GSM3170ZFF

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.

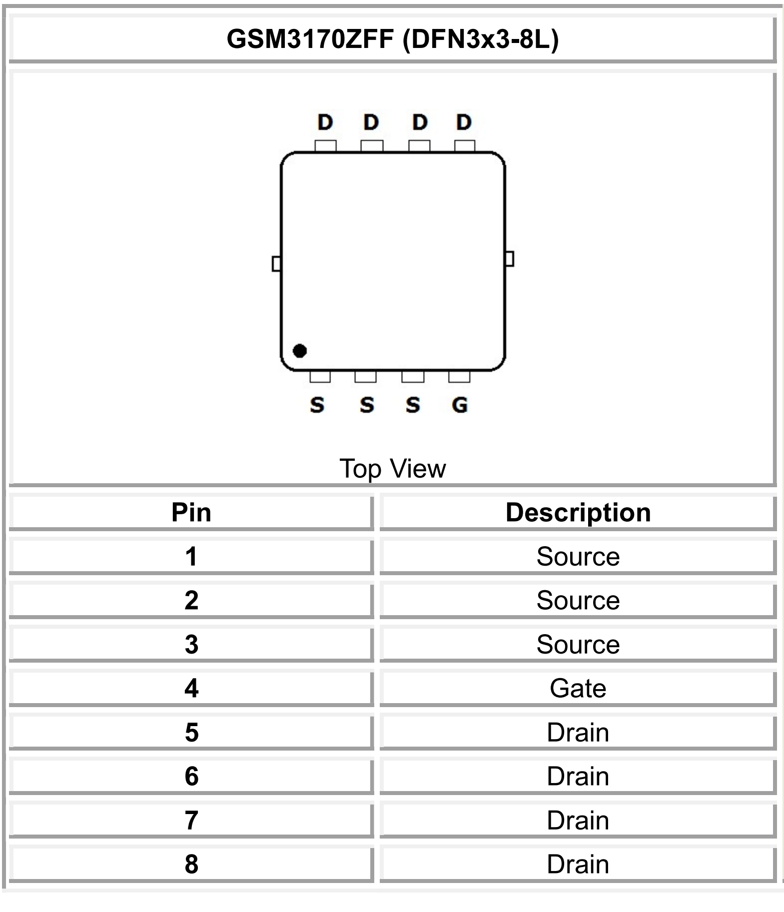
Features

- 30V, 70A, $R_{DS(ON)}$<7.5mΩ@V_{GS}=10V, $R_{DS(ON)}$<11mΩ@V_{GS}=4.5V
- High Power and current handing capability
- Lead free product is acquired
- DFN3x3-8L package design

Applications

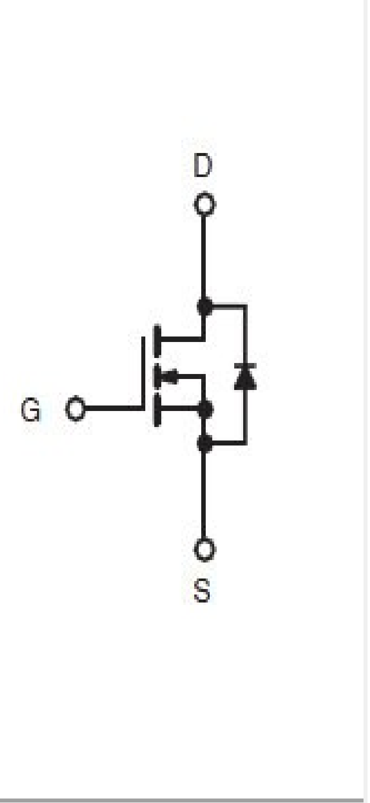
- PWM applications
- Load switch
- Power management

Packages & Pin Assignments

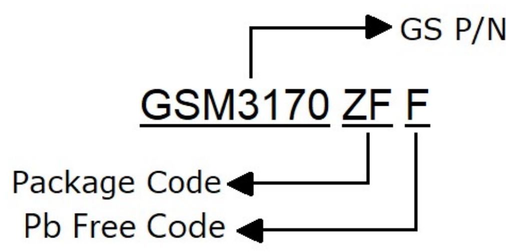


GSM3170ZFF (DFN3x3-8L)

Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

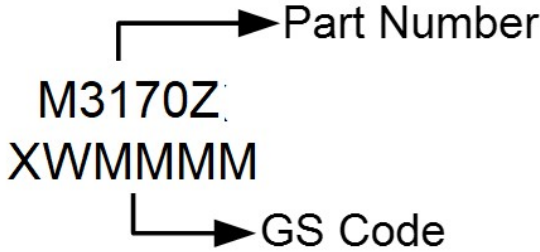


Ordering Information



Part Number	Package	Quantity
GSM3170ZFF	DFN3x3-8L	5000pcs

Marking Information



Absolute Maximum Ratings

T_A=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃ [1]	70	A
		T_A=100℃	55	
I_{DM}	Pulsed Drain Current[2]		280	A
E_{AS}	Single Pulse Avalanche Energy[3]		144	mJ
P_D	Power Dissipation T_A=25℃		35	W
	Power Dissipation T_A=100℃		0.28	W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.9	℃/W

Note :
1.The maximum current rating is packagelimited..
2.Repetitive Rating: Pulse width limited by maximum junctiontemperature.
3.E_{AS} condition: T_J=25℃,V_{DS}=30V,V_{GS}=10V,R_G=25Ω, L=0.5mH, Ipeak=24A.

Electrical Characteristics

T_A=25℃ Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	1.7	2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V			1	uA
I_{SD}	Source-Drain Current (Body Diode)				70	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V, I_S=20A			1.2	V
t_{rr}	Body Diode Reverse Recovery Time	I_S=10A, dI/dt=100A/us		100		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_S=20A, dI/dt=100A/us		120		nC
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=20A		6.4	7.5	mΩ
		V_{GS}=4.5V, I_D=10A		9.5	11	
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=15A		24		S
Gate charge characteristics						
Q_g	Total Gate Charge[3,4]	V_{DS}=25V, V_{GS}=10V, I_D=20A		32.1		nC
Q_{gs}	Gate-Source Charge[3,4]			7.14		
Q_{gd}	Gate-Drain Charge[3,4]			7.65		
$V_{plateau}$	Gate plateau voltage			4.24		V
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz		1372		pF
C_{oss}	Output Capacitance			159		
C_{rss}	Reverse Transfer Capacitance			121		
$t_{d(on)}$	Turn-On Time	V_{DS}=21V, V_{GS}=10V, I_D=20A		11		ns
t_r	Rise Time			36.8		
$t_{d(off)}$	Turn-Off Time			40.4		
t_f	Fall Time			10		
Rg	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		3.1		Ω

Typical Performance Characteristics

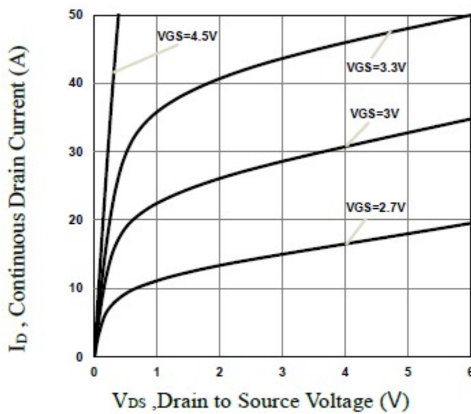


Figure 1. Output Characteristics

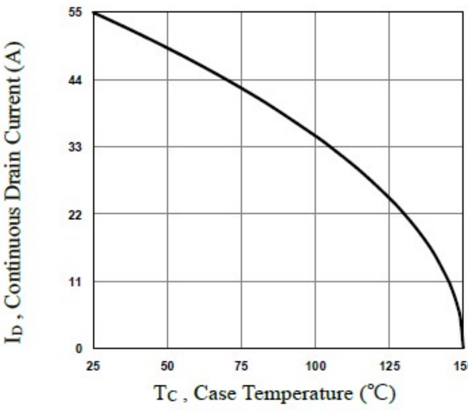


Figure 2. Drain Current vs. T_C

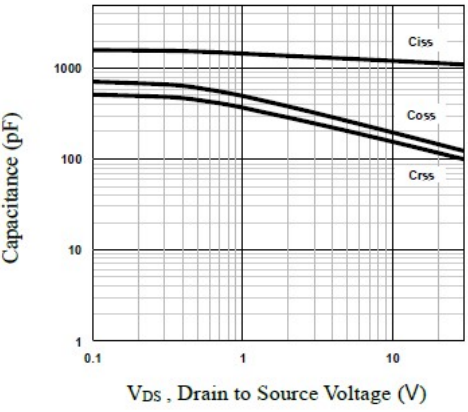


Figure 3. Capacitance

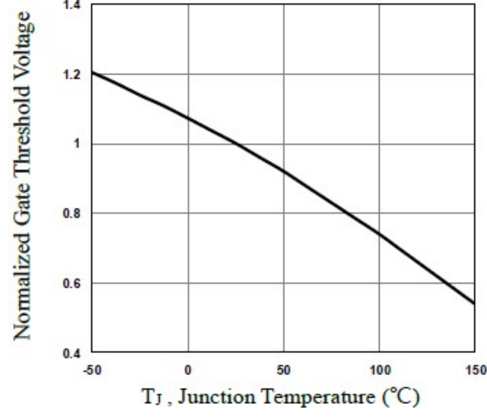


Figure 4. Normalize d Vth vs. T_J

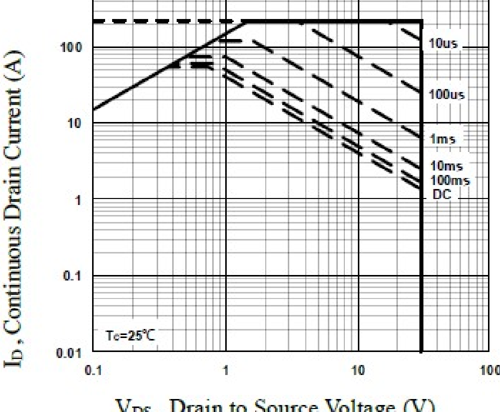
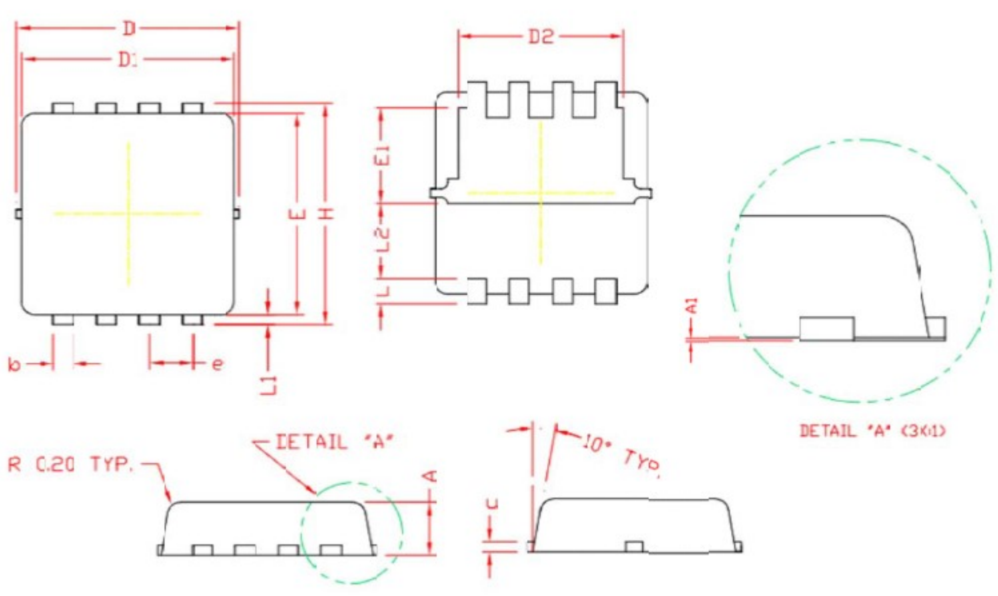


Figure 5. Maximum Safe Operating Area

Package Dimension

DFN3x3-8L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.900	0.028	0.035
A1	0.000	0.050	0.000	0.002
b	0.240	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	3.250	3.400	0.128	0.134
D1	3.050	3.250	0.120	0.020
D2	2.400	2.600	0.095	0.102
E	3.000	3.200	0.118	0.126
E1	1.350	1.550	0.053	0.061
e	0.650 BSC		0.026 BSC	
H	3.200	3.400	0.126	0.134
L	0.300	0.500	0.012	0.020
L1	0.100	0.200	0.004	0.008
L2	1.130 REF		0.045 REF	

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