GSM22N10XF

100V 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.

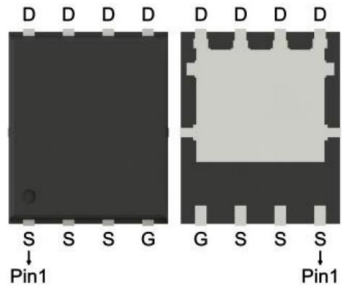
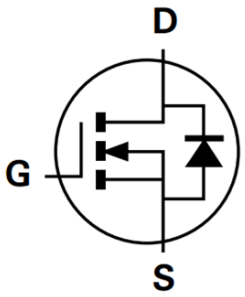
Features

- 100V, 45A, $R_{DS(ON)}$ < 22mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% E_{AS} guaranteed
- DFN5X6-8L package
- RoHS Compliant and Halogen Free

Applications

- Networking
- Load Switch
- LED Applications

Packages & Pin Assignments

GSM22N10XF (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**
GSM22N10XF	DFN5x6-8L	22N10XF □□□□□□	3,000 PCS

GSM22N10 1 2

- **Product Code:** GSM22N10
- **Package Code:** 1 is **X** for DFN5x6-8L
- **Green Level:** 2 is **F** for RoHS Compliant and Halogen Free

Marking Information

22N10XF
□□□□□□

- **Product Code:** 22N10XF
- **GS Code:** □□□□□□

Absolute Maximum Ratings (T_A=25ºC unless otherwise specified)

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		100	V
V_{GS}	Gate –Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	45	A
		T_C=100℃	28	
I_{DM}	Pulsed Drain Current [1]		100	A
I_{AS}	Single Pulse Avalanche Current, L = 0.1mH [1]		20	A
E_{AS}	Single Pulse Avalanche Energy, L = 0.1mH [1]		40	mJ
P_D	Power Dissipation	T_C=25℃	96	W
		T_C=100℃	38	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.3	℃/W
T_J	Operating Junction Temperature Range		-50 to +150	℃
T_{STG}	Storage Temperature Range		-50 to +150	℃

NOTE:
1. Single pulse width is limited by max junction temperature

Electrical Characteristics (T_A=25ºC unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V			1	uA
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	2	3	V
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=16A		19	22	mΩ
		V_{GS}=4.5V, I_D=5A		21	38	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A		13		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A			1	V
Dynamic Characteristics						
R_g	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		1.4		Ω
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz		4708		pF
C_{oss}	Output Capacitance			326		
C_{rss}	Reverse Transfer Capacitance			247		
Q_g	Total Gate Charge	V_{DS}=80V, V_{GS}=10V, I_D=20A		75		nC
Q_{gs}	Gate-Source Charge			15.5		
Q_{gd}	Gate-Drain Charge			21		
$t_{d(on)}$	Turn-On Time	V_{DD}=40V, I_D=10A, V_{GS}=10V, R_G=3.3Ω		18		ns
t_r				10		
$t_{d(off)}$	Turn-Off Time			58		
t_f				16		

Performance Characteristics

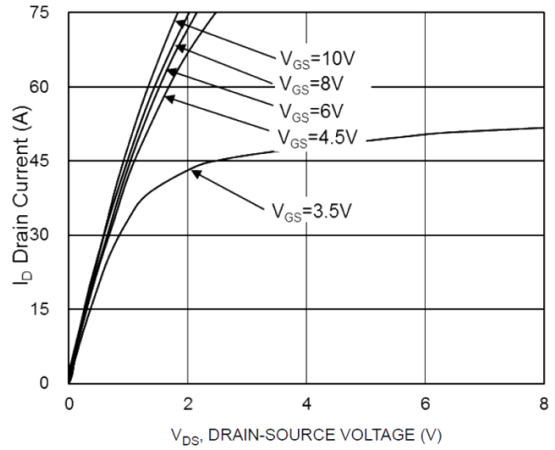


Fig.1 Output Characteristics

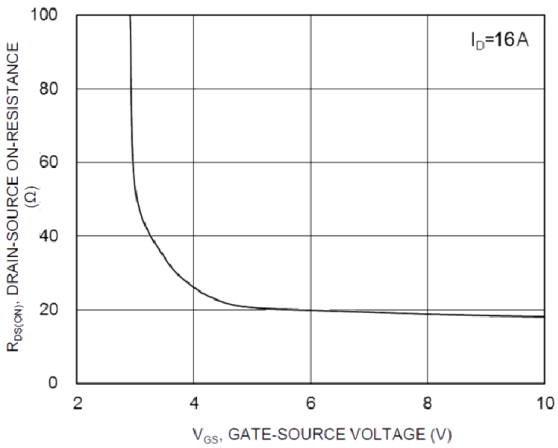


Fig.2 On-Resistance vs. Gate Voltage

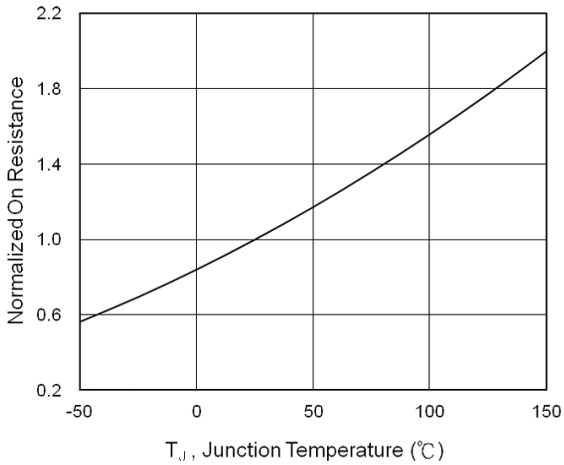


Fig.3 Normalized On-Resistance vs. T_J

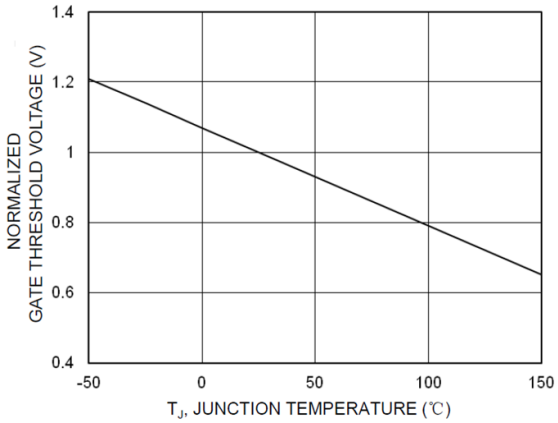


Fig.4 Normalized $V_{GS(th)}$ vs. T_J

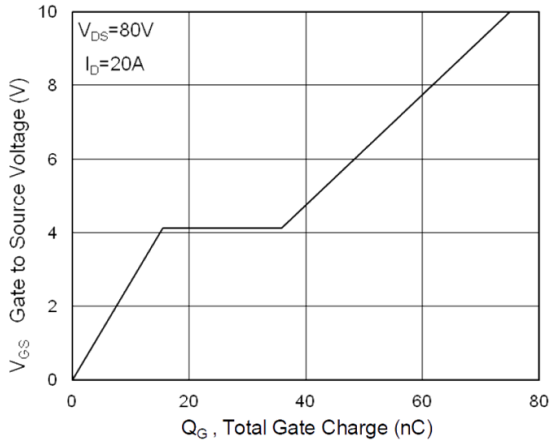


Fig.5 Gate Charge Characteristics

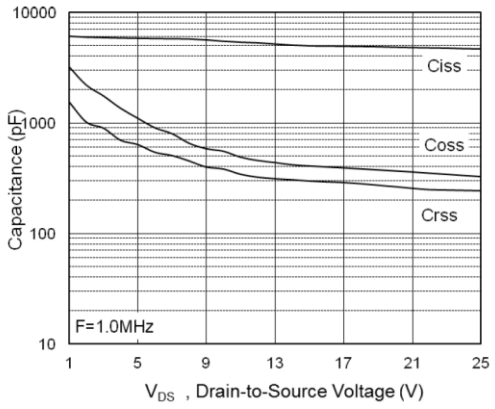


Fig.6 Capacitance Characteristics

Performance Characteristics

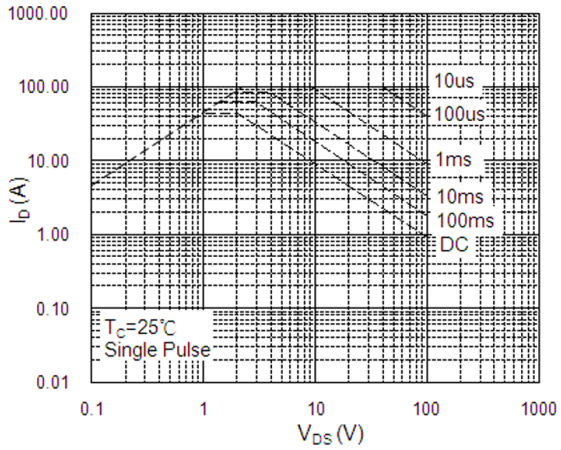


Fig.7 Maximum Safe Operation Area

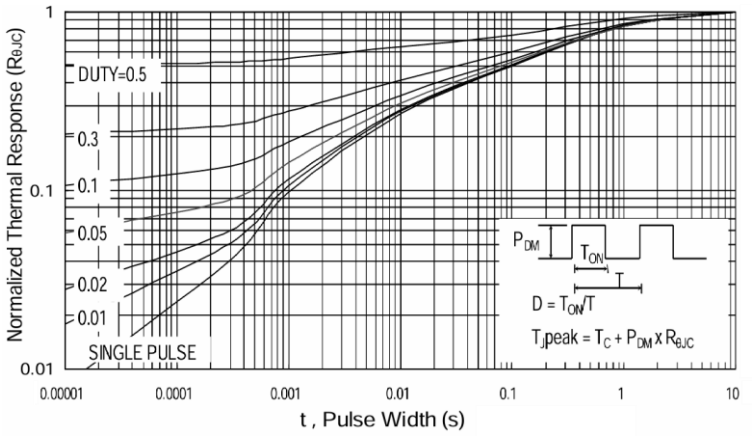
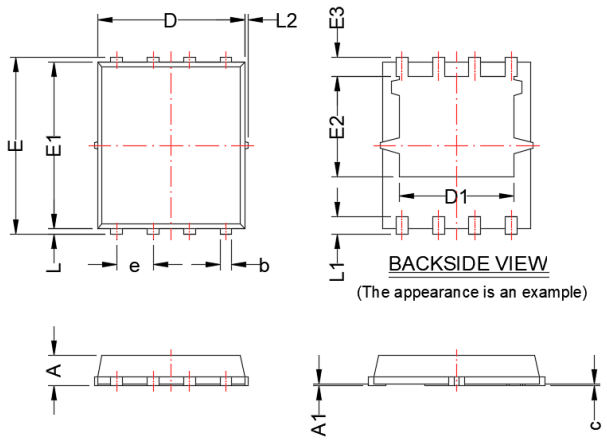


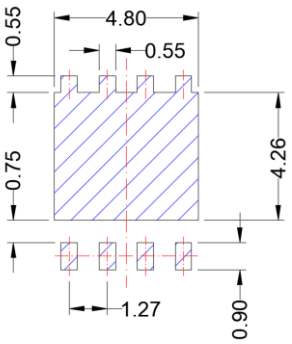
Fig.8 Normalized Transient Impedance

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	4.80	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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