.3mH, I<sub>AS</sub>=12A, Starting T<sub>J</sub>=25°C.
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

## Typical Performance Characteristics

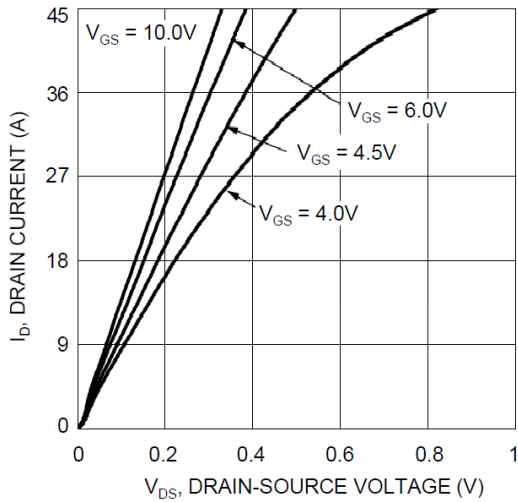


Fig. 1 Typical Output Characteristics

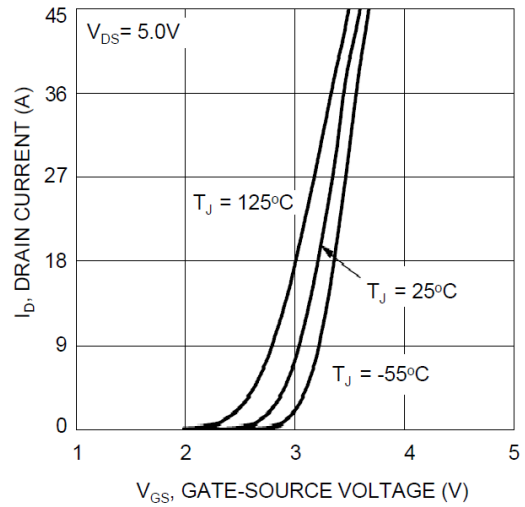


Fig. 2 Typical Transfer Characteristics

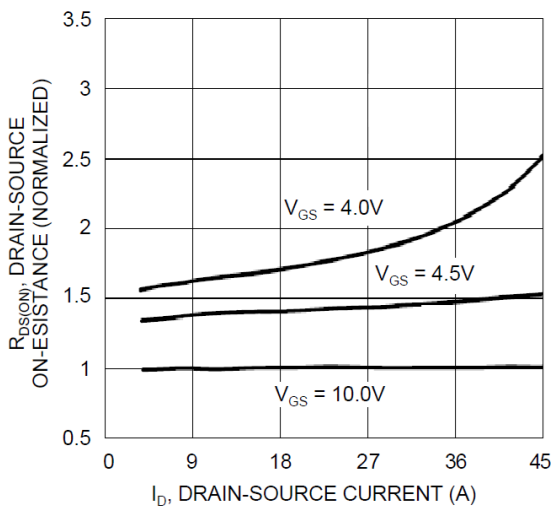


Fig. 3 On-Resistance Variation with  $T_A$

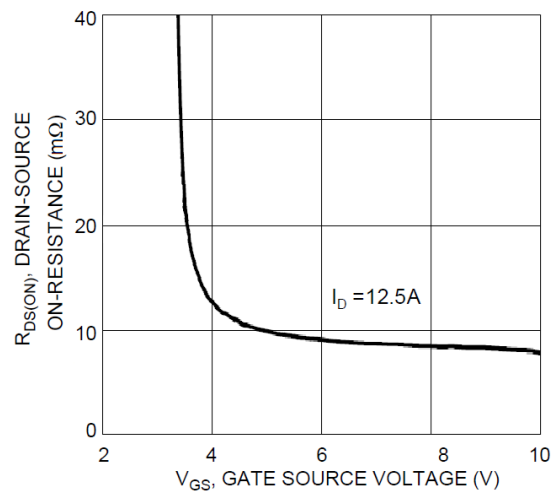


Fig. 4 Typical On-Resistance vs. Drain Current and Gate Voltage

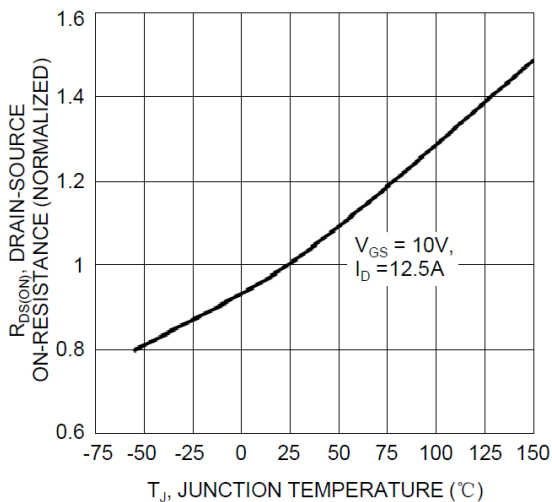


Figure. 5 On-Resistance Variation with  $T_J$

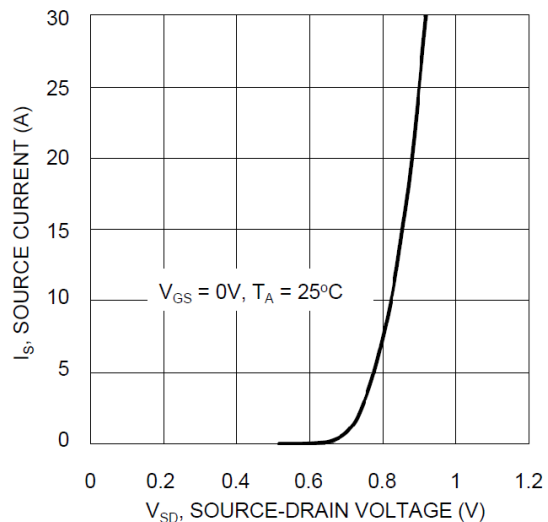


Fig. 6 Diode Forward Voltage vs. Current

## Typical Performance Characteristics (Continue)

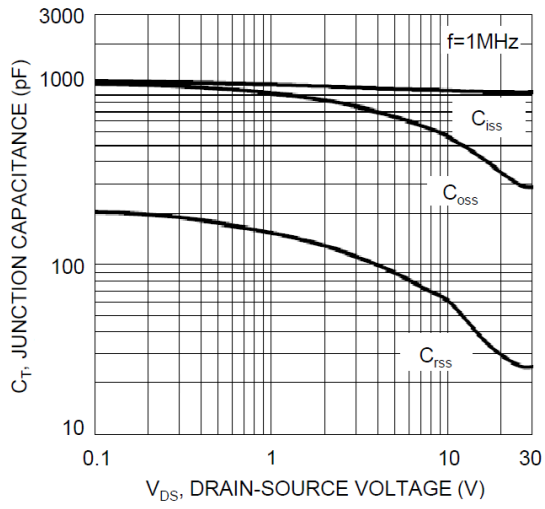


Fig. 7 Typical Capacitance

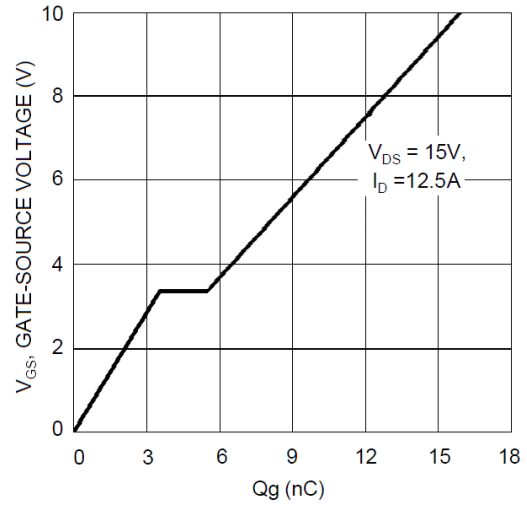
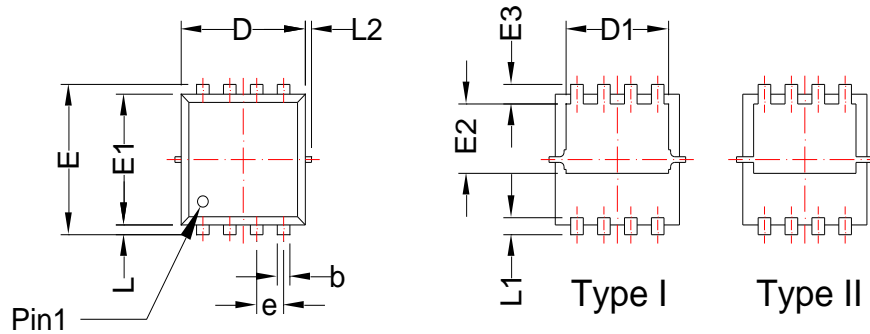


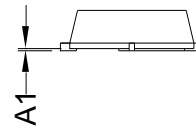
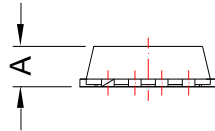
Fig. 8 Gate Charge

## Package Dimension

### DFN3X3-8L



BACKSIDE VIEW









Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
A1	0.00	0.05	0.000	0.002
b	0.24	0.37	0.009	0.015
c	0.10	0.25	0.004	0.010
D	2.90	3.25	0.114	0.128
D1	2.35	2.60	0.093	0.102
E	3.05	3.45	0.120	0.136
E1	2.90	3.20	0.114	0.126
E2	1.35	2.00	0.053	0.079
E3	0.30	0.60	0.012	0.024
e	0.65 BSC		0.026 BSC	
L	0.02	0.2	0.001	0.008
L1	0.28	0.5	0.011	0.020
L2	---	0.15	---	0.006

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