GSM3112DF

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.

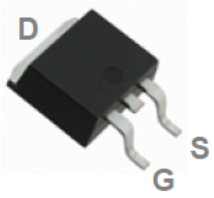
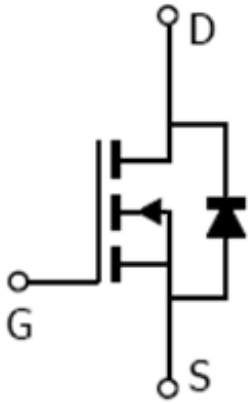
Features

- 30V, 40A, $R_{DS(ON)}$=12mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

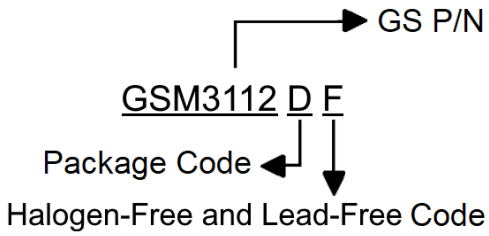
Applications

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

Packages & Pin Assignments

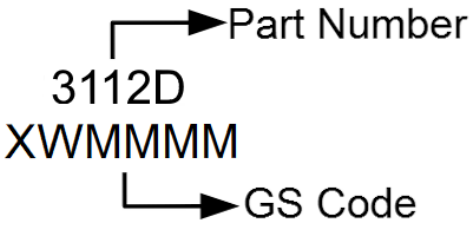
GSM3112DF (TO-252-2L)	
 Top View	
Description	
Gate	
Drain	
Source	

Ordering Information



Part Number	Package	Quantity
GSM3112DF	TO-252	2500pcs

Marking Information



Absolute Maximum Ratings

T_C=25ºC 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℃	40	A
		T_A=70℃	30	
		T_C=25℃	11.8	
I_{DM}	Pulsed Drain Current[1]		50	A
EAS	Single Pulse Avalanche Energy[2]		13	mJ
P_D	Power Dissipation	T_A=25℃	2.5	W
		T_A=70℃	1.6	
		T_C=25℃	40.3	
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		50	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3.1	℃/W

Electrical Characteristics

T_J=25℃ 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		9.8	12	mΩ
		V_{GS}=4.5V, I_D=5A,		15.7	18	
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		
Rg	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}=15V, V_{GS}=10V, L=0.1mH, I_{AS}=13A, Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

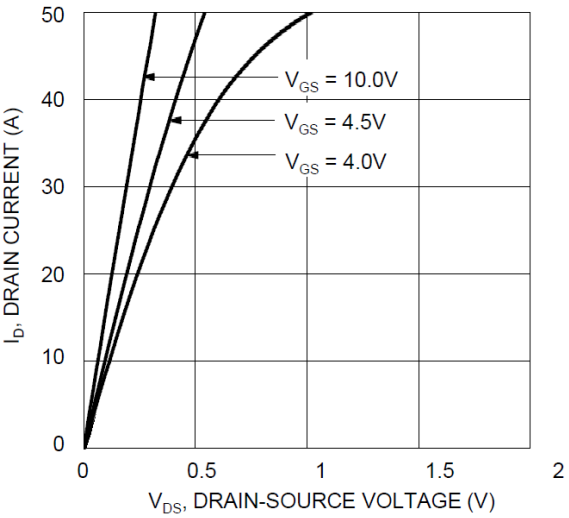


Fig. 1 Typical Output Characteristics

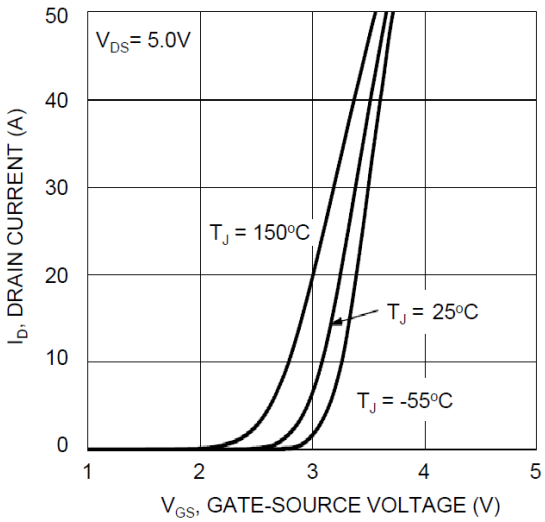


Fig. 2 Typical Transfer Characteristics

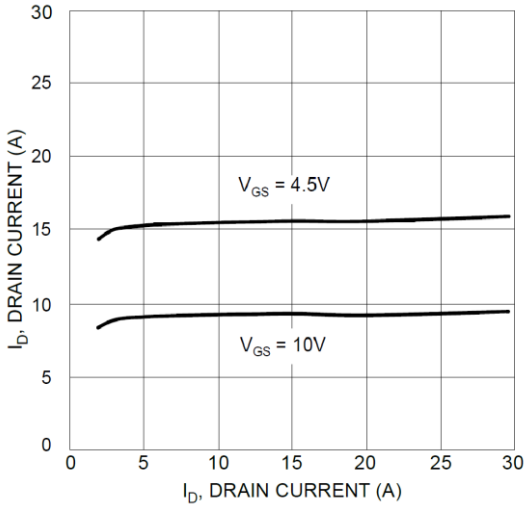


Fig. 3 Typical On-Resistance vs I_D and V_{GS}

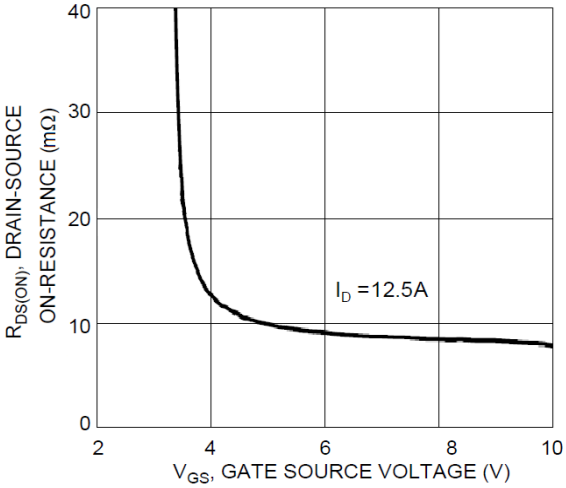


Fig. 4 Typical Transfer Characteristic

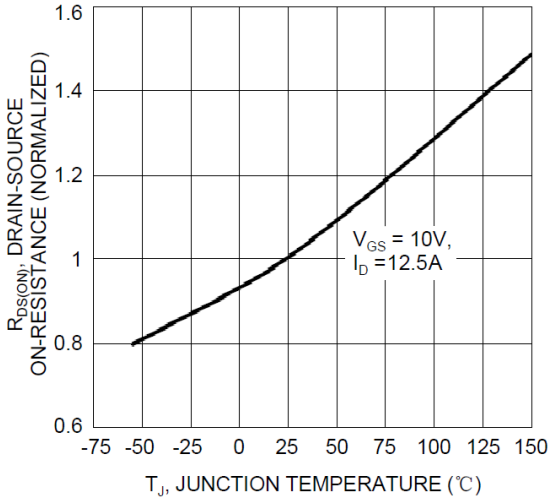


Figure. 5 On-Resistance Variation with T_J

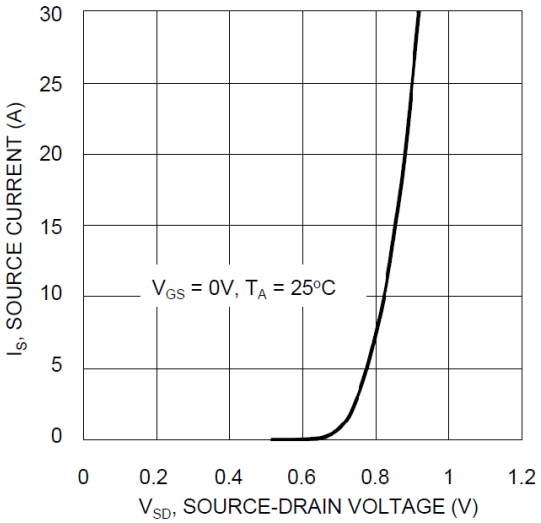


Fig. 6 Diode Forward Voltage vs. Current

Typical Performance Characteristics (Continue)

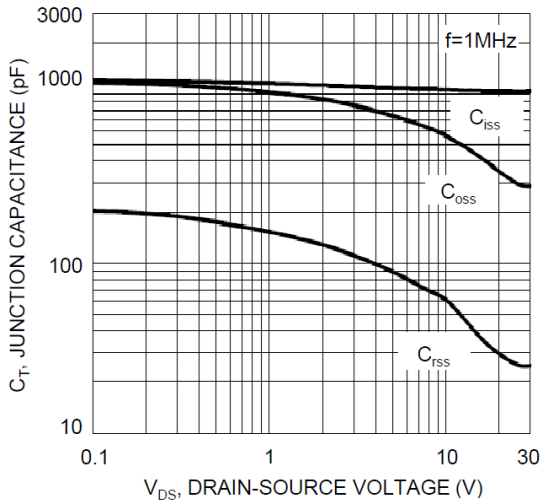


Fig. 7 Typical Capacitance

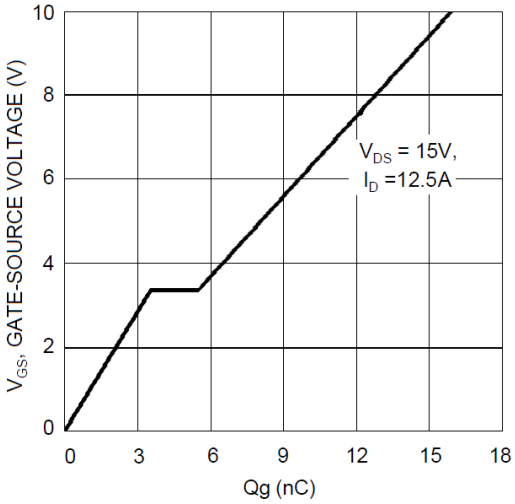
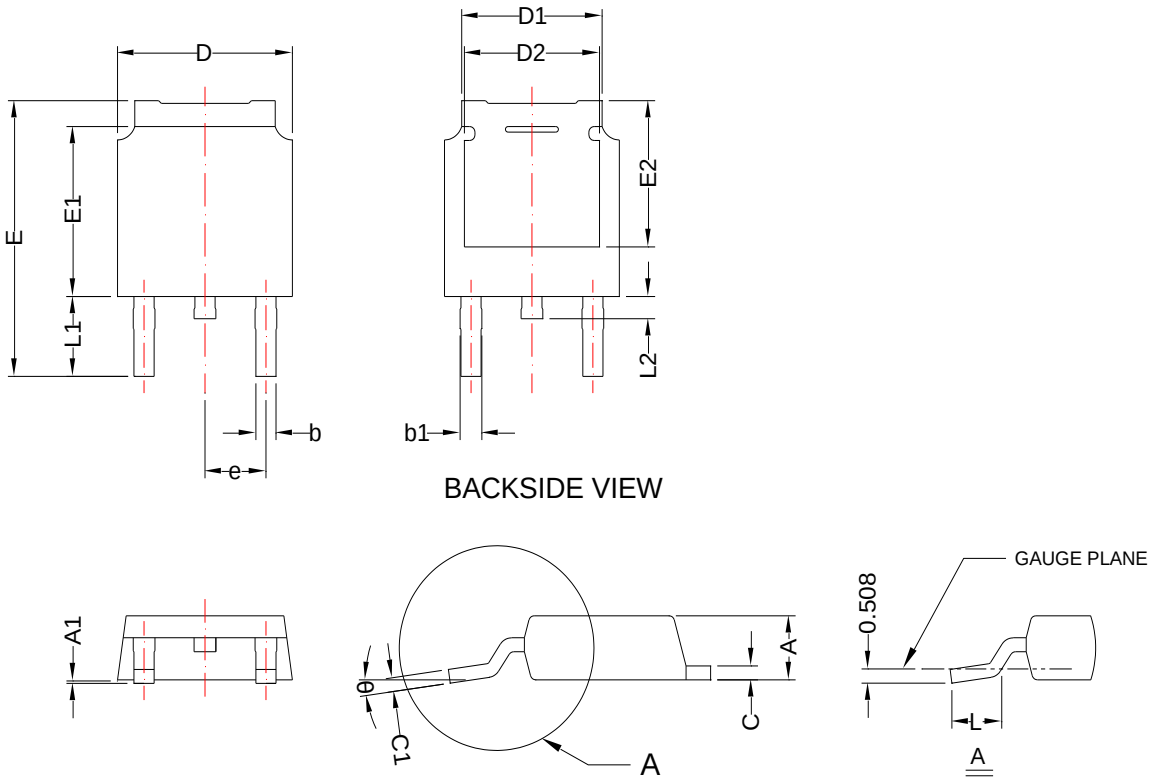


Fig. 8 Gate Charge

Package Dimension

TO-252(AA)



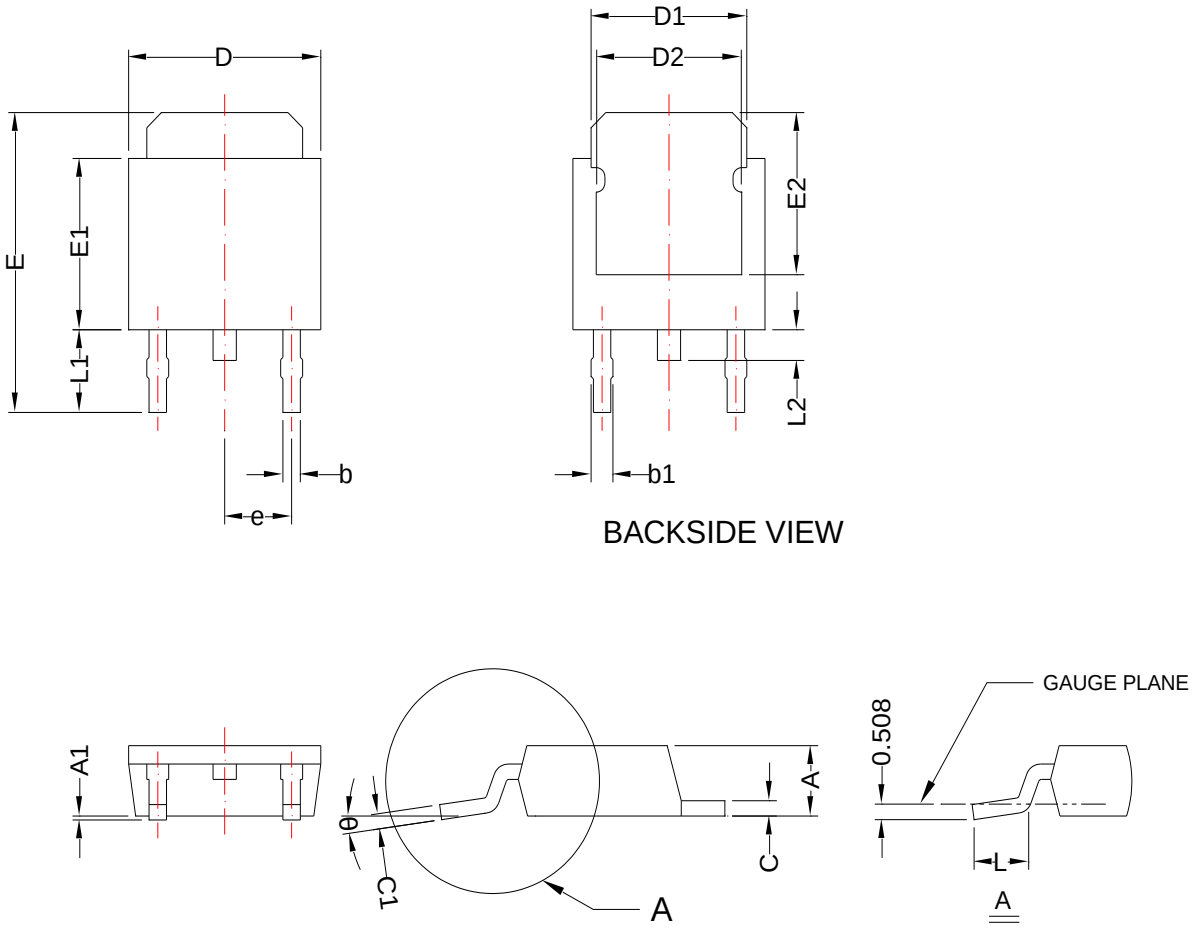
THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM.DIMENDIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMS OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH,TIE BAR BURSS,GATE BURS AND INTETLEAD FLASH,BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.

DIMENSION D DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.15mm PER DNE. DIMENSION E1 DOES NOT INCLUDE MOLD FLASH, PROTRUSION. OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL EXCEED 0.15mm INCHES PER DNE.

Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.18	2.40	0.086	0.094
A1	0.00	0.15	0.000	0.006
b	0.64	0.90	0.025	0.035
b1	0.76	1.14	0.030	0.045
c	0.40	0.89	0.016	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.73	0.250	0.265
D1	4.95	5.46	0.195	0.215
D2	4.32	---	0.170	---

TO-252(AB)



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Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.18	2.40	0.086	0.094
A1	0.00	0.15	0.000	0.006
b	0.50	0.90	0.020	0.035
b1	0.60	1.14	0.024	0.045
c	0.45	0.89	0.018	0.035
c1	0.40	0.61	0.016	0.024
D	6.35	6.80	0.250	0.268
D1	4.95	5.50	0.195	0.217
D2	3.81	---	0.150	---

E	9.40	10.41	0.370	0.410
E1	5.33	5.80	0.210	0.228
E2	4.57	---	0.180	---
e	2.286 BSC		0.090 BSC	
L	1.40	1.78	0.055	0.070
L1	2.40	3.00	0.094	0.118
L2	---	1.20	---	0.047
θ	0°	8°	0°	8°

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