

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.

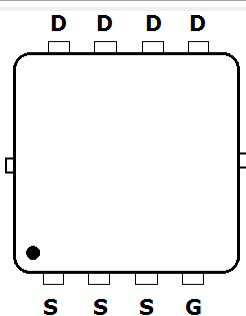
Features

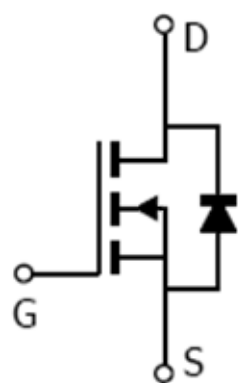
- 30V, 12.6A, $R_{DS(ON)}=10m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

Applications

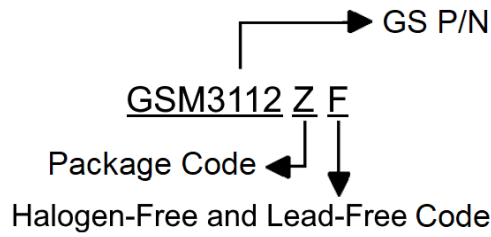
- MB / VGA / Vcore
- DC-DC Converters
- Power Management Functions

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

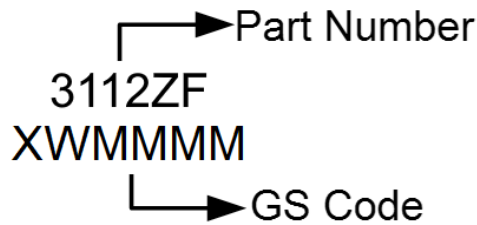


Ordering Information



Part Number	Package	Quantity
GSM3112ZF	DFN3x3-8L	5000pcs

Marking Information



Absolute Maximum Ratings

$T_C=25^\circ\text{C}$ Unless otherwise noted

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	12.6
		$T_A=70^\circ\text{C}$	10
I_{DM}	Pulsed Drain Current ¹	45	A
EAS	Single Pulse Avalanche Energy ²	21	mJ
P_D	Power Dissipation	$T_A=25^\circ\text{C}$	2.3
		$T_A=70^\circ\text{C}$	1.5
T_J	Operating Junction Temperature Range	-55 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	53	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4.7	$^\circ\text{C}/\text{W}$

Electrical Characteristics

T_J=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 =250uA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.2		2.5	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V			1	uA
R _{DS(on)}	Drain-Source On-Resistance ³	V _{GS} =10V, I _D =10A		7.9	10	mΩ
		V _{GS} =4.5V, I _D =5A,		13	16	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =3A			10	S
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _S =1A		0.7	1	V
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =15V, V _{GS} =4.5V, I _D =12.5A		8		nC
Q _{gs}	Gate-Source Charge ^{3,4}			4		
Q _{gd}	Gate-Drain Charge ^{3,4}			2		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz		1040		pF
C _{oss}	Output Capacitance			445		
C _{rss}	Reverse Transfer Capacitance			40		
t _{d(on)}	Turn-On Time ^{3,4}	V _{DD} =15V, I _D =12.5A, V _{GS} =10V, R _G =6Ω		10		ns
t _r	Rise Time ^{3,4}			9		
t _{d(off)}	Turn-Off Time ^{3,4}			24		
t _f	Fall Time ^{3,4}			8		
R _g	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.1		Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=12A, Starting T_J=25°C.
3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

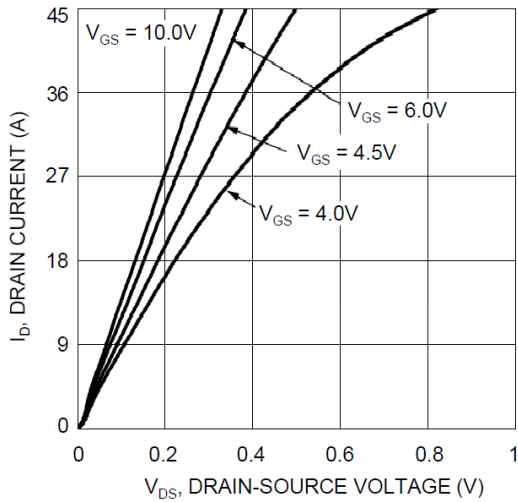


Fig. 1 Typical Output Characteristics

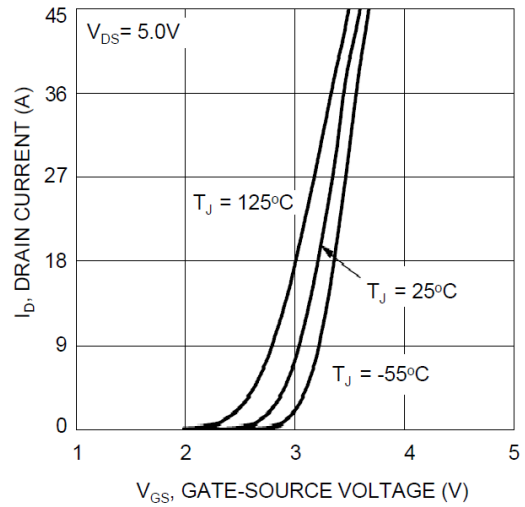


Fig. 2 Typical Transfer Characteristics

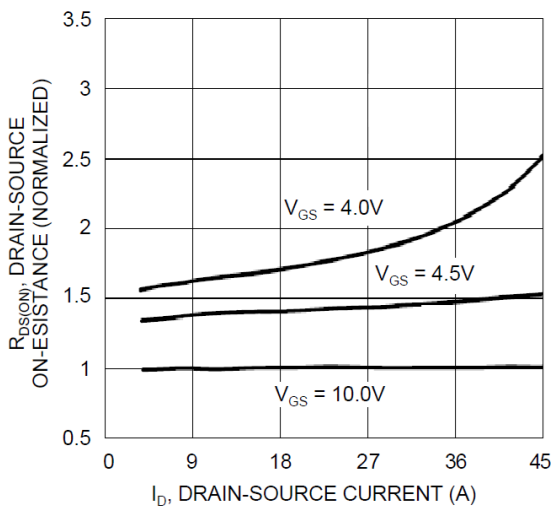


Fig. 3 On-Resistance Variation with T_A

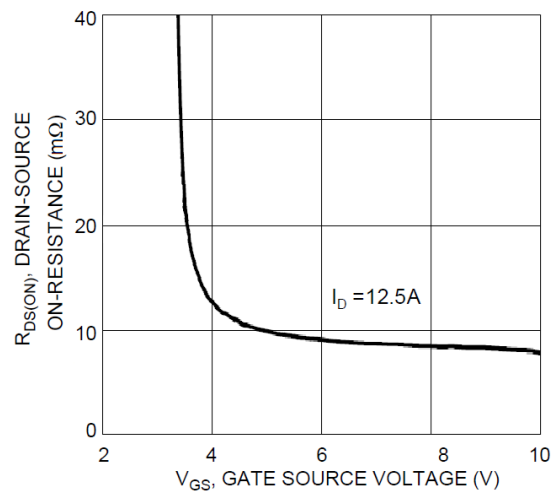


Fig. 4 Typical On-Resistance vs. Drain Current and Gate Voltage

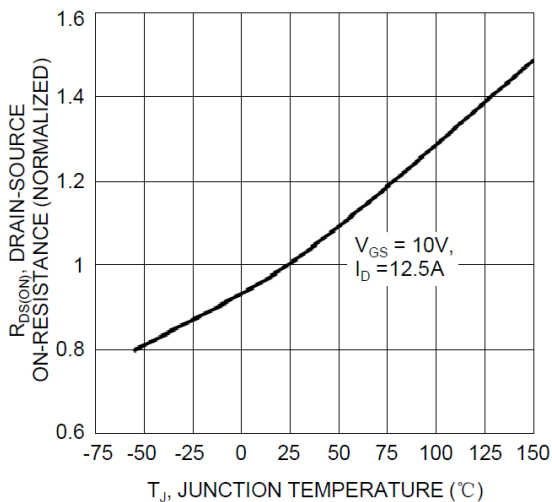


Figure. 5 On-Resistance Variation with T_J

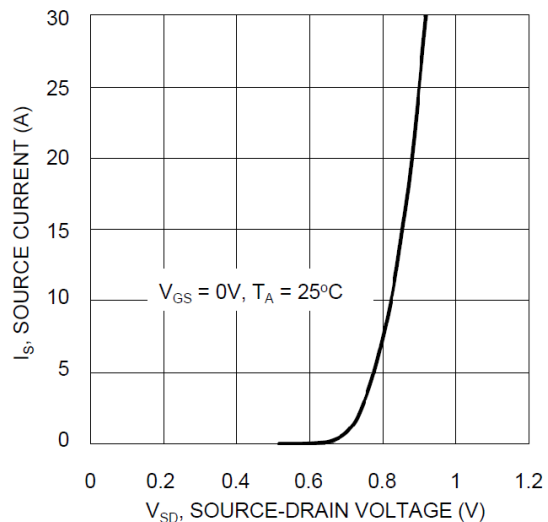


Fig. 6 Diode Forward Voltage vs. Current

Typical Performance Characteristics (Continue)

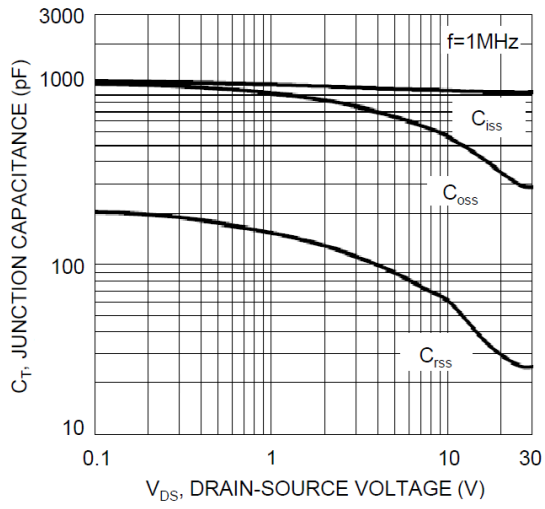


Fig. 7 Typical Capacitance

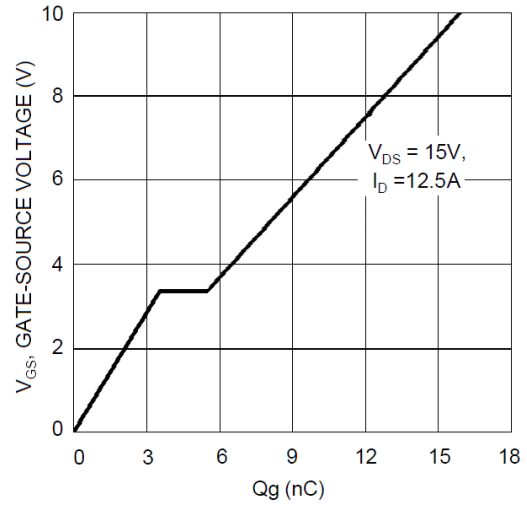
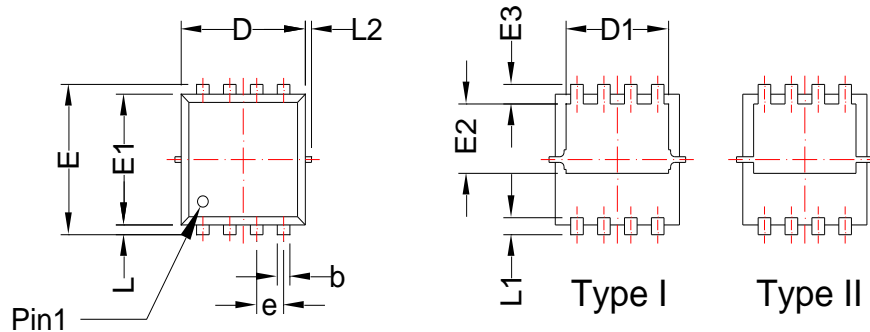


Fig. 8 Gate Charge

Package Dimension

DFN3X3-8L



BACKSIDE VIEW

DIMENSION D AND E1 DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.5mm PER INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.5mm PER SIDE.

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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