

GSM3320XF

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, 73A, $R_{DS(ON)} < 4.0m\Omega @ V_{GS}=10V$
- High Power and current handling capability
- Lead free product is acquired
- DFN5x6-8L package design

Applications

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

Packages & Pin Assignments

GSM3320XF (DFN5x6-8L)	
<p style="text-align: center;">Top View</p>	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

Ordering Information

GS P/N

GSM3320 XF

 Package Code

Part Number	Package	Quantity
GSM3320XF	DFN5x6-8L	3000pcs

Absolute Maximum Ratings

T_A=25°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 _C =25°C	73
		T _C =100°C	46
I _{DM}	Pulsed Drain Current ²	240	A
E _{AS}	Avalanche Energy, Single pulse	144	mJ
P _D	Power Dissipation T _C =25°C	35.8	W
	Power Dissipation T _C =100°C	14.3	W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJC}	Thermal Resistance-Junction to Case	1.1	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	62	°C/W

Note :

- 1.Surface Mounted on 1in² pad area, t ≤ 10sec.
- 2.The maximum current rating is package limited.
- 3.The E_{AS} data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS} =48A

Electrical Characteristics

T_A=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	1.6	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
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			90	A
I _{SM}	Pulsed Source Current				360	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A		1.5	4	mΩ
		V _{GS} =4.5V, I _D =15A		2.7	6	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =5A		23		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =15V, V _{GS} =10V, I _D =15A		56.9		nC
Q _{gs}	Gate-Source Charge ^{3,4}			13.8		
Q _{gd}	Gate-Drain Charge ^{3,4}			23.5		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz		4345		pF
C _{oss}	Output Capacitance			340		
C _{rss}	Reverse Transfer Capacitance			225		
t _{d(on)}	Turn-On Time ^{3,4}	V _{DD} =15V, I _D =1A, V _{GS} =10V, R _G =3.3Ω		20.1		ns
t _r				6.3		
t _{d(off)}	Turn-Off Time ^{3,4}			124.6		
t _f				15.8		
R _g	Gate Resistance		V _{DS} =0V, V _{GS} =0V, f=1MHz		1.7	

Note :

1.Pulse test ; pulse width ≤ 300us, duty cycle ≤ 2%.

Typical Performance Characteristics

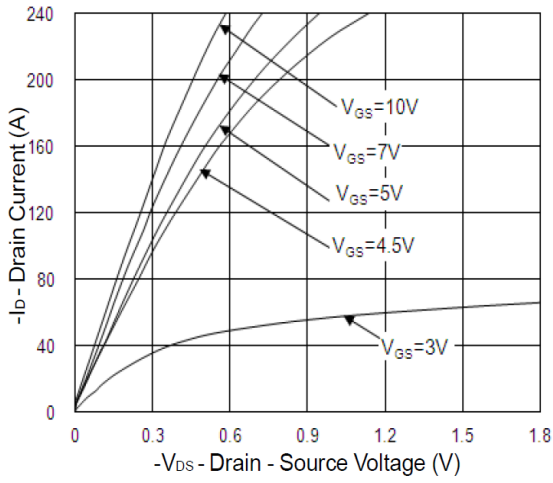


Fig.1 Typical Output Characteristic

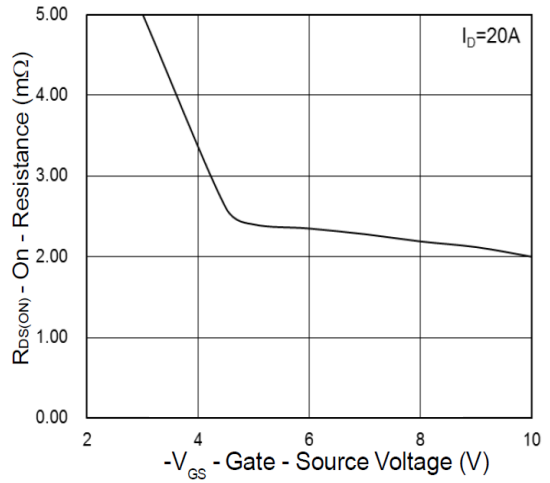


Fig.2 Gate-Source On Resistance

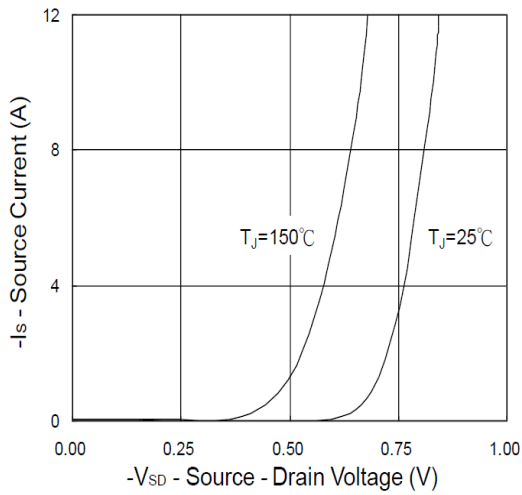


Fig.3 Source-Drain Diode Forward

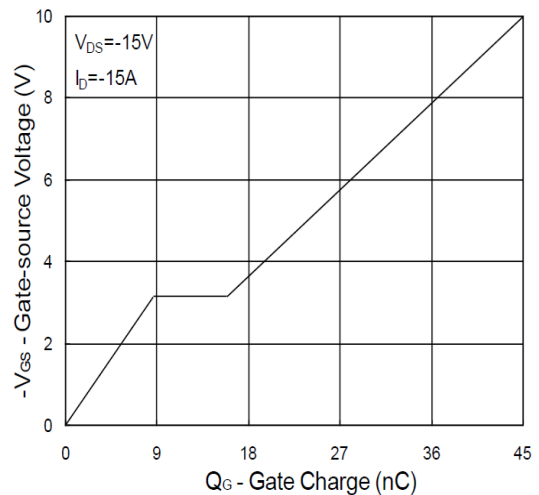


Fig.4 Gate Charge Waveform

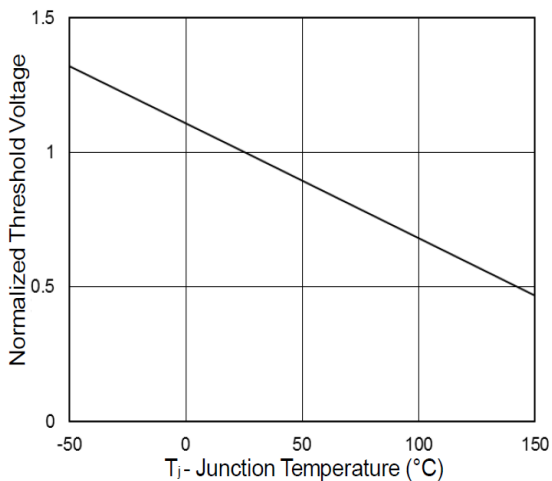


Figure 5. Threshold Voltage

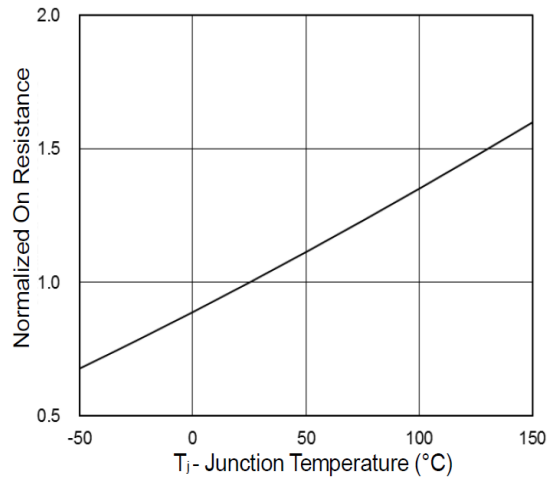


Figure 6. Drain-Source On Resistance

Typical Performance Characteristics (continue)

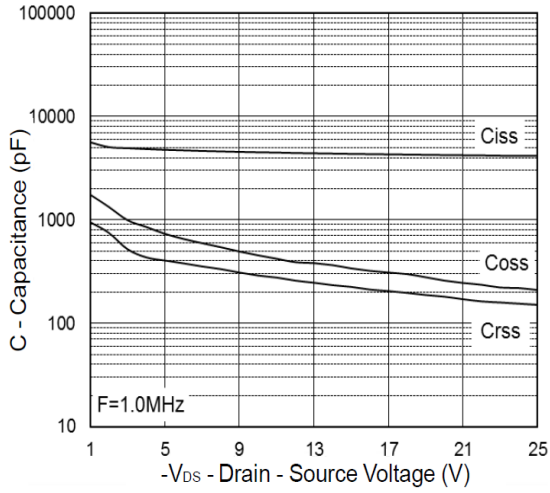


Fig.5 Normalized Transient Impedance

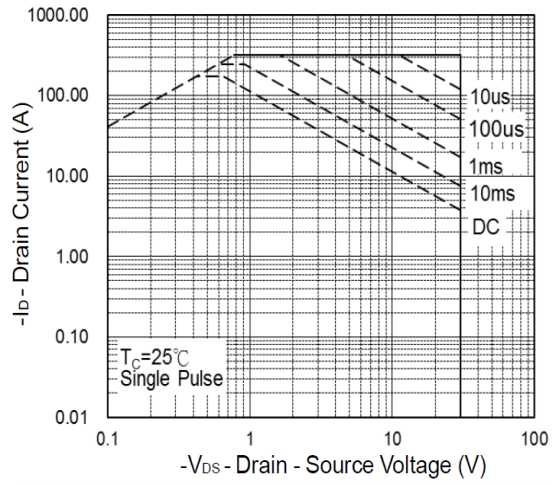


Fig.8 Maximum Safe Operating Area

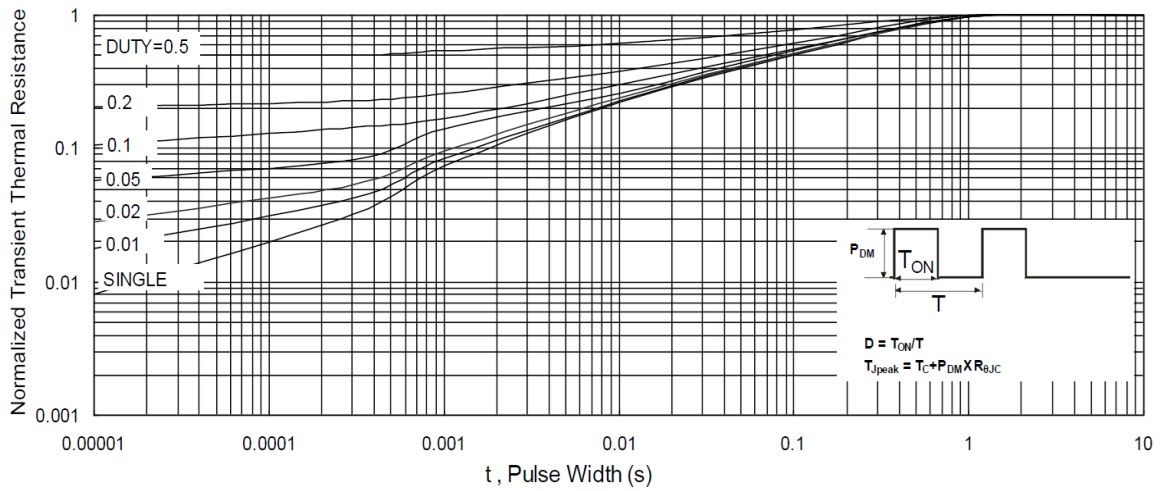
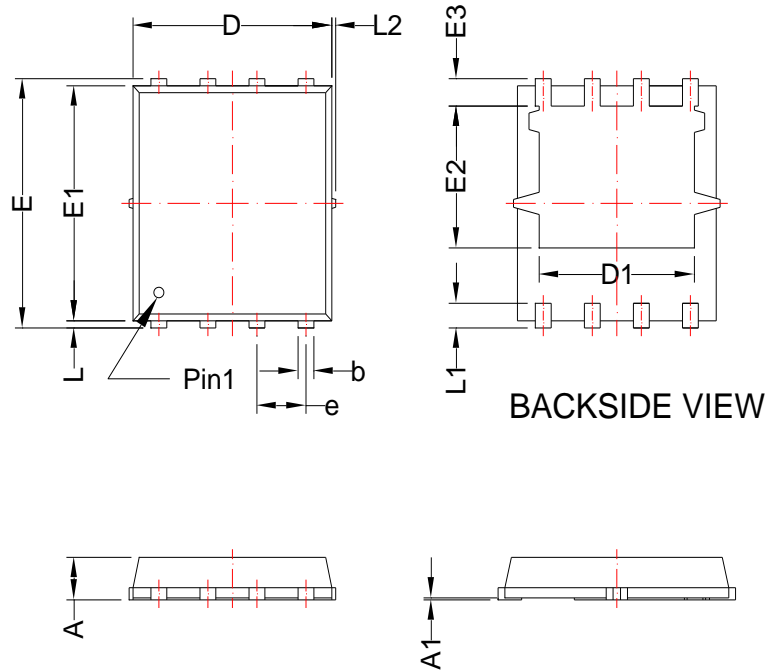


Figure 11. Normalized Thermal Transient Impedance

Package Dimension

DFN5x6-8L









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	4.90	5.40	0.193	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	0.1	0.25	0.004	0.010
L1	0.45	0.75	0.018	0.030
L2	---	0.15	---	0.006

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