

GSM22N10TF

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.

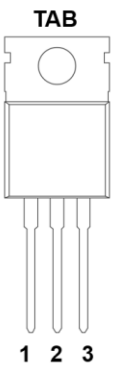
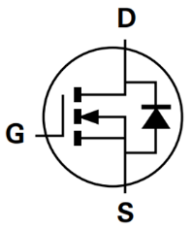
Features

- $R_{DS(ON)} = 22m\Omega$ @ $V_{GS}=10V$
- $R_{DS(ON)} = 32m\Omega$ @ $V_{GS}=4.5V$
- TO-220-3L Package
- RoHS Compliant and Halogen Free

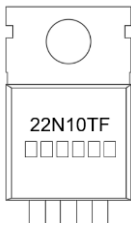
Applications

- Power Management for SMPS.
- POL Applications

Packages & Pin Assignments

TO-220-3L			Equivalent Circuit		
					
Pin	Symbol	Description	Pin	Symbol	Description
1	G	Gate	2	D	Drain
3	S	Source	TAB	D	Drain

Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Tube
GSM22N10TF	TO-220-3L	22N10TF □□□□□□	50 PCS
GSM22N10 1 2			
- Product Code: GSM22N10 - Package Code: 1 is T for TO-220-3L - Green Level: 2 is F for RoHS Compliant and Halogen Free			
Marking Information			
 - Product Code: 22N10TF - 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 ¹ ,	T _C =25°C	A
		T _C =100°C	
I _{DM}	Pulsed Drain Current ²	100	A
I _{AS}	Single Pulse Avalanche Current, L = 0.1mH ²	20	A
E _{AS}	Single Pulse Avalanche Energy, L = 0.1mH ²	40	mJ
P _D	Power Dissipation	T _C =25°C	W
		T _C =100°C	
R _{θJC}	Thermal Resistance-Junction to Case	1.2	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

- The maximum current rating is package limited.
- Single pulse width is limited by max junction temperature.

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
B _V 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	3	V
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =25A	-	19	22	mΩ
		V _{GS} =4.5V, I _D =10A	-	22	32	
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =20A	-	50	-	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A	-	-	1	V
Dynamic Characteristics						
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} =50V, I _D =20A V _{GS} =10V	-	75	-	nC
Q _{gs}	Gate-Source Charge		-	16	-	
Q _{gd}	Gate-Drain Charge		-	21	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V, I _D =10A V _{GS} =10V, R _g =3.3Ω	-	18	-	ns
t _r	Turn-On Rise Time		-	10	-	
t _{d(off)}	Turn-Off Delay Time		-	58	-	
t _f	Turn-Off Fall Time		-	16	-	

Typical Performance Characteristics

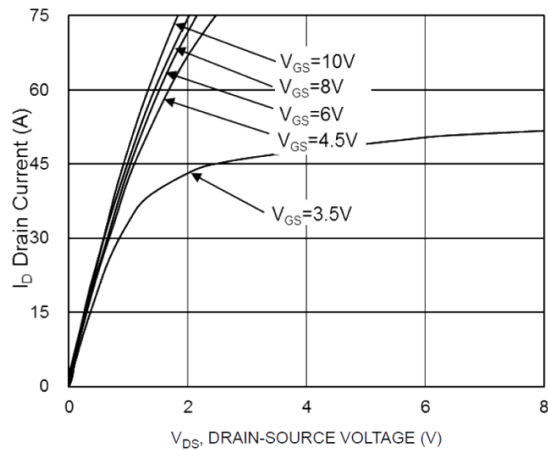


Fig.1 Output Characteristics

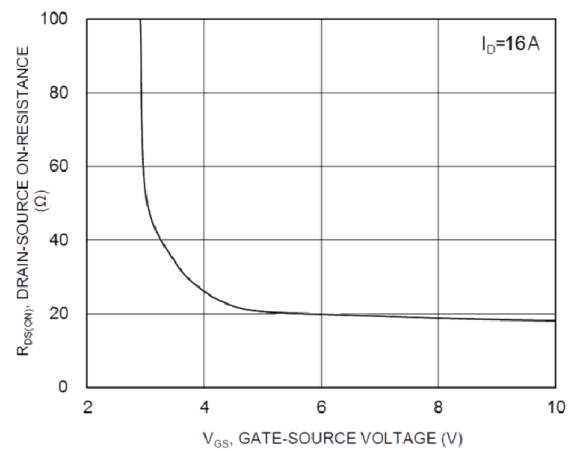


Fig.2 On-Resistance vs. Gate Voltage

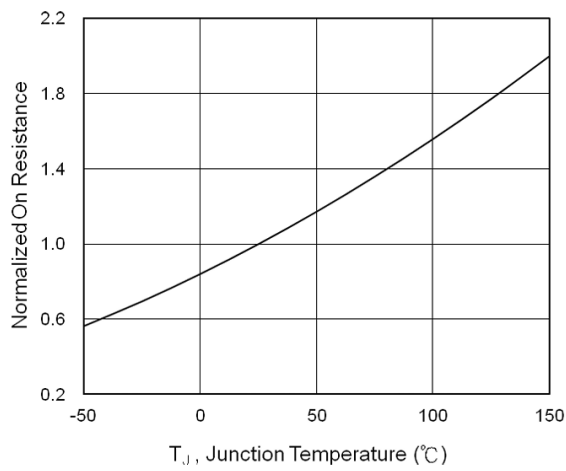


Fig.3 Normalized On-Resistance vs. T_J

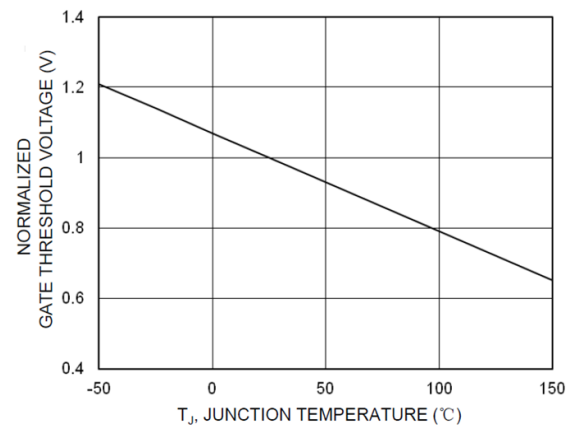


Fig.4 Normalized $V_{GS(th)}$ vs. T_J

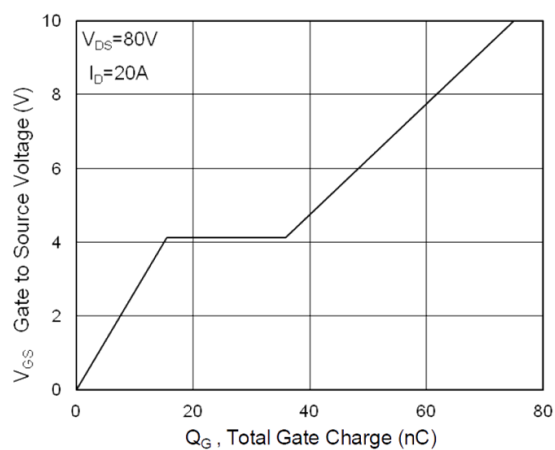


Fig.5 Gate Charge Characteristics

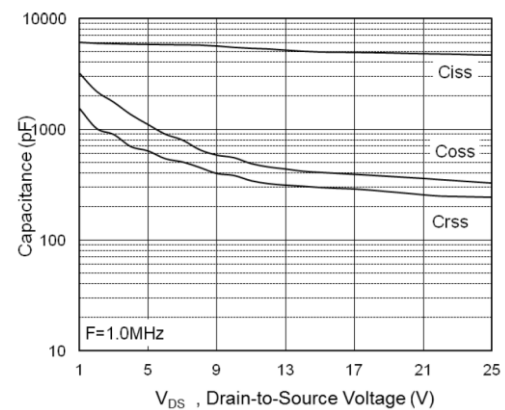


Fig.6 Capacitance Characteristics

Typical Performance Characteristics

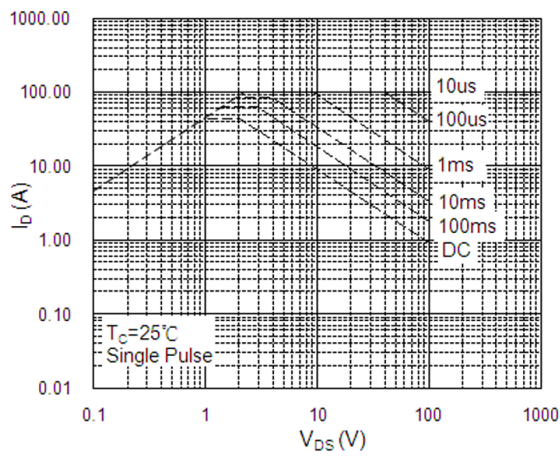


Fig.7 Maximum Safe Operation Area

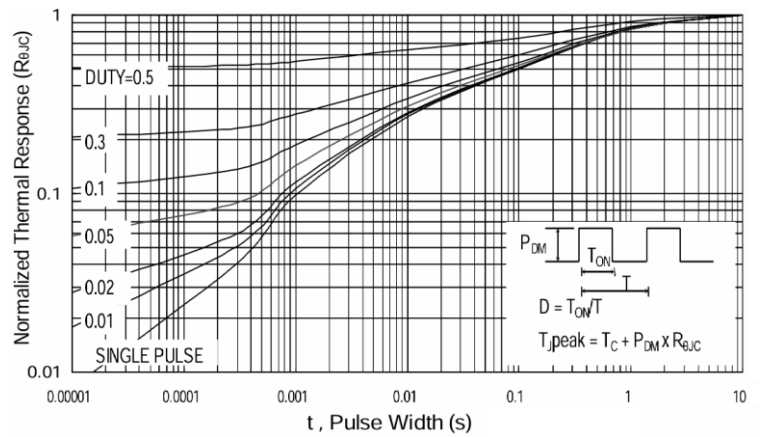
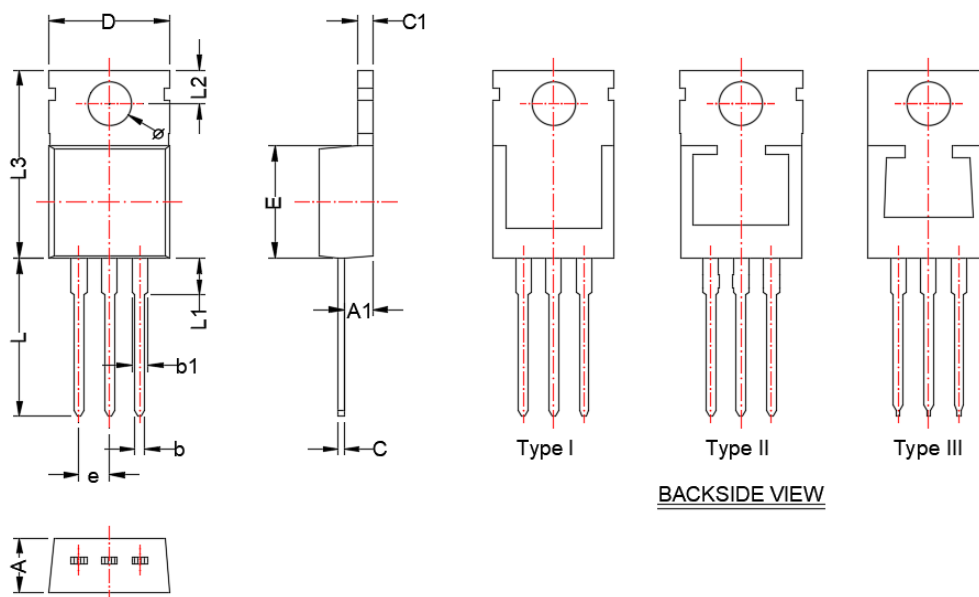


Fig.8 Normalized Transient Impedance

TO-220-3L

Package Dimension



BACKSIDE VIEW

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	3.56	4.82	0.140	0.190
A1	2.03	2.92	0.080	0.115
b	0.38	1.14	0.015	0.045
b1	1.00	1.78	0.039	0.070
c	0.30	1.14	0.012	0.045
c1	0.51	1.50	0.020	0.059
D	9.50	10.67	0.374	0.420
E	8.38	9.42	0.330	0.371
e	2.54 BSC		0.100 BSC	
L	12.00	14.73	0.472	0.250
L1	---	7.00	---	0.250
L2	2.54	3.43	0.100	0.135
L3	14.22	16.51	0.560	0.650
Ø	3.40	4.09	0.134	0.161

NOTE:

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

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