

# GSM3080ZF

## 30V 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.

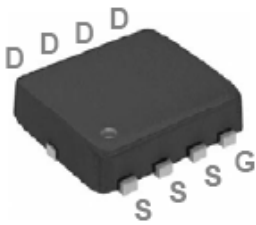
### Features

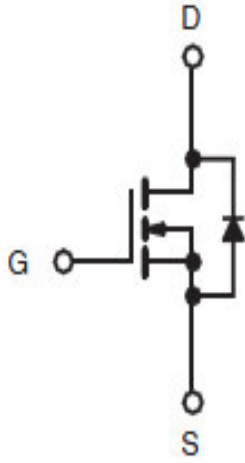
- 30V, 86A,  $R_{DS(ON)} < 6m\Omega @ V_{GS}=10V$ ,  $R_{DS(ON)} < 10.5m\Omega @ V_{GS}=4.5V$
- High Power and current handling capability
- Lead free product is acquired
- DFN3X3-8L package design

### Applications

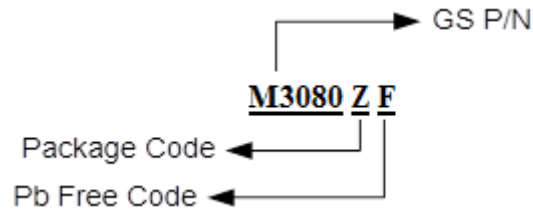
- PWM applications
- Load switch
- Power management

### Packages & Pin Assignments

GSM3080ZF (DFN3X3-8L)	
 Top View	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain



## Ordering Information



Part Number	Package	Quantity
GSM3080ZF	DFN3X3-8L	5000pcs

## Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  Unless otherwise noted

Symbol	Parameter	Typical	Unit
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	$T_A=25^{\circ}\text{C}$ <sup>1</sup>	86
		$T_A=100^{\circ}\text{C}$	60
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	344	A
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	270	mJ
$P_D$	Power Dissipation $T_A=25^{\circ}\text{C}$	83	W
	Power Dissipation $T_A=100^{\circ}\text{C}$	42	W/ $^{\circ}\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to +175	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature Range	-55 to +175	$^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.8	$^{\circ}\text{C}/\text{W}$

Note :

1. The maximum current rating is package limited.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3.  $E_{AS}$  condition:  $T_J=25^{\circ}\text{C}$ ,  $V_{DD}=30\text{V}$ ,  $V_G=10\text{V}$ ,  $R_G=25\Omega$

## Electrical Characteristics

T<sub>A</sub>=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.5	2.5	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	uA
I <sub>SD</sub>	Source-Drain Current (Body Diode)				86	A
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.2	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =20A, di/dt=100A/us		15		ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =20A, di/dt=100A/us		4		nC
R <sub>DS(on)</sub>	Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		4.6	6	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A		7	10.5	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =15A		24		S
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge <sup>3,4</sup>	V <sub>DS</sub> =25V, V <sub>GS</sub> =10V, I <sub>D</sub> =14A		45		nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3,4</sup>			3		
Q <sub>gd</sub>	Gate-Drain Charge <sup>3,4</sup>			15		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1.0MHz		1980		pF
C <sub>oss</sub>	Output Capacitance			320		
C <sub>rss</sub>	Reverse Transfer Capacitance			240		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, R <sub>L</sub> =0.75Ω, R <sub>GEN</sub> =3Ω		12		ns
t <sub>r</sub>	Rise Time			36		
t <sub>d(off)</sub>	Turn-Off Time			49		
t <sub>f</sub>	Fall Time			12		
R <sub>g</sub>	Gate Resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1.0MHz		3.2		Ω

## Typical Performance Characteristics

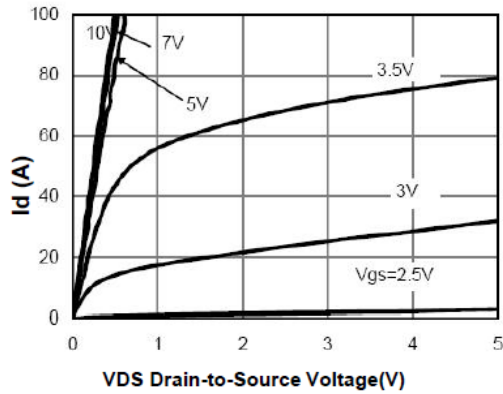


Figure 1. Output Characteristics

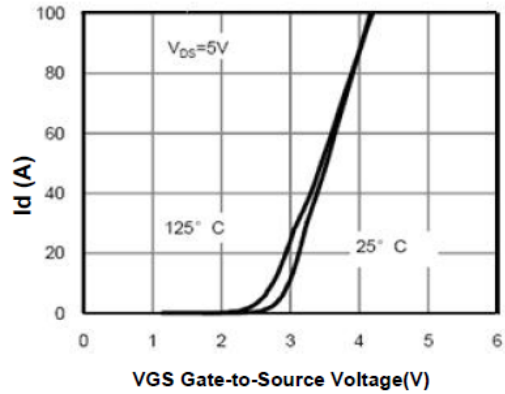


Figure 2. Transfer Characteristics

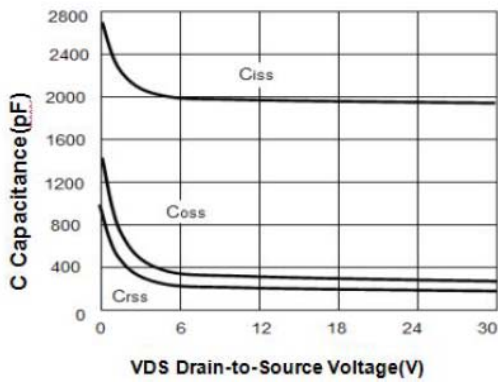


Figure 3. Capacitance

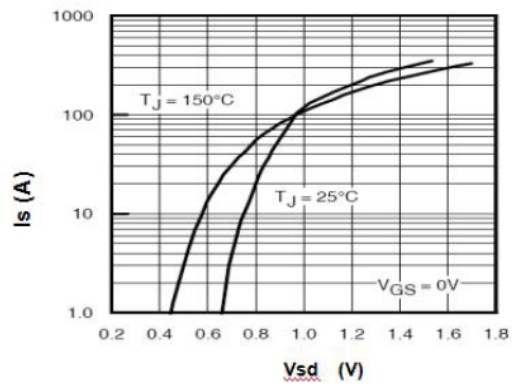


Figure 4. Body-Diode Characteristics

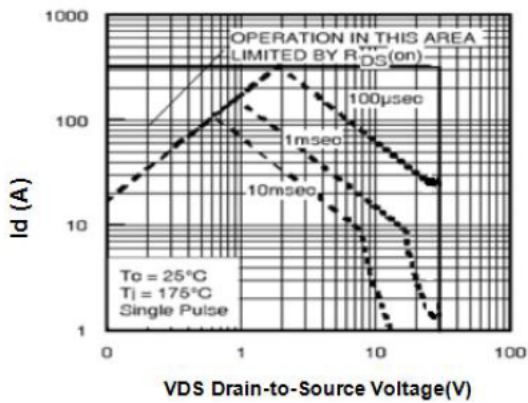
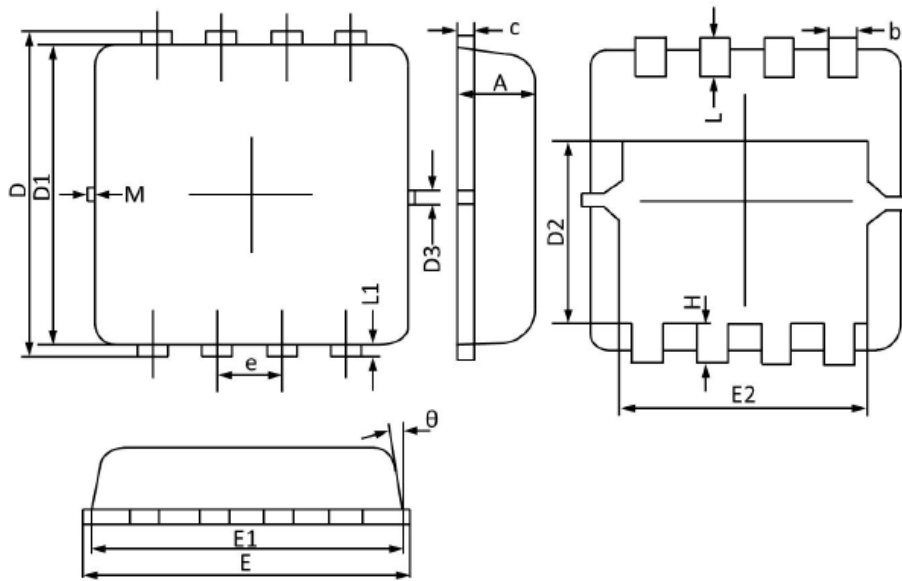


Figure 5. Maximum Safe Operating Area

## Package Dimension

### DFN3X3-8L



### Dimensions





Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.700	0.800	0.028	0.031
<b>b</b>	0.250	0.350	0.010	0.013
<b>c</b>	0.100	0.250	0.004	0.009
<b>D</b>	3.250	3.450	0.128	0.135
<b>D1</b>	3.000	3.200	0.119	0.125
<b>D2</b>	1.780	1.980	0.070	0.077
<b>D3</b>	0.130 (REF)		0.005 (REF)	
<b>E</b>	3.200	3.400	0.126	0.133
<b>E1</b>	3.000	3.200	0.119	0.125
<b>E2</b>	2.390	2.590	0.094	0.102
<b>e</b>	0.650 (BSC)		0.026 (BSC)	
<b>H</b>	0.300	0.500	0.011	0.019
<b>L</b>	0.300	0.500	0.011	0.019
<b>L1</b>	0.130 (REF)		0.005 (REF)	
<b>θ</b>	0°	12°	0°	12°
<b>M</b>	0.150 (REF)		0.006 (REF)	





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