GSM3080XF

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

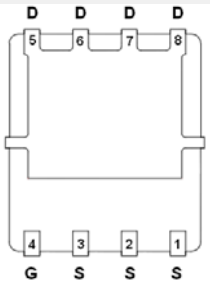
- 30V, 86A, $R_{DS(ON)}$<6mΩ@V_{GS}=10V, $R_{DS(ON)}$<10.5mΩ@V_{GS}=4.5V
- High Power and current handing capability
- Lead free product is acquired
- DFN5X6-8L package design

Applications

- PWM applications
- Load switch
- Power management

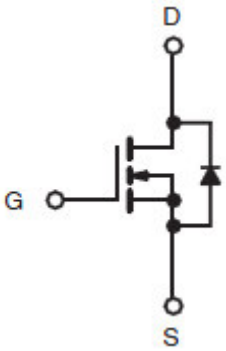
Packages & Pin Assignments

GSM3080XF (DFN5X6-8L)

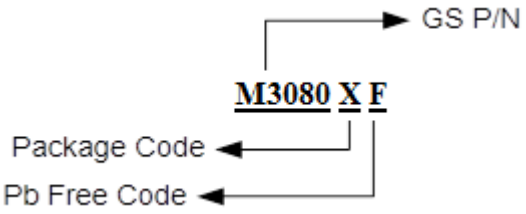


Top View

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



Ordering Information



Part Number	Package	Quantity
GSM3080XF	DFN5X6-8L	3000pcs

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]	86	A
		T_A=100℃	60	
I_{DM}	Pulsed Drain Current[2]		344	A
E_{AS}	Single Pulse Avalanche Energy[3]		270	mJ
P_D	Power Dissipation T_A=25℃		83	W
	Power Dissipation T_A=100℃		42	W/℃
T_J	Operating Junction Temperature Range		-55 to +175	℃
T_{STG}	Storage Temperature Range		-55 to +175	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.8	℃/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_{DD}=30V,V_G=10V,R_G=25Ω

Electrical Characteristics

T_A=25℃ Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	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	1.0	1.5	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)				86	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V, I_S=20A			1.2	V
t_{rr}	Body Diode Reverse Recovery Time	I_F=20A, dI/dt=100A/us		15		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=20A, dI/dt=100A/us		4		nC
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=20A		4.6	6	mΩ
		V_{GS}=4.5V, I_D=20A		7	10.5	
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=15A		24		S
Dynamic						
Q_g	Total Gate Charge[3,4]	V_{DS}=25V, V_{GS}=10V, I_D=14A		45		nC
Q_{gs}	Gate-Source Charge[3,4]			3		
Q_{gd}	Gate-Drain Charge[3,4]			15		
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1.0MHz		1980		pF
C_{oss}	Output Capacitance			320		
C_{rss}	Reverse Transfer Capacitance			240		
$t_{d(on)}$	Turn-On Time	V_{DS}=15V, V_{GS}=10V, R_L=0.75Ω, R_{GEN}=3Ω		12		ns
t_r	Rise Time			36		
$t_{d(off)}$	Turn-Off Time			49		
t_f	Fall Time			12		
Rg	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1.0MHz		3.2		Ω

Typical Performance Characteristics

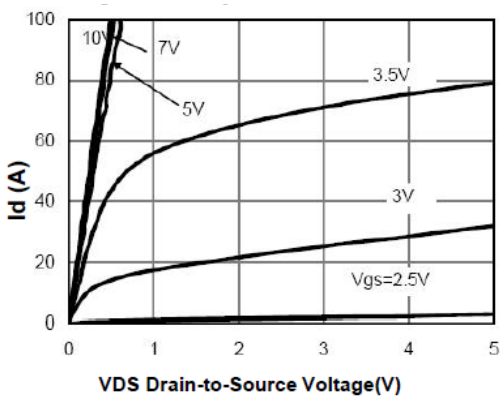


Figure 1. Output Characteristics

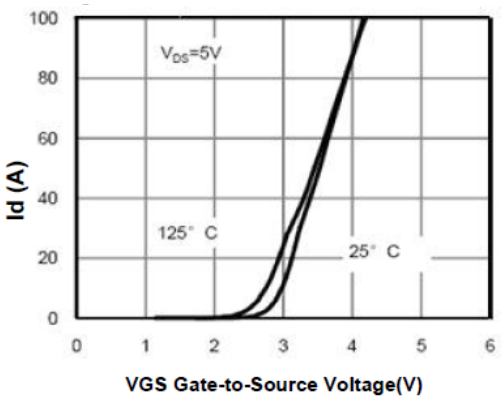


Figure 2. Transfer Characteristics

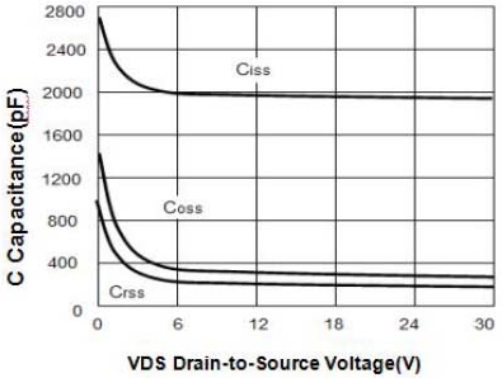


Figure 3. Capacitance

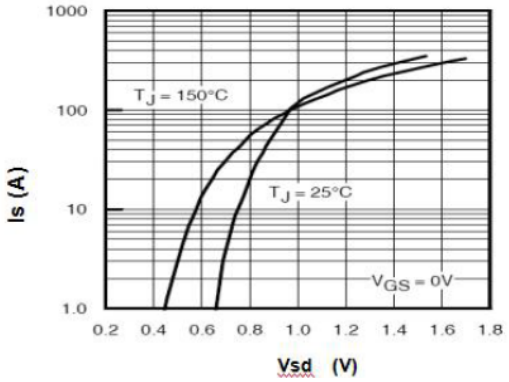


Figure 4. Body-Diode Characteristics

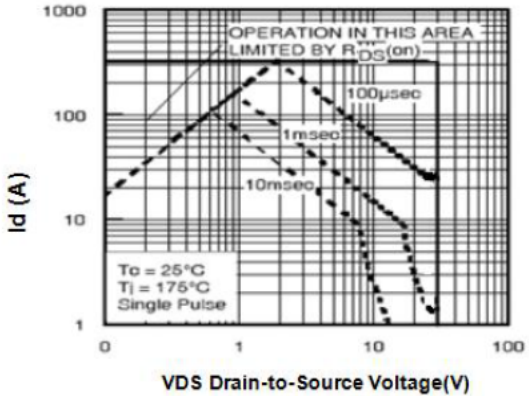
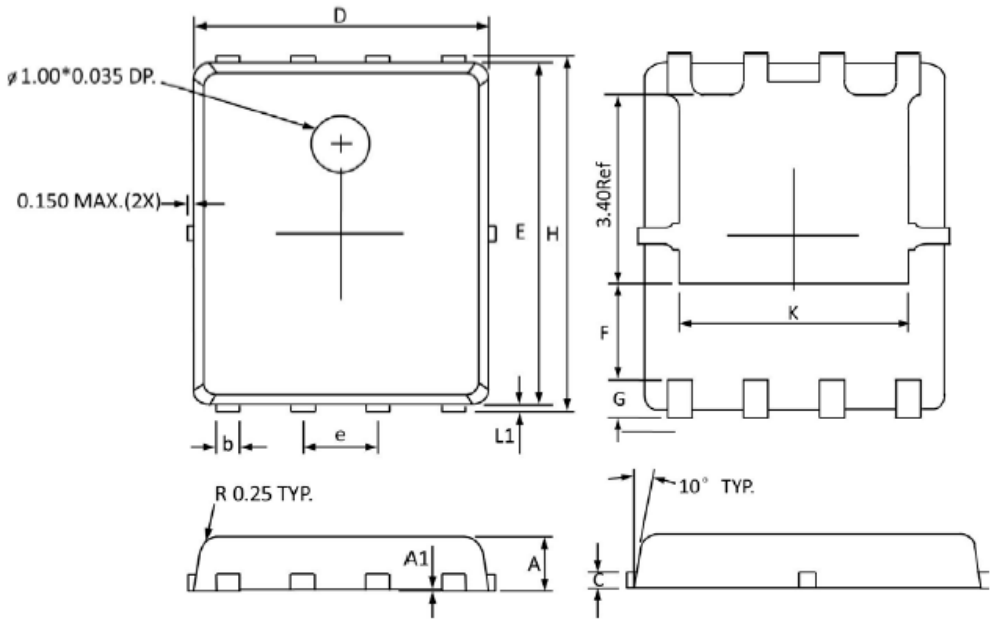


Figure 5. Maximum Safe Operating Area

Package Dimension

DFN5X6-8L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.032	0.039
A1	0.000	0.005	0.000	0.000
b	0.350	0.490	0.014	0.019
C	0.254 (REF)		0.010 (REF)	
D	4.900	5.100	0.193	0.200
E	5.700	5.900	0.225	0.232
e	1.27 (BSC)		0.050 (BSC)	
F	1.400 (REF)		0.055 (REF)	
G	0.600 (REF)		0.024 (REF)	
H	5.950	6.200	0.235	0.244
L1	0.100	0.180	0.004	0.007
K	4.000 (REF)		0.157 (REF)	

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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587