

GSM1336XF

100V N-Channel MOSFET

Product Description

The N-Channel enhancement mode power field effect transistor is 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.

The device is well suited for high efficiency fast switching applications.

Features

- $R_{DS(ON)} = 3.6\text{m}\Omega$ @ $V_{GS}=10\text{V}$
- $R_{DS(ON)} = 5.1\text{m}\Omega$ @ $V_{GS}=4.5\text{V}$
- DFN5X6-8L Package
- RoHS Compliant and Halogen Free

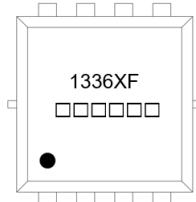
Applications

- MB / VGA / Vcore
- POL Applications
- SMPS

Packages & Pin Assignments

DFN5X6-8L				Equivalent Circuit			
Pin	Symbol	Description		Pin	Symbol	Description	
1	S	Source		8	D	Drain	
2	S	Source		7	D	Drain	
3	S	Source		6	D	Drain	
4	G	Gate		5	D	Drain	

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM1336XF	DFN5X6-8L	1336XF □□□□□□	3,000 PCS
GSM1336 1 2			
- Product Code: GSM1336	- Package Code: 1 is X for DFN5X6-8L	- Green Level: 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
		- Product Code: 1336XF	
- GS Code: □□□□□□			

Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	100	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current (Silicon Limited)	152	A
	T _C =25°C	152	
	T _C =100°C	96	
I _{DM}	Continuous Drain Current (Package Limited)	100	A
I _{AS}	Pulsed Drain Current ¹	400	A
E _{AS}	Single Pulse Avalanche Current, L = 0.1mH ¹	37	A
	Single Pulse Avalanche Energy, L = 0.1mH ¹	136	mJ
P _D	Power Dissipation	T _C =25°C	W
		T _C =100°C	
R _{θJC}	Thermal Resistance-Junction to Case	0.8	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient ²	55	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

1. Single pulse width is limited by max junction temperature.
2. The device mounted on 1in² FR-4 board with 2oz. Copper

GSM1336XF

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	-	-	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	-	2.5	V
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A	-	3.1	3.6	mΩ
		V _{GS} =4.5V, I _D =15A	-	4.1	5.1	
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =30A	-	60	-	S
Dynamic Characteristics						
R _g	Gate Resistance	f=1MHz		0.9		Ω
C _{iss}	Input Capacitance		-	4020	-	pF
C _{oss}	Output Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	-	970	-	
C _{rss}	Reverse Transfer Capacitance		-	36	-	
Q _g	Total Gate Charge		-	95	-	nC
Q _{gs}	Gate-Source Charge	V _{DS} =50V, I _D =20A V _{GS} =10V	-	10	-	
Q _{gd}	Gate-Drain Charge		-	32	-	
t _{d(on)}	Turn-On Delay Time		-	38	-	
t _r	Turn-On Rise Time	V _{DD} =50V, I _D =20A	-	60	-	ns
t _{d(off)}	Turn-Off Delay Time	V _{GS} =10V, R _g =6Ω	-	57	-	
t _f	Turn-Off Fall Time		-	20	-	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _s =1A	-	-	1	V
t _{rr}	Reverse Recovery Time		-	76	-	ns
Q _{rr}	Reverse Recovery Charge	I _F =50A, dI/dt=100A/μs	-	210	-	nC

Typical Performance Characteristics

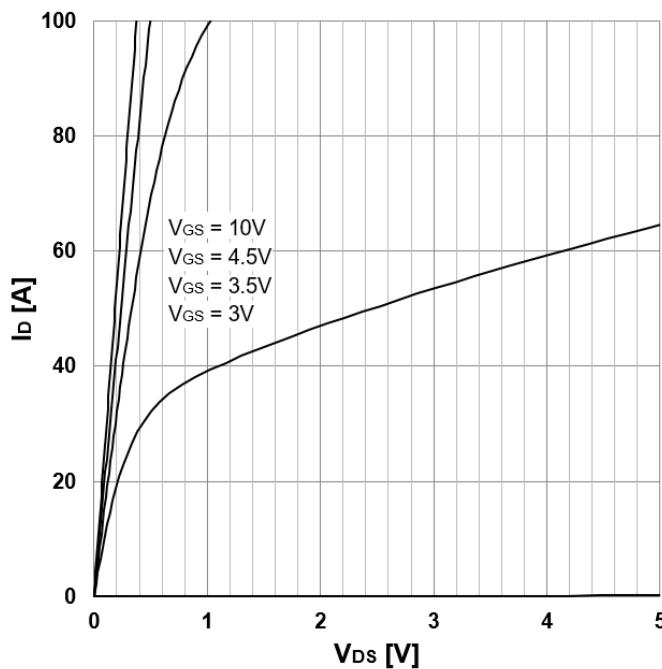


FIG.1 Output Characteristics

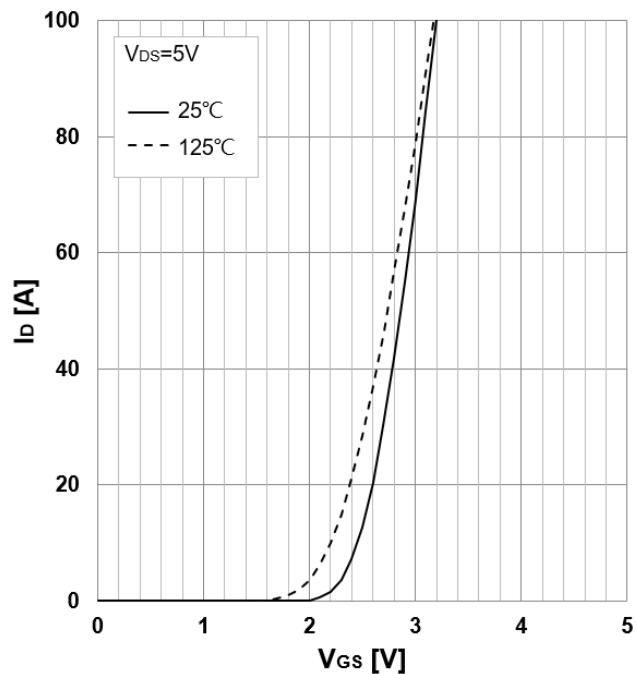


FIG.2 Transfer Characteristics

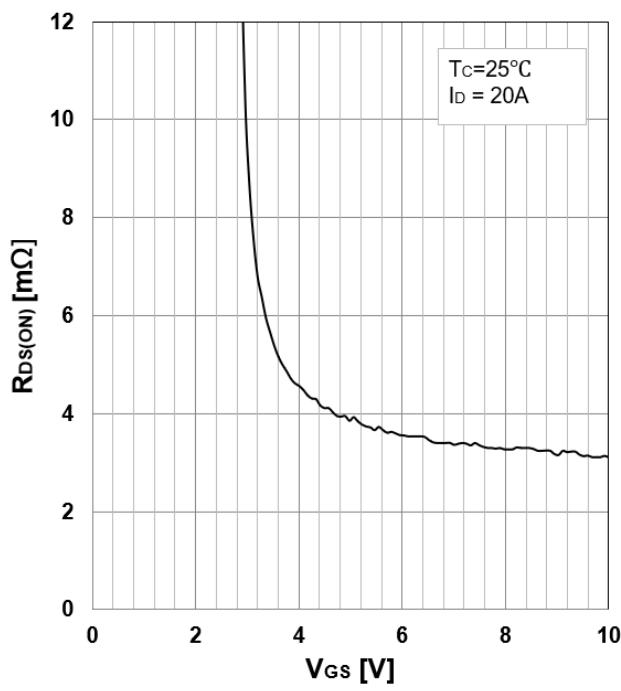


FIG.3 On-Resistance vs. Gate Voltage

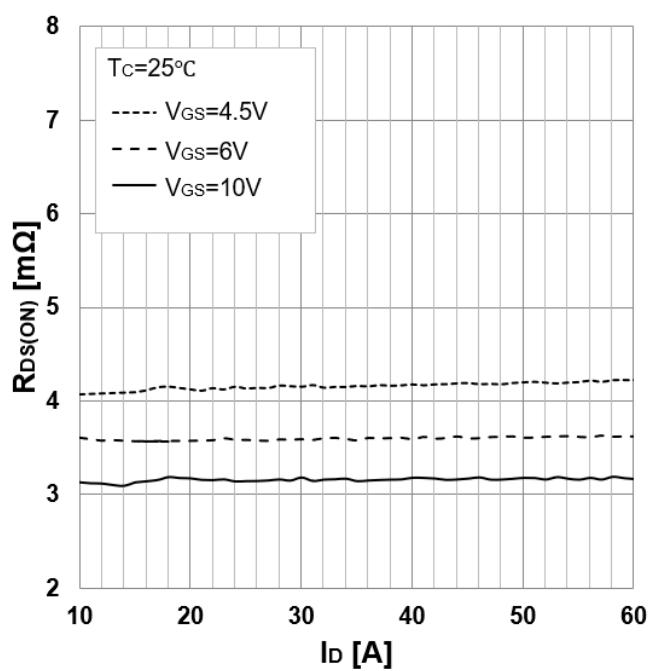


FIG.4 On-Resistance vs. Drain Current

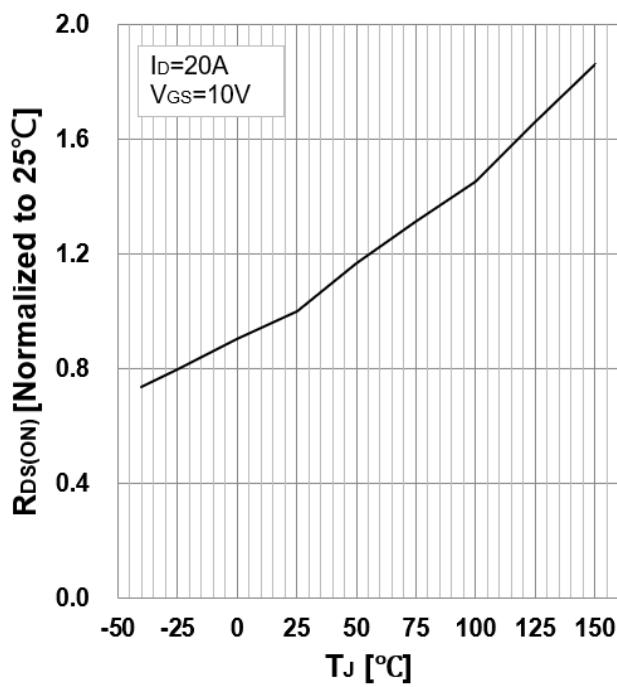


FIG.5 Normalized On-Resistance vs. T_J

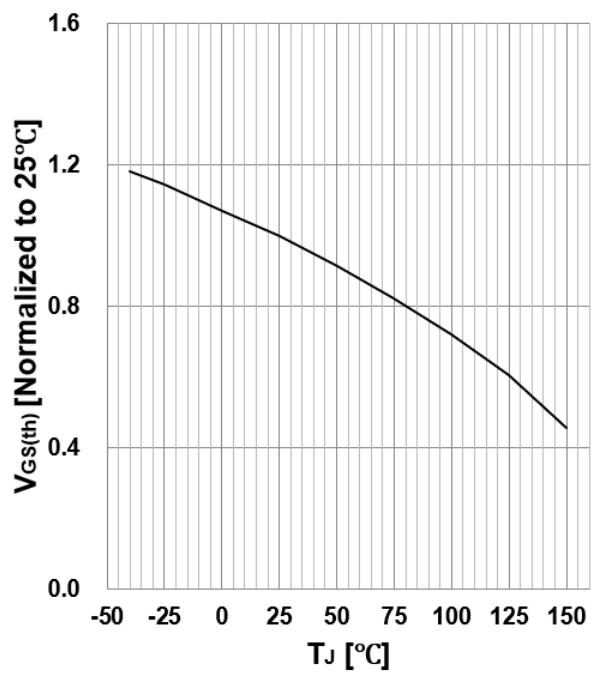
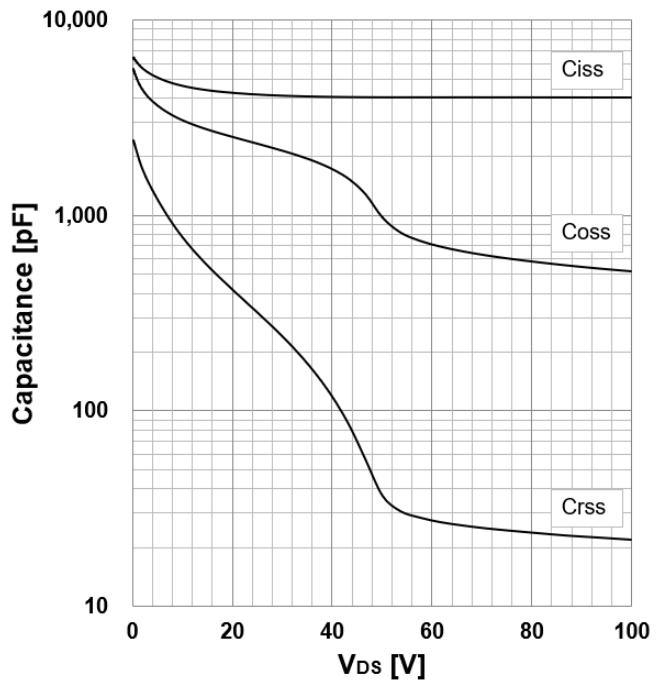
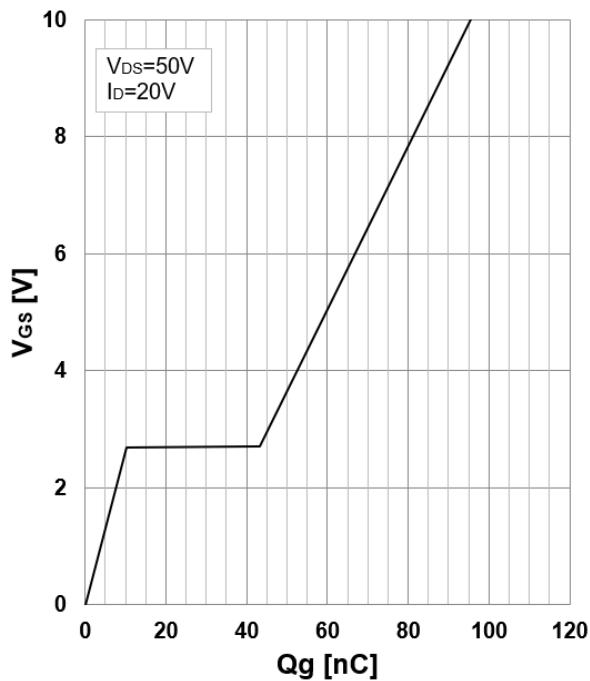
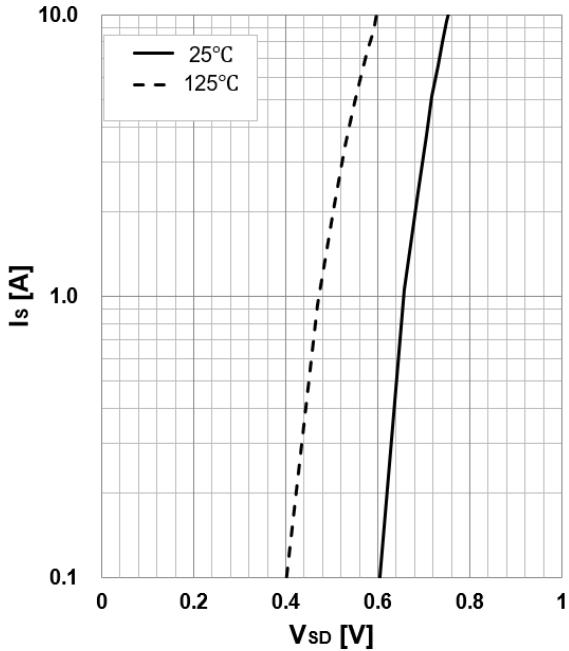
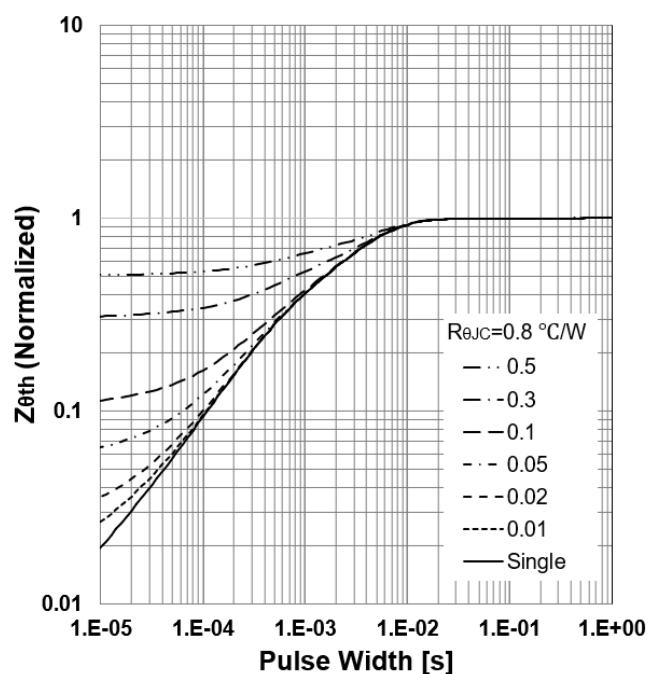
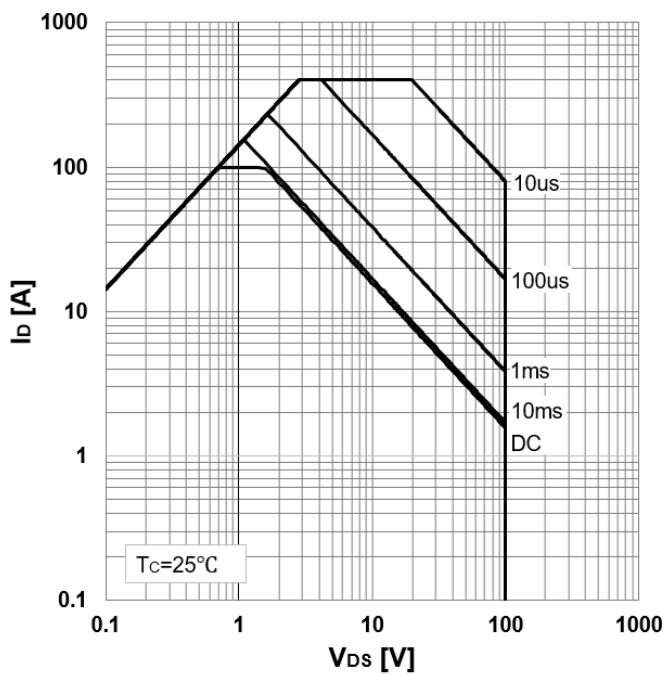


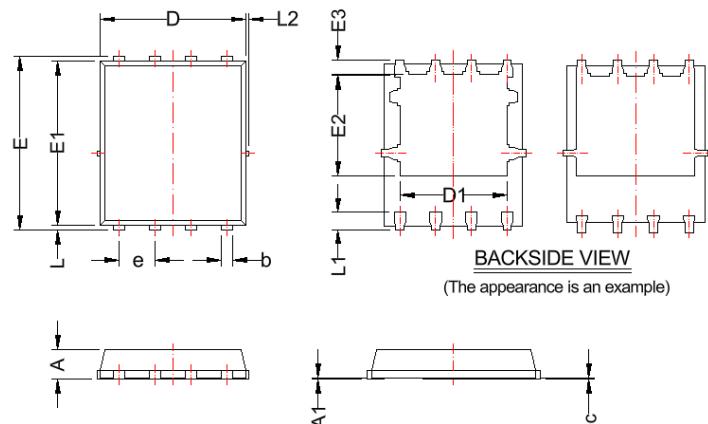
FIG.6 Normalized $V_{GS(th)}$ vs. T_J



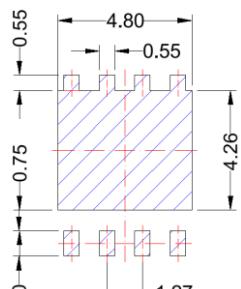


DFN5X6-8L

Package Dimension



Recommended Land Pattern



Unit: mm

Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.20	0.031	0.047
A1	0.00	0.05	0.000	0.002
b	0.25	0.51	0.010	0.020
c	0.20	0.35	0.008	0.014
D	4.80	5.40	0.189	0.213
D1	3.40	4.60	0.134	0.181
E	5.90	6.20	0.232	0.244
E1	5.40	5.90	0.213	0.232
E2	3.20	3.80	0.126	0.150
E3	0.40	0.80	0.016	0.031
e	1.27 BSC		0.050 BSC	
L	0.06	0.25	0.002	0.010
L1	0.34	0.75	0.013	0.030
L2	---	0.15	---	0.006

NOTE:

Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

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