

# GSM1362SF

## 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

- $R_{DS(ON)} = 6.4\text{m}\Omega$  @  $V_{GS}=10\text{V}$
- $R_{DS(ON)} = 9.6\text{m}\Omega$  @  $V_{GS}=4.5\text{V}$
- SOP-8L Package
- RoHS Compliant and Halogen Free

### Applications

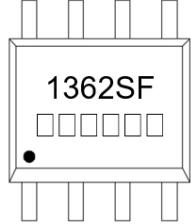
- MB / VGA / Vcore
- POL Applications
- SMPS

### Packages & Pin Assignments

SOP-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	

GSM1362SF

## Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM1362SF	SOP-8L	1362SF □□□□□□□	4,000 PCS
<b>GSM1362 1 2</b>			
- <b>Product Code:</b> GSM1362	- <b>Package Code:</b> 1 is S for SOP-8L	- <b>Green Level:</b> 2 is F for RoHS Compliant and Halogen Free	
Marking Information			
		- <b>Product Code:</b> 1362SF  - <b>GS Code:</b> □□□□□□ • The dot indicates pin1	

## Absolute Maximum Ratings (T<sub>A</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V <sub>DSS</sub>	Drain-Source Voltage	100	V
V <sub>GSS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current	12	A
	T <sub>A</sub> =25°C	12	
	T <sub>A</sub> =70°C	9.6	
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	56	A
I <sub>AS</sub>	Single Pulse Avalanche Current, L = 0.1mH <sup>1</sup>	25	A
E <sub>AS</sub>	Single Pulse Avalanche Energy, L = 0.1mH <sup>1</sup>	62.5	mJ
P <sub>D</sub>	Power Dissipation	1.66	W
	T <sub>A</sub> =25°C	1.66	
	T <sub>A</sub> =70°C	1.06	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient <sup>2</sup>	75	°C/W
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C

### NOTE:

1. Single pulse width is limited by max junction temperature.
2. The device was mounted on 1in<sup>2</sup> FR-4 board with 2oz.copper.

## Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	-	-	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	-	-	1	μA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	-	2.5	V
R <sub>DS(ON)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =15A	-	5.6	6.4	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	8	9.6	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =30A	-	30	-	S
<b>Dynamic Characteristics</b>						
R <sub>g</sub>	Gate Resistance	f=1MHz		1		Ω
C <sub>iss</sub>	Input Capacitance		-	2340	-	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz	-	455	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	22	-	
Q <sub>g</sub>	Total Gate Charge		-	54	-	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =40A V <sub>GS</sub> =10V	-	8	-	
Q <sub>gd</sub>	Gate-Drain Charge		-	20	-	
t <sub>d(on)</sub>	Turn-On Delay Time		-	20	-	
t <sub>r</sub>	Turn-On Rise Time	V <sub>DD</sub> =50V, I <sub>D</sub> =40A	-	10	-	ns
t <sub>d(off)</sub>	Turn-Off Delay Time	V <sub>GS</sub> =10V, R <sub>g</sub> =3Ω	-	31	-	
t <sub>f</sub>	Turn-Off Fall Time		-	7	-	
<b>Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =1A	-	-	1	V
t <sub>rr</sub>	Reverse Recovery Time	V <sub>R</sub> =50V, I <sub>F</sub> =40A , dI/dt=100A/μs	-	58	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	115	-	nC

## Typical Performance Characteristics

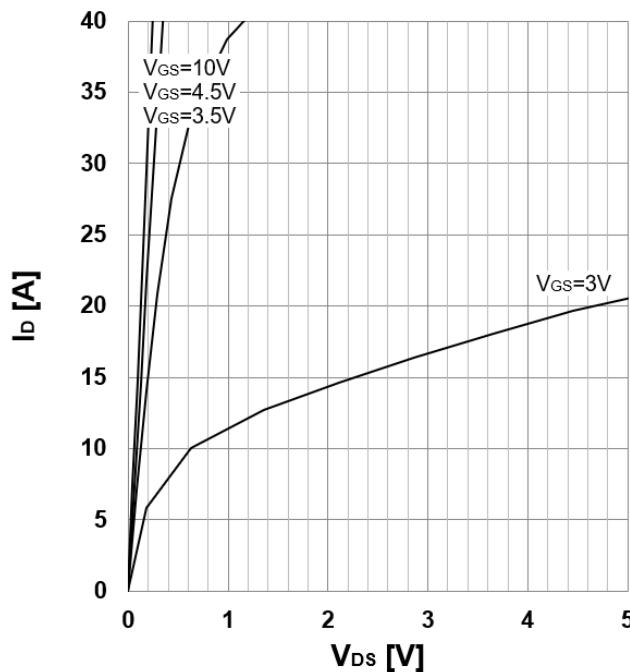


FIG.1 Output Characteristics

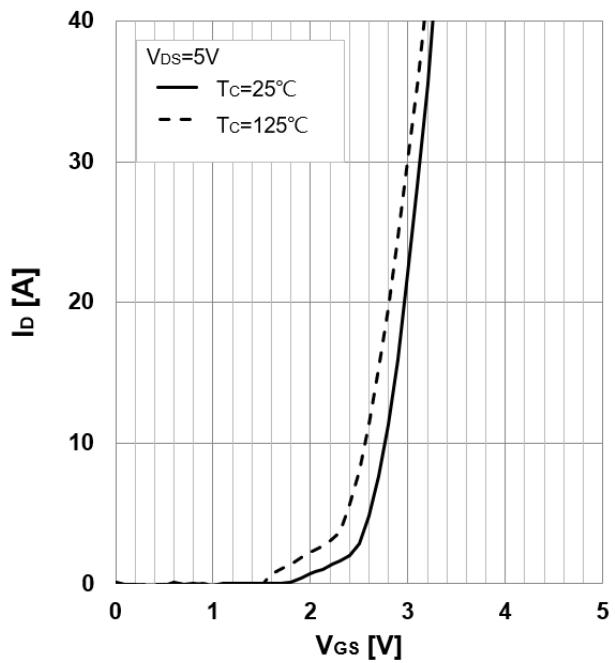


FIG.2 Transfer Characteristics

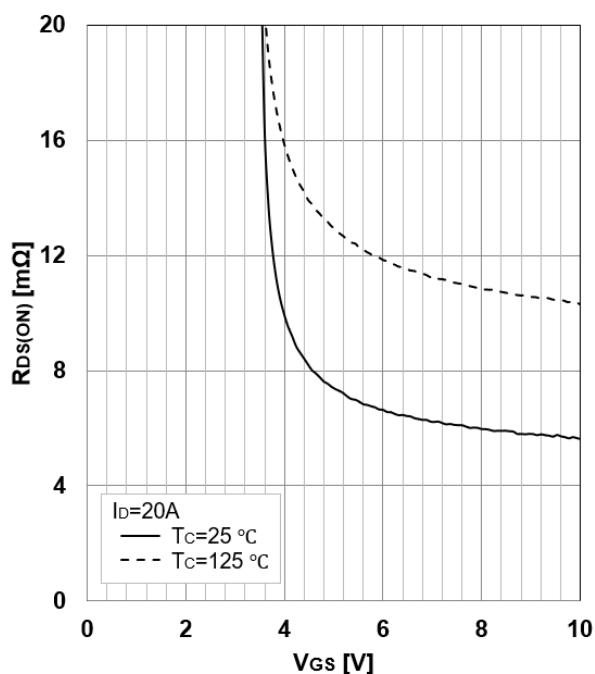


FIG.3 On-Resistance vs. Gate Voltage

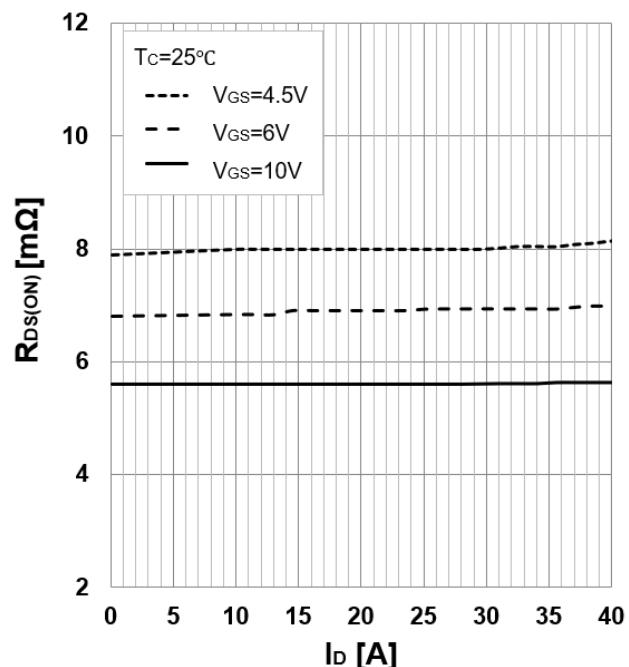


FIG.4 On-Resistance vs. Drain Current

## Typical Performance Characteristics

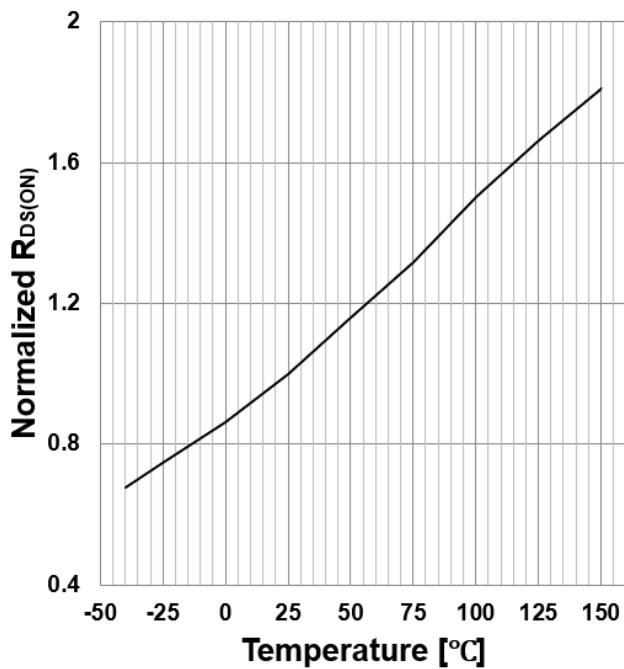


FIG.5 Normalized On-Resistance vs.  $T_J$

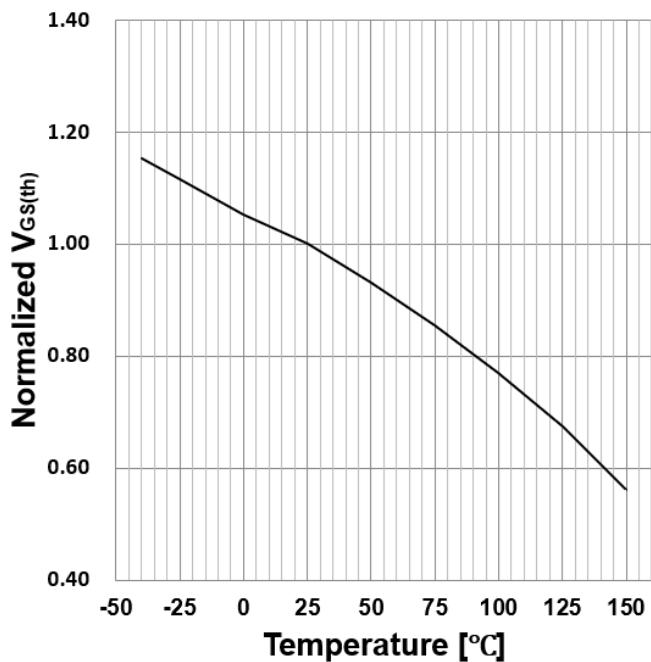


FIG.6 Normalized  $V_{GS(th)}$  vs.  $T_J$

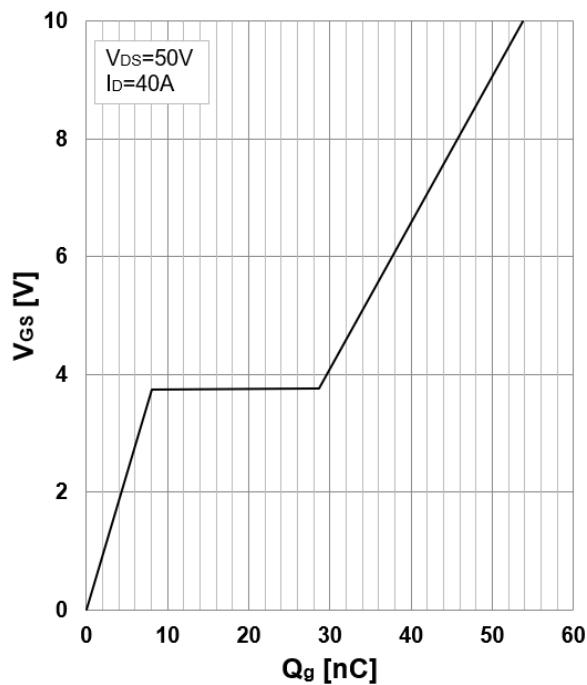
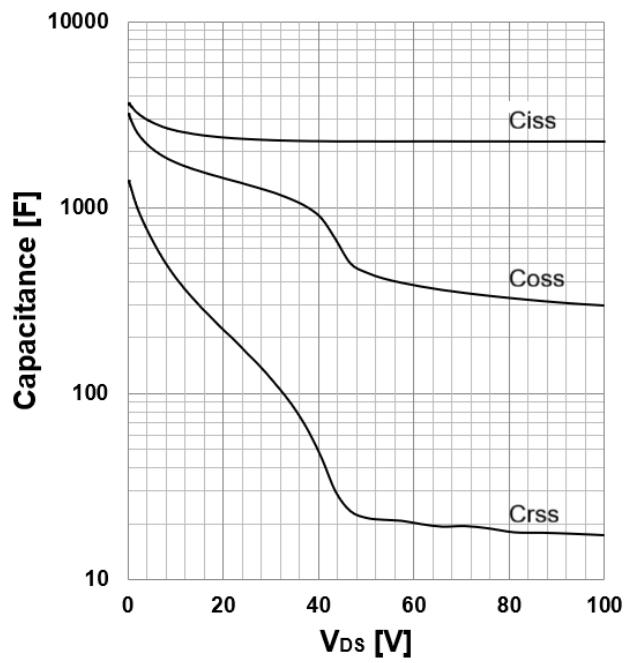
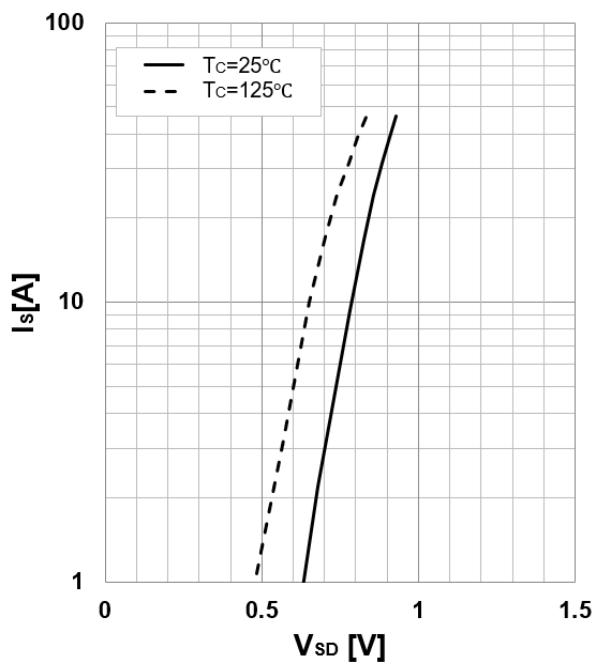
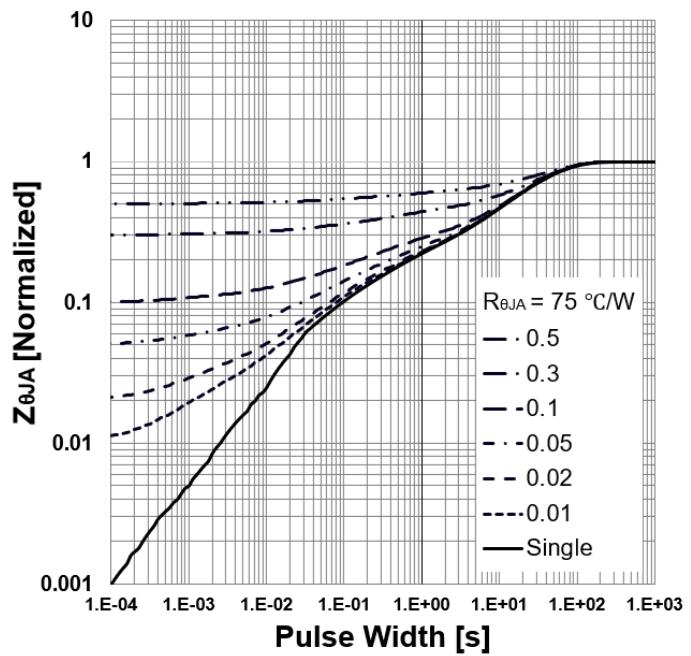
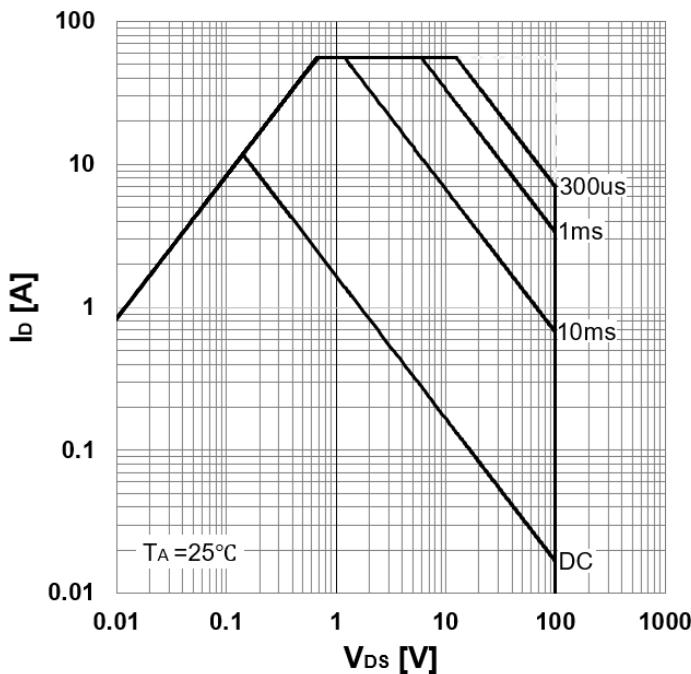


FIG.7 Gate Charge Characteristics

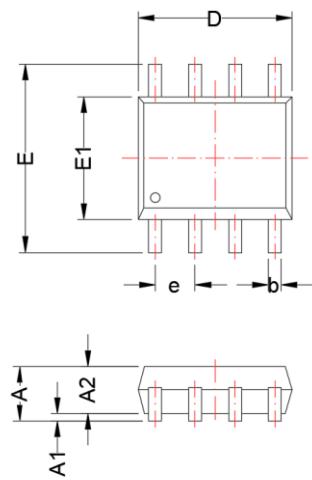


## Typical Performance Characteristics

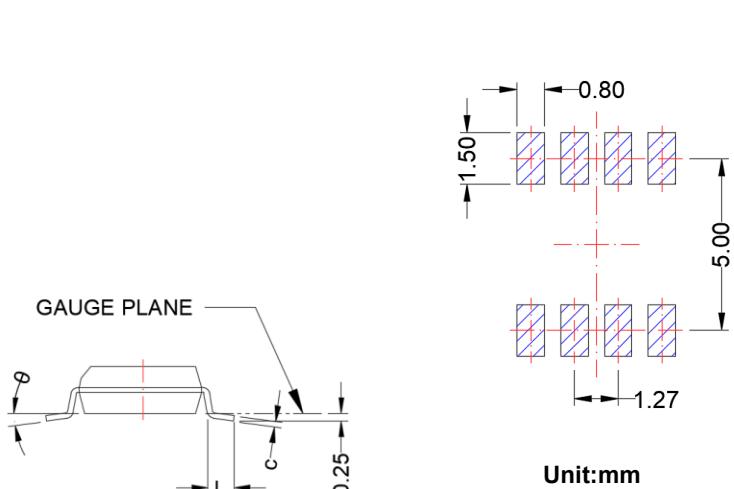


# SOP-8L

## Package Dimension



## Recommended Land Pattern



## Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	---	1.75	---	0.069
<b>A1</b>	0.10	0.25	0.004	0.010
<b>A2</b>	1.25	---	0.049	---
<b>b</b>	0.31	0.51	0.012	0.020
<b>c</b>	0.10	0.25	0.004	0.010
<b>D</b>	4.70	5.10	0.185	0.201
<b>E</b>	5.80	6.20	0.228	0.244
<b>E1</b>	3.80	4.00	0.150	0.157
<b>e</b>	1.27 BSC		0.050 BSC	
<b>L</b>	0.40	1.27	0.016	0.050
<b>θ</b>	0°	8°	0°	8°

### NOTE:

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

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