GSM3106XF

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

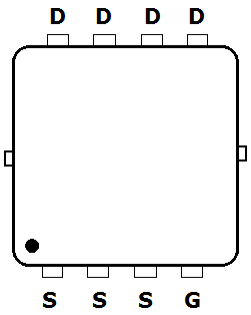
- 30V, 60A, $R_{DS(ON)}$<6mΩ@V_{GS}=10V
- High Power and current handing capability
- Lead free product is acquired
- DFN5x6-8L package design

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

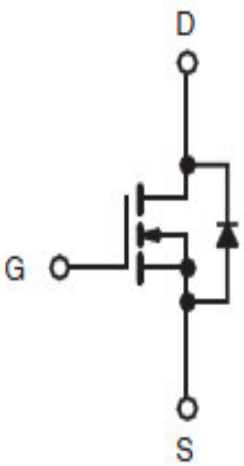
Packages & Pin Assignments

GSM3106XF (DFN5x6-8L)

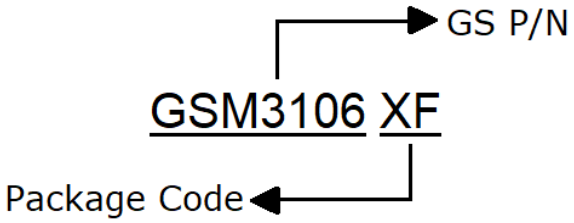


Top View

Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

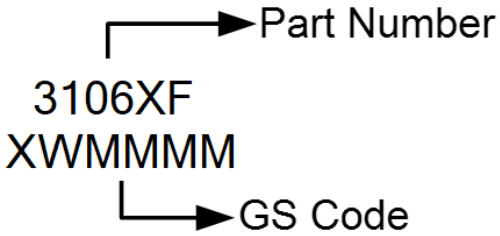


Ordering Information



Part Number	Package	Quantity
GSM3106XF	DFN5x6-8L	3000pcs

Marking Information



Absolute Maximum Ratings

T_A=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_C=25℃[1]	60	A
		T_C=70℃	48	
I_{DM}	Pulsed Drain Current[2]		100	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.5mH [3]		30	mJ
P_D	Power Dissipation T_C=25℃		40	W
	Power Dissipation T_C=70℃		27	W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3	℃/W

Note :
1.The maximum current rating is package limited..
2.Repetitive Rating: Pulse width limited by maximum junction temperature.
3.E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.

Electrical Characteristics

T_A=25℃ Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
$V_{(BR)DSS}$	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	1.0		2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V			1	uA
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V, I_S=2A			1	V
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=20A		4.8	6	mΩ
		V_{GS}=4.5V, I_D=10A		6.8	9.8	
Gate charge characteristics						
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=9A		16.7		nC
Q_{gs}	Gate-Source Charge			2.2		
Q_{gd}	Gate-Drain Charge			3.5		
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz		1155		pF
C_{oss}	Output Capacitance			456		
C_{rss}	Reverse Transfer Capacitance			72		
$t_{d(on)}$	Turn-On Time	V_{DS}=15V, V_{GS}=10V, Rg=3Ω, I_D=9A		3.5		ns
t_r	Rise Time			5.5		
$t_{d(off)}$	Turn-Off Time			13.5		
t_f	Fall Time			4.6		
Rg	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		1.6		Ω

Typical Performance Characteristics

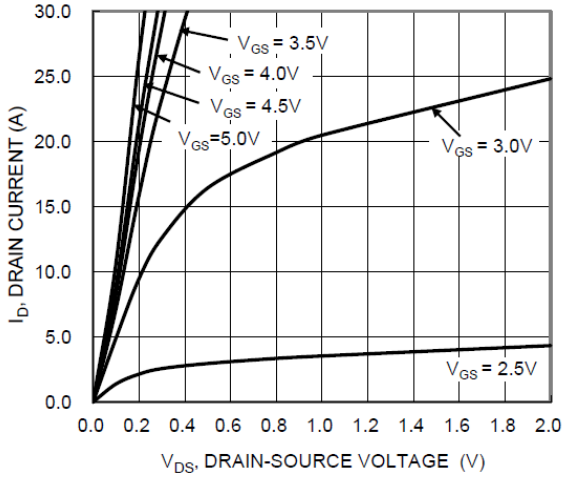


Figure 1. Output Characteristics

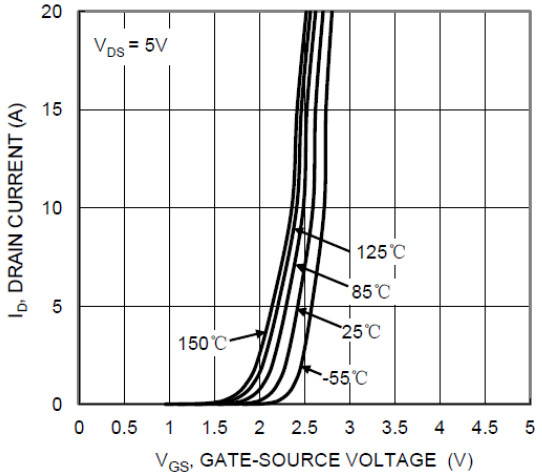


Figure 2. Transfer Characteristics

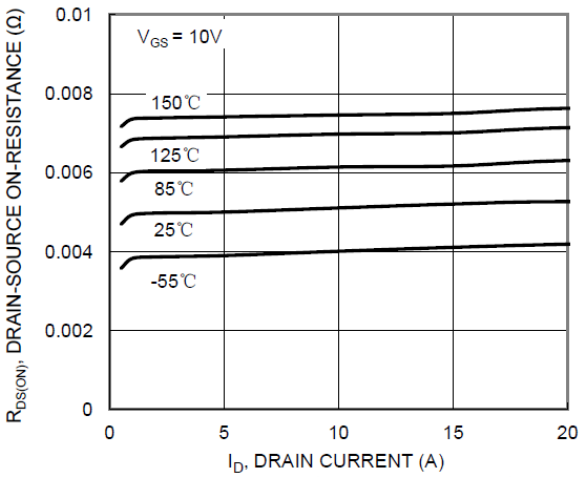


Figure 3. On-Resistance vs. Drain Current

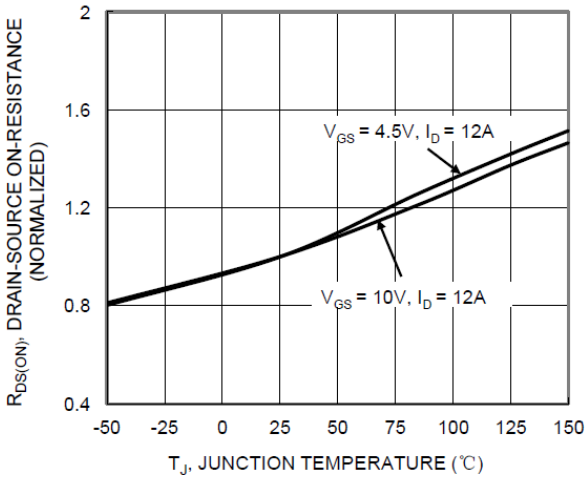


Figure 4. Normalized R_{DSON} vs. T_J

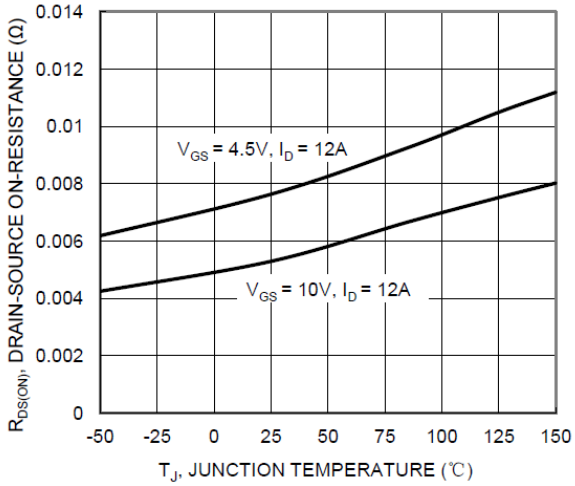


Figure 5. On-Resistance Variation with Temperature

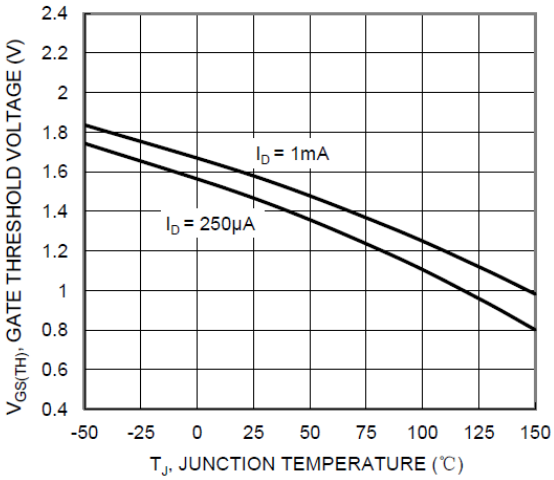


Figure 6. Gate Threshold Variation vs. T_J

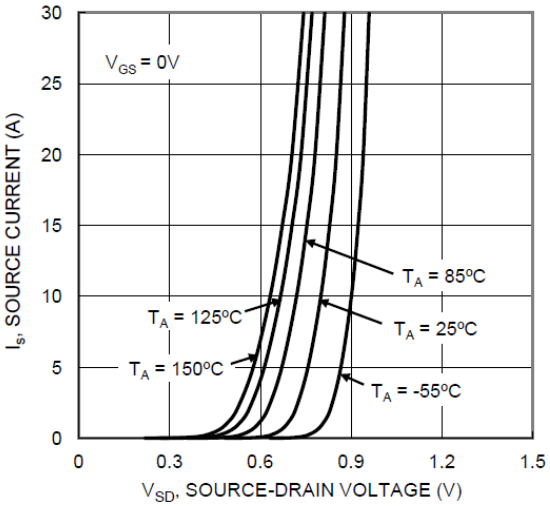


Figure 7. Diode Forward Voltage vs. Current

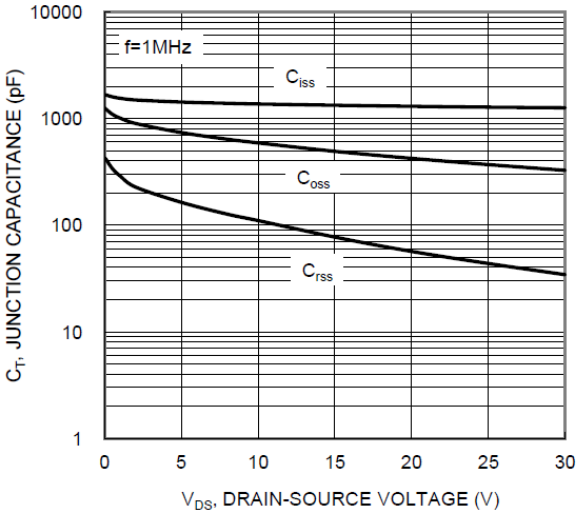


Figure 8. Capacitance

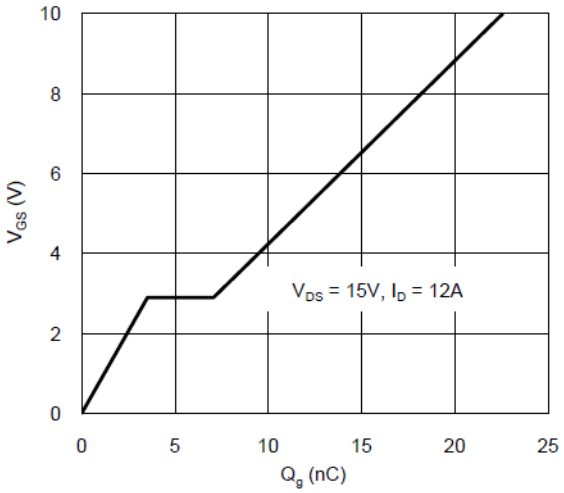


Figure 9. Gate Charge Waveform

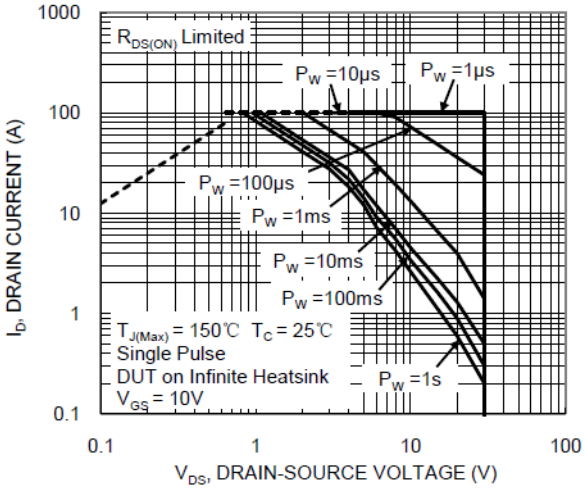


Figure 10. Maximum Safe Operating Area

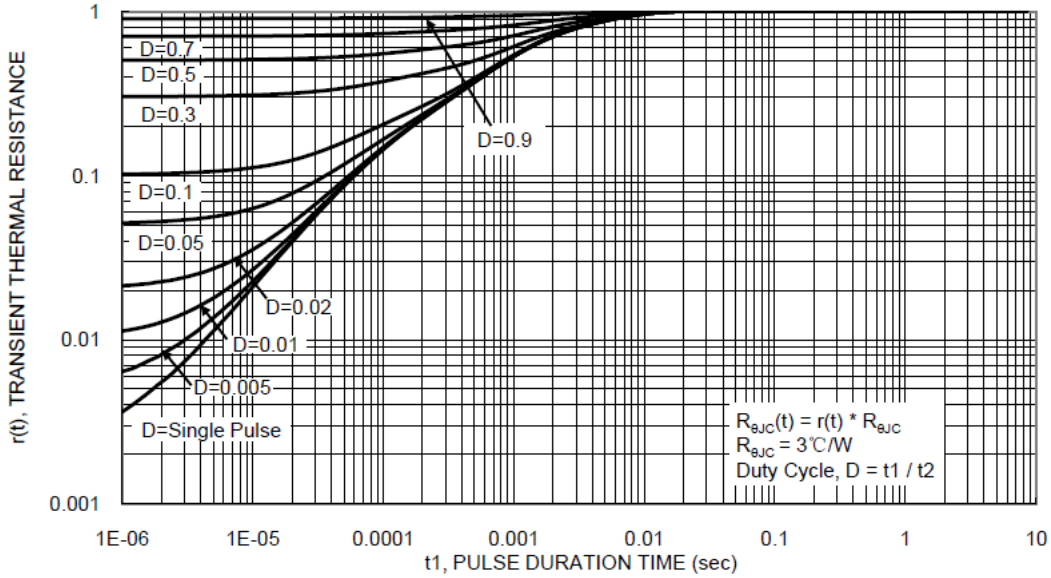
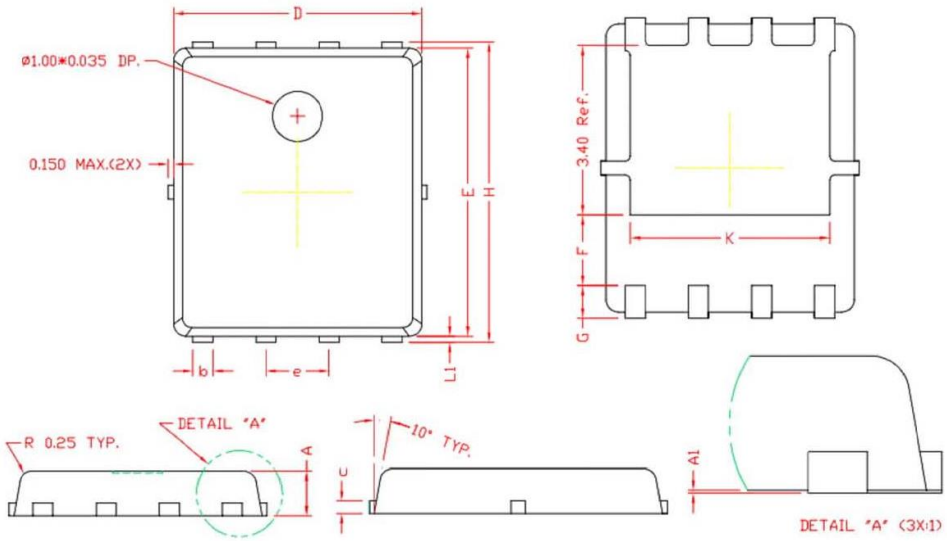


Figure 11. Normalized Transient Thermal Resistance

Package Dimension

DFN5x6-8L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.800	1.000	0.031	0.039
A1	0.000	0.050	0.000	0.002
b	0.350	0.490	0.014	0.019
c	0.254 REF		0.010 REF	
D	4.900	5.100	0.193	0.201
F	1.400 REF		0.055 REF	
E	5.700	5.900	0.224	0.232
e	1.270 BSC		0.050 BSC	
H	5.950	6.200	0.234	0.244
L1	0.100	0.180	0.012	0.009
G	0.600 REF		0.024 REF	
K	4.000 REF		0.157 REF	

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