

GSM3320XF

30V N-Channel MOSFETs

Product Description

The GSM3320XF is an N-channel enhancement mode power MOSFET uses trench DMOS technology.

It has been especially tailored to minimize on-state resistance and provides a superior switching performance that is well suited for high efficiency fast switching applications.

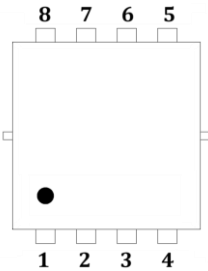
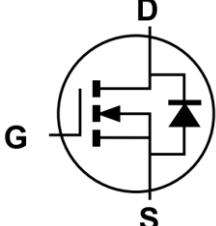
Features

- Low $R_{DS(ON)}$
- DFN5x6-8L package
- RoHS Compliant and Halogen Free

Applications

- Power Management Application
- DC-DC Converter
- Power Load Switch

Packages & Pin Assignments

GSM3320XF (DFN5x6-8L)		Equivalent Circuit
		
Pin Number	Description	
1, 2 & 3	Source	
4	Gate	
5, 6, 7 & 8	Drain	

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM3320XF	DFN5x6-8L	3320XF □□□□□□	3,000 PCS
GSM3320 1 2			
- Product Code: GSM3320		- Package Code: 1 is X for DFN5x6-8L	
		- Green Level: 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
3320 1 2 3 3 3 3 3 3			
- Product Code: 3320		- Package Code: 1 is X for DFN5x6-8L	
		- Green Level: 2 is F for RoHS Compliant and Halogen Free	
- GS Code: - 3 3 3 3 3 3 is GS Code			

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

Symbol	Parameter	Rating	Unit
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current ⁴	T _C =25°C	85
		T _C =100°C	66
I _{DM}	Pulsed Drain Current ²	240	A
E _{AS}	Avalanche Energy, Single pulse ³	144	mJ
P _D	Power Dissipation T _C =25°C	73	W
	Power Dissipation T _C =100°C	29	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	1.7	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient ¹	62	°C/W

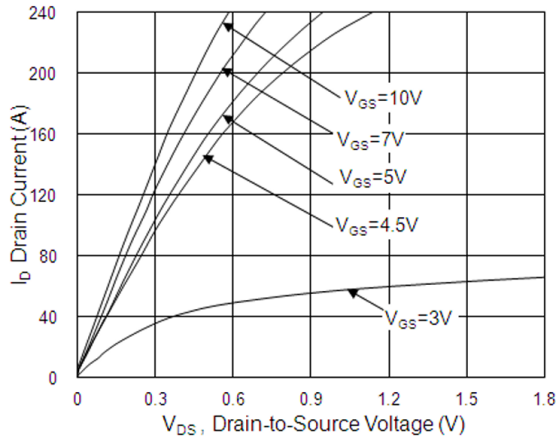
Electrical Characteristics (T_A=25°C Unless otherwise specified)

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
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A		2.0	2.6	mΩ
		V _{GS} =4.5V, I _D =15A		2.7	3.8	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =5A		24		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			73	A
Dynamic						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _D =15A		112		nC
Q _{gs}	Gate-Source Charge			13.8		
Q _{gd}	Gate-Drain Charge			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	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			124.6		
t _f				15.8		
R _g	Gate Resistance		V _{DS} =0V, V _{GS} =0V, f=1MHz		1.7	

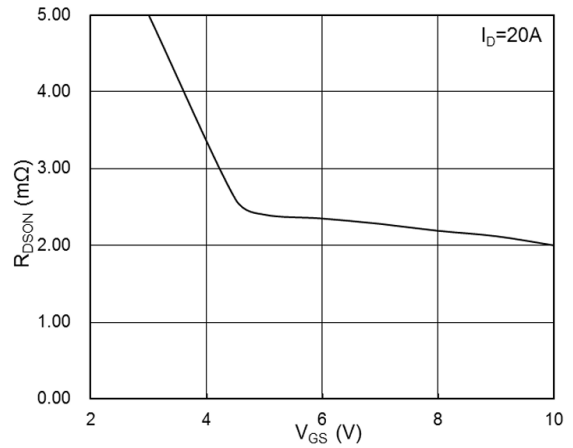
NOTE :

1. Device mounted on FR4 board with 1 inch², 2 oz. Cu.
2. Pulse width ≤ 300us , duty cycle ≤ 2%
3. The test condition is V_{DD}=20V, V_{GS}=10V, L=0.5mH, I_{AS}=24A
4. The maximum current rating is package limited

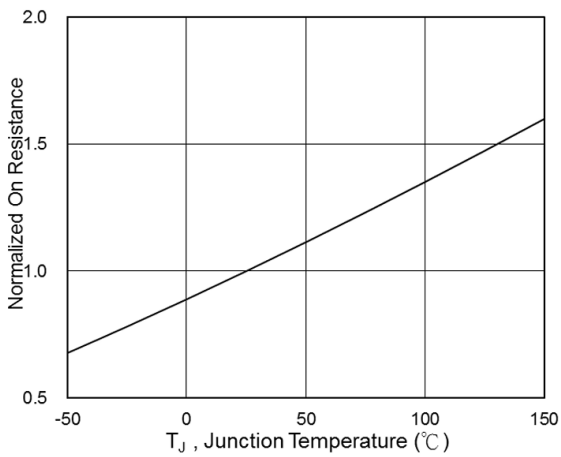
Typical Performance Characteristics



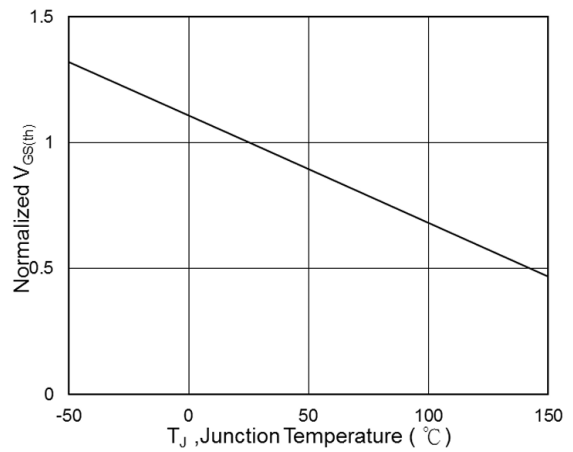
Output Characteristics



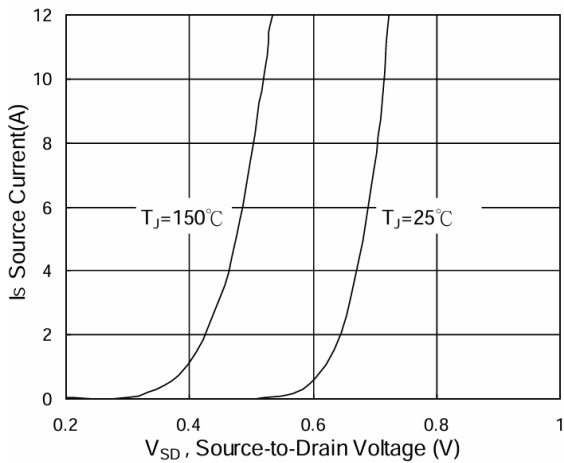
On-Resistance vs. Gate-Source Voltage



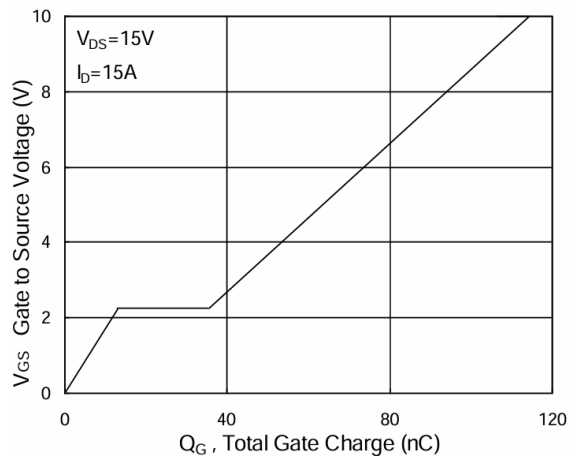
Normalized On-Resistance vs. Temperature



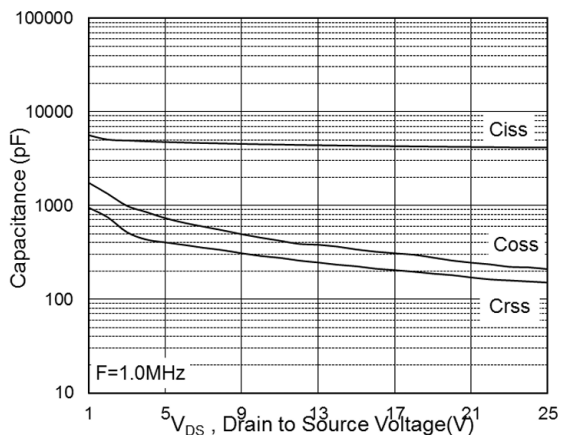
Normalized $V_{GS(th)}$ vs. Temperature



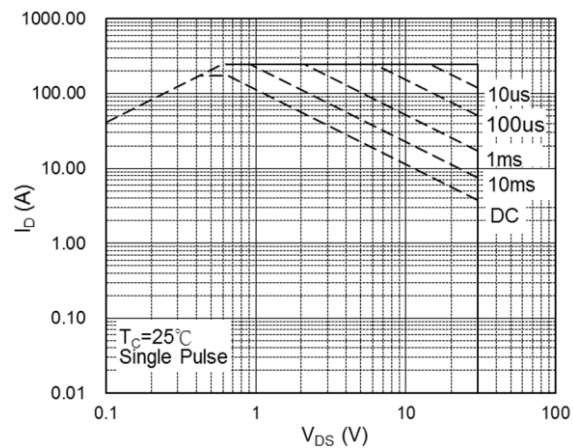
Diode Characteristics



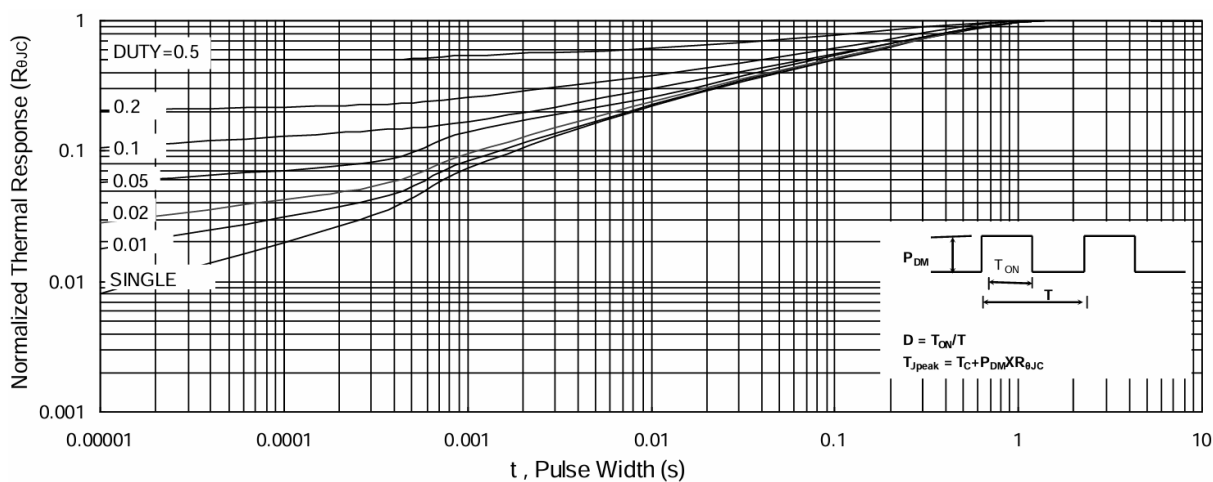
Gate Charge Characteristics



Capacitance Characteristics



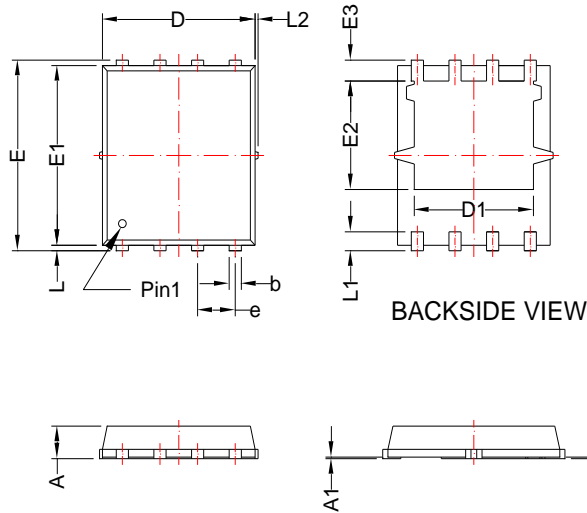
Safe Operating Area



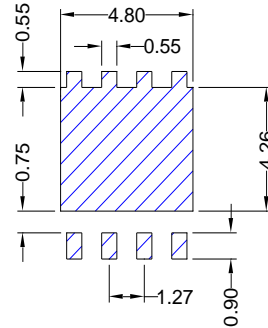
Normalized Maximum Transient Thermal Impedance

DFN5x6-8L

Package Dimension



Recommended Land Pattern







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



NOTE:
Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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