GSM3170XFF

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

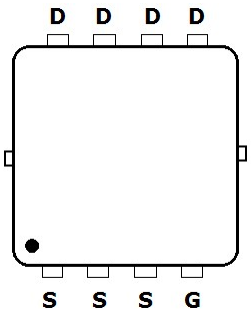
- 30V, 70A, $R_{DS(ON)}$<7.5mΩ@V_{GS}=10V, $R_{DS(ON)}$<11mΩ@V_{GS}=4.5V
- High Power and current handing capability
- Lead free product is acquired
- DFN5x6-8L package design

Applications

- PWM applications
- Load switch
- Power management

Packages & Pin Assignments

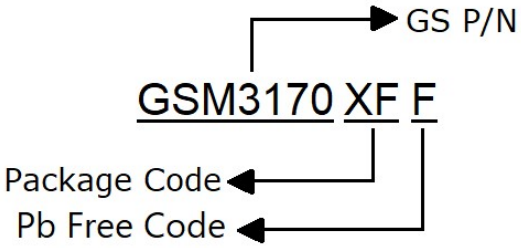
GSM3170XFF (DFN5x6-8L)



Top View

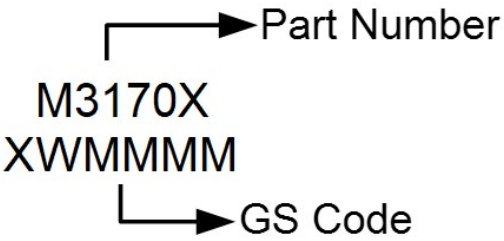
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

Ordering Information



Part Number	Package	Quantity
GSM3170XFF	DF5x6-8L	3000pcs

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	1.1	1.7	2.4	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		6.3	7.4	mΩ
		V_{GS}=4.5V, I_D=10A		9.4	10.9	
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		1367		pF
C_{oss}	Output Capacitance			154		
C_{rss}	Reverse Transfer Capacitance			116		
$t_{d(on)}$	Turn-On Time	V_{DS}=21V, V_{GS}=10V, I_D=20A		10		ns
t_r	Rise Time			35.8		
$t_{d(off)}$	Turn-Off Time			39.4		
t_f	Fall Time			9		
Rg	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		2.8		Ω

Typical Performance Characteristics

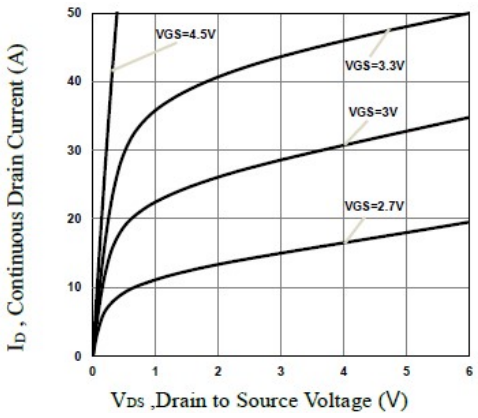


Figure 1. Output Characteristics

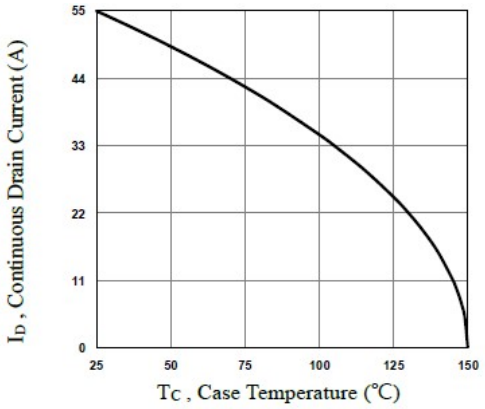


Figure 2. Drain Current vs. T_C

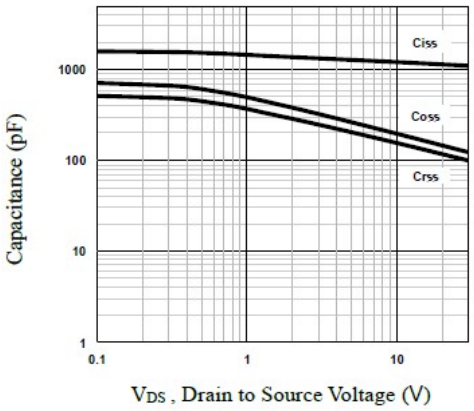


Figure 3. Capacitance

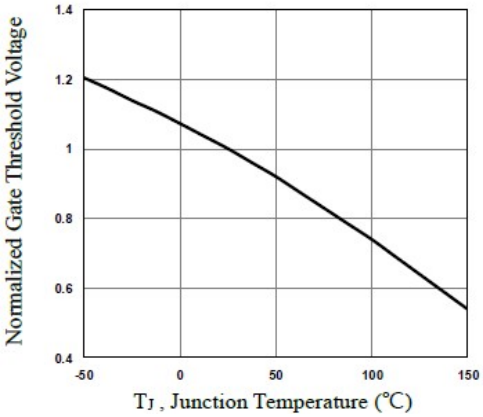


Figure 4. Normalize d Vth vs. T_J

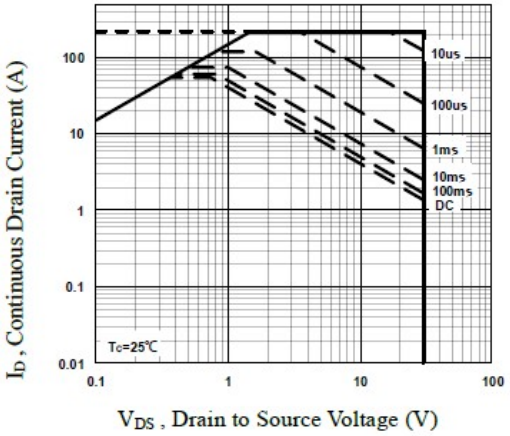
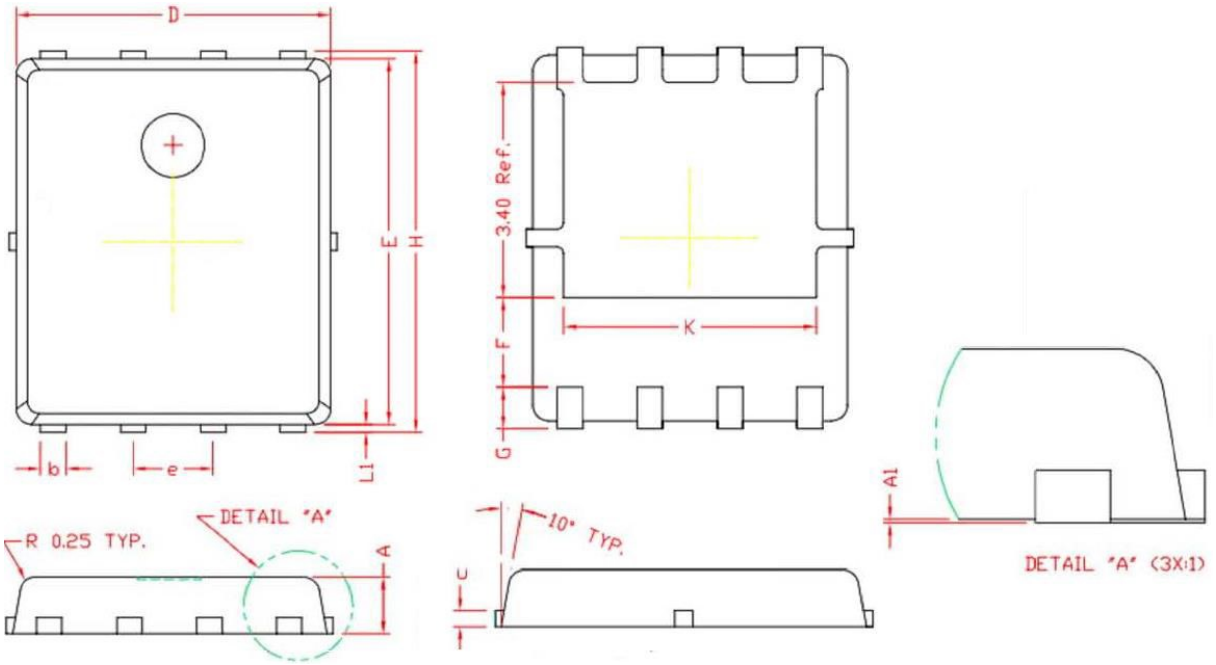


Figure 5. Maximum Safe Operating Area

Package Dimension

DFN5x6-8L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.800	1.000	0.031	0.039
A1	0.000	0.050	0.000	0.002
b	0.350	0.490	0.014	0.019
c	0.254 REF		0.010 REF	
D	4.900	5.100	0.193	0.201
E	5.700	5.900	0.224	0.232
F	1.400 REF		0.055 REF	
e	1.270 BSC		0.050 BSC	
H	5.950	6.200	0.234	0.244
L1	0.100	0.180	0.004	0.007
G	0.600 REF		0.024 REF	
K	4.000 REF		0.157 REF	

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