

GSM1336MF

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.

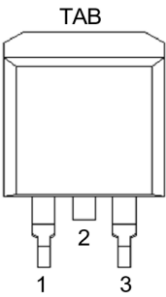
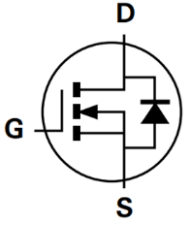
Features

- $R_{DS(ON)} = 3.8m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} = 5.4m\Omega @ V_{GS}=4.5V$
- TO-263-2L Package
- RoHS Compliant and Halogen Free

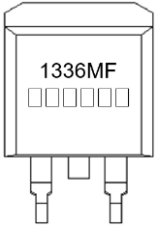
Applications

- MB / VGA / Vcore
- POL Applications
- SMPS

Packages & Pin Assignments

TO-263-2L			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 / Reel
GSM1336MF	TO-263-2L	1336MF □□□□□□	800 PCS
GSM1336 1 2			
- Product Code: GSM1336		- Package Code: 1 is M for TO-263-2L	
		- Green Level: 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
		- Product Code: 1336MF	
		- 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)	T _C =25°C	170	A
		T _C =100°C	108	
	Continuous Drain Current (Package Limited)	120		
I _{DM}	Pulsed Drain Current ¹	400	A	
I _{AS}	Single Pulse Avalanche Current, L = 0.1mH ¹	34	A	
E _{AS}	Single Pulse Avalanche Energy, L = 0.1mH ¹	115	mJ	
P _D	Power Dissipation	T _C =25°C	208	W
		T _C =100°C	83	
R _{θJC}	Thermal Resistance-Junction to Case	0.6	°C/W	
R _{θJA}	Thermal Resistance-Junction to Ambient	62	°C/W	
T _J	Operating Junction Temperature Range	-55 to +150	°C	
T _{STG}	Storage Temperature Range	-55 to +150	°C	

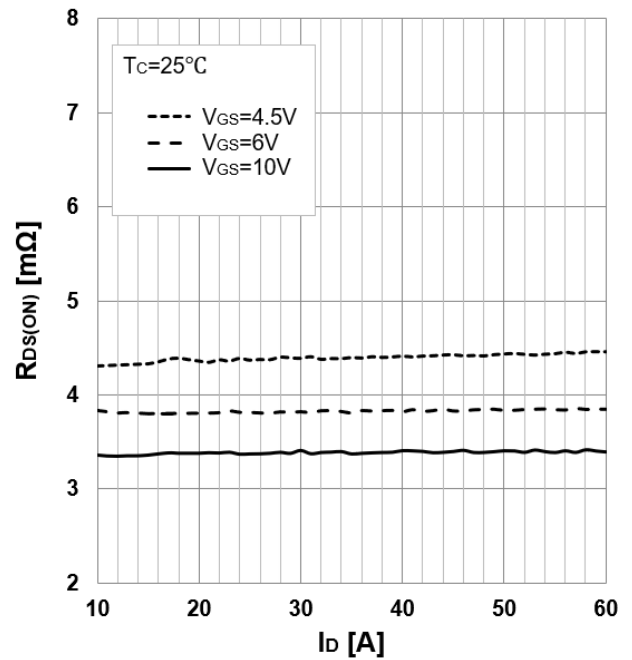
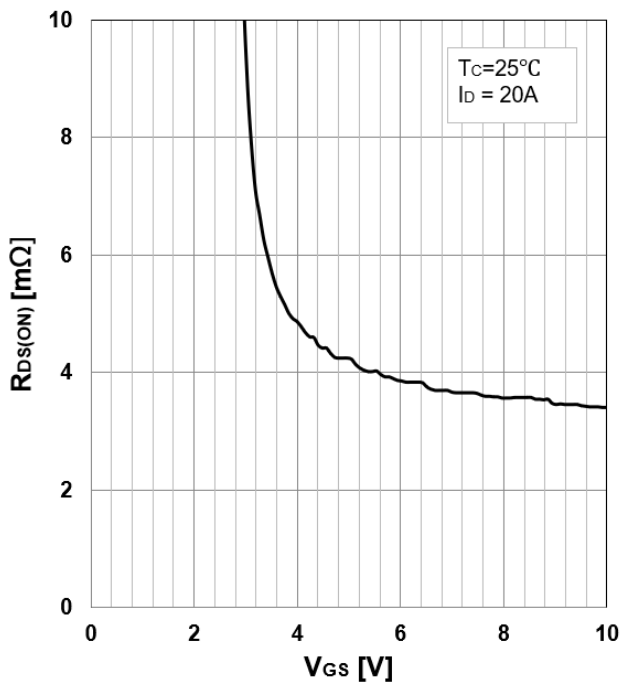
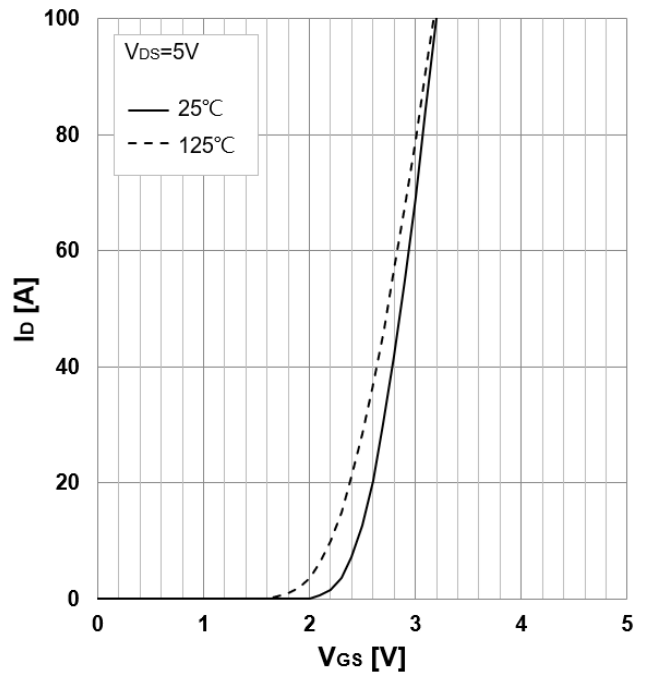
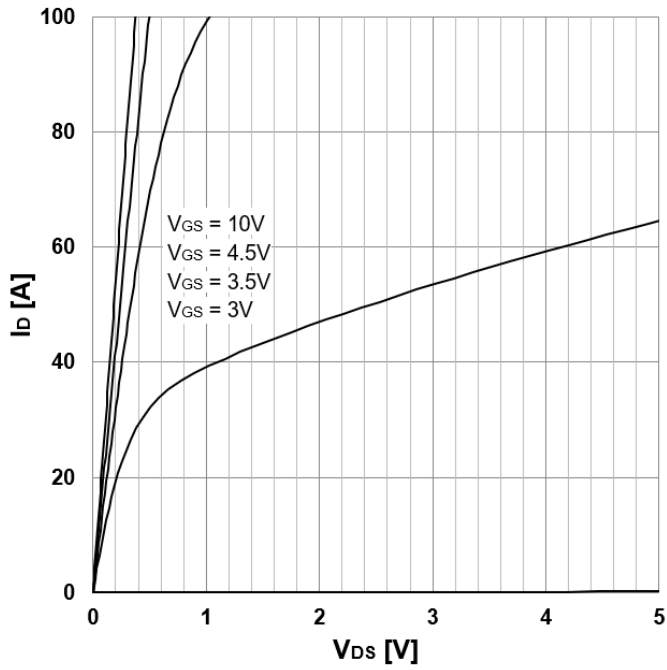
NOTE:

- 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	-	2.5	V
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =20A	-	3.4	3.8	mΩ
		V _{GS} =4.5V, I _D =15A	-	4.5	5.4	
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	V _{DS} =50V, V _{GS} =0V, f=1MHz	-	4020	-	pF
C _{oss}	Output Capacitance		-	970	-	
C _{rss}	Reverse Transfer Capacitance		-	36	-	
Q _g	Total Gate Charge	V _{DS} =50V, I _D =20A V _{GS} =10V	-	95	-	nC
Q _{gs}	Gate-Source Charge		-	10	-	
Q _{gd}	Gate-Drain Charge		-	32	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V, I _D =20A V _{GS} =10V, R _g =6Ω	-	38	-	ns
t _r	Turn-On Rise Time		-	60	-	
t _{d(off)}	Turn-Off Delay Time		-	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	I _F =50A, dI/dt=100A/μs	-	76	-	ns
Q _{rr}	Reverse Recovery Charge		-	210	-	nC

Typical Performance Characteristics



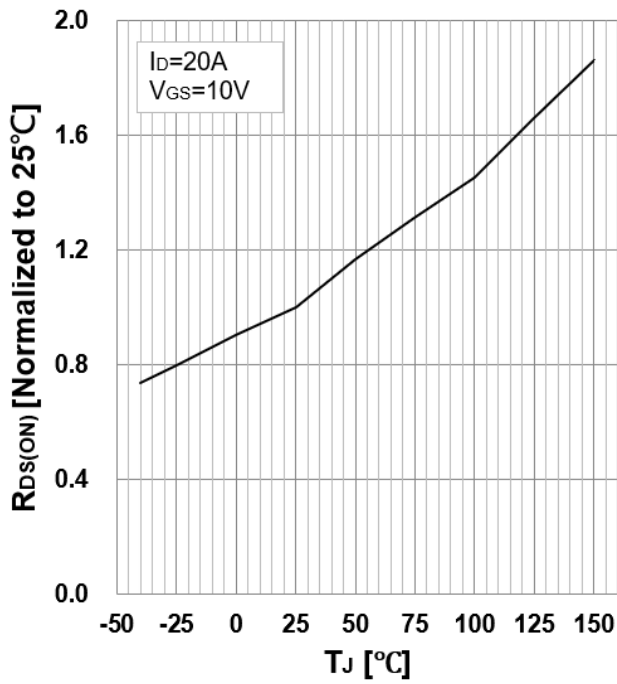


FIG.5 Normalized On-Resistance vs. T_j

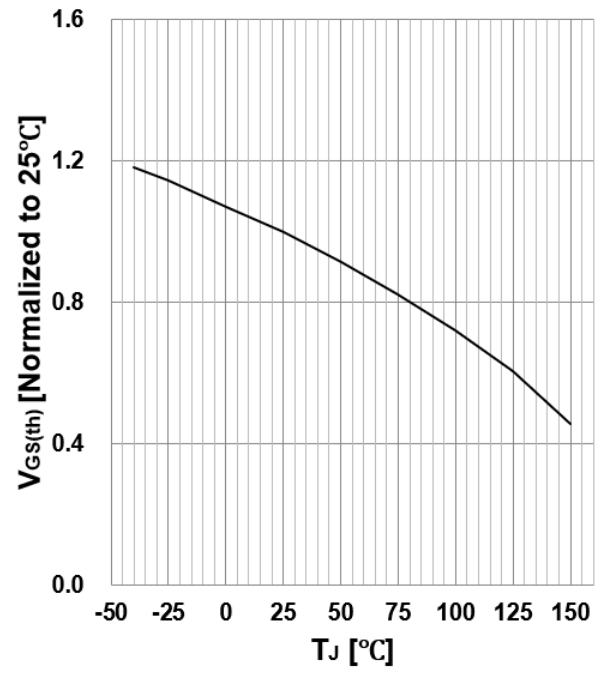


FIG.6 Normalized $V_{GS(th)}$ vs. T_j

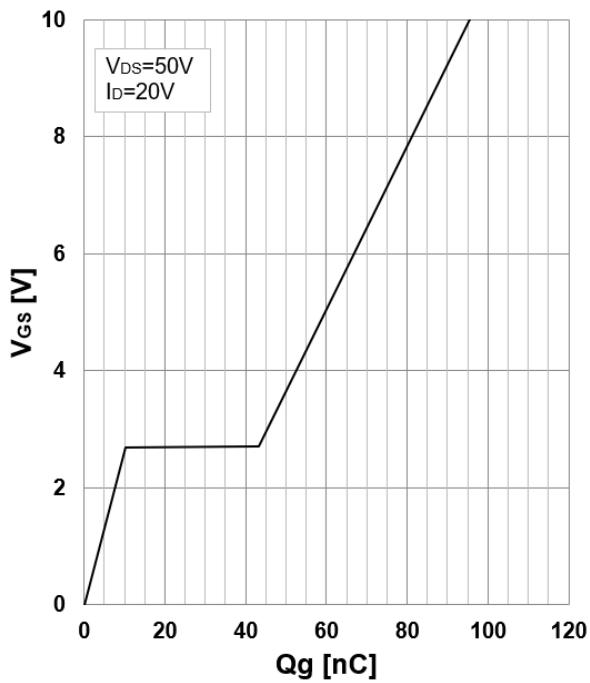


FIG.7 Gate Charge Characteristics

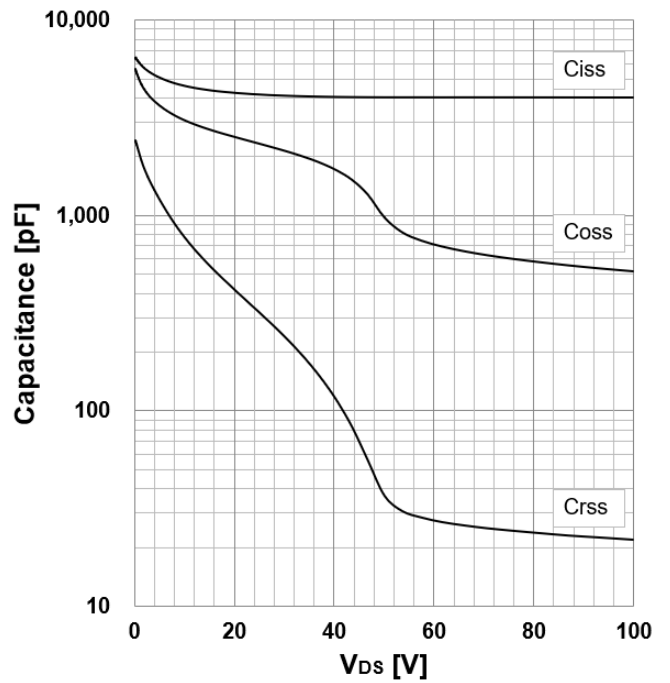


FIG.8 Capacitance Characteristics

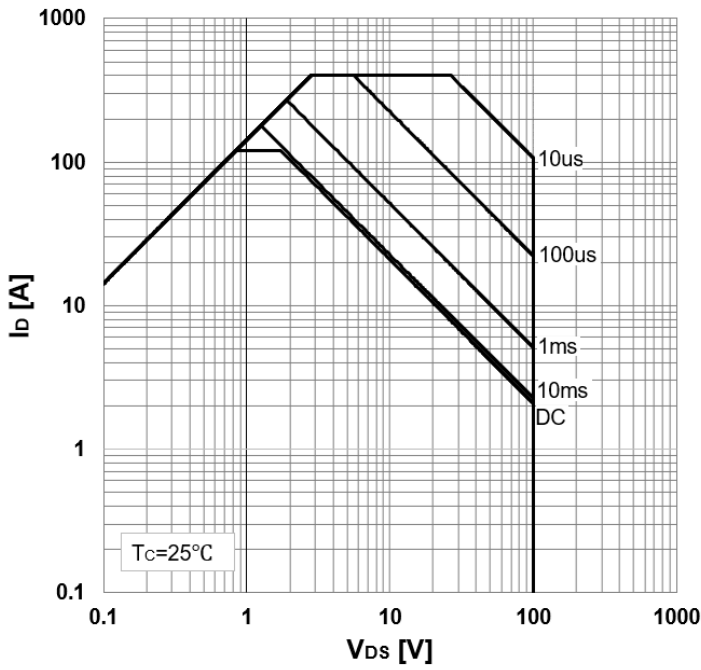


FIG.9 Maximum Safe Operation Area

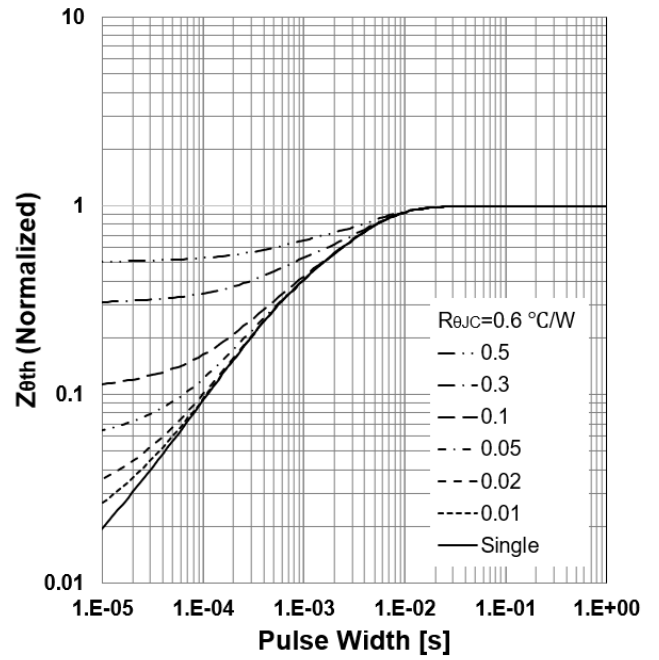


FIG.10 Transient Thermal Impedance (Normalized)

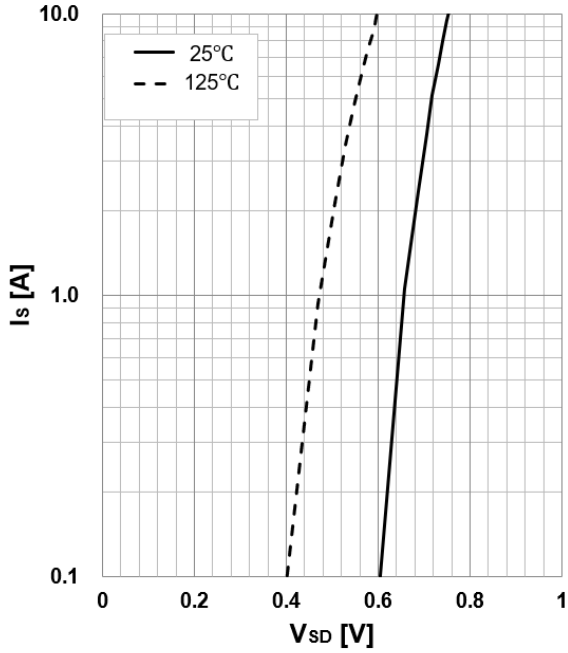
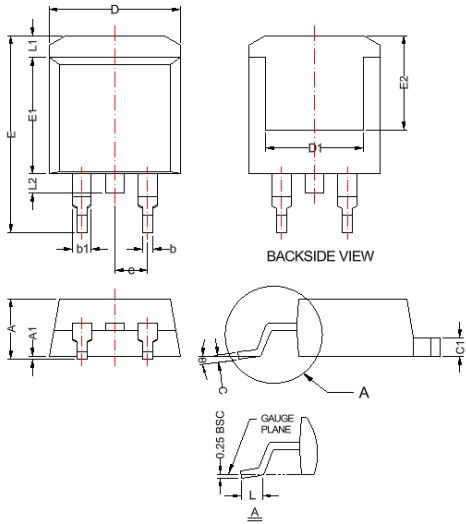


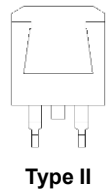
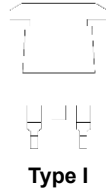
FIG.11 Body-Diode Characteristics

TO-263-2L

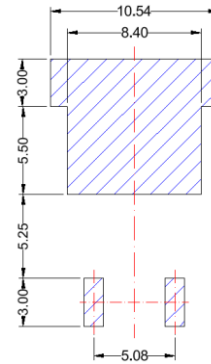
Package Dimension



Recommended Land Pattern



BACKSIDE VIEW



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	4.06	4.83	0.160	0.190
A1	0.00	0.25	0.000	0.010
b	0.51	0.99	0.020	0.039
b1	1.14	1.78	0.045	0.070
c	0.38	0.74	0.015	0.029
c1	1.14	1.65	0.045	0.065
D	9.65	10.67	0.380	0.420
D1	6.22	---	0.245	---
E	14.61	15.88	0.575	0.625
E1	8.38	9.65	0.330	0.380
E2	6.86	---	0.270	---
e	2.54 BSC		0.100 BSC	
L	1.78	2.79	0.070	0.110
L1	---	1.68	---	0.066
L2	---	1.78	---	0.070
θ	0°	8°	0°	8°





NOTE:



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

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