GSM3385XF

30V P-Channel MOSFETs

Product Description

These P-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

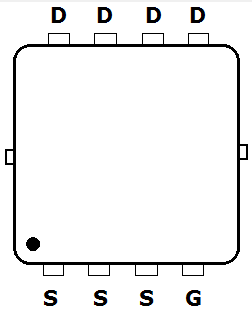
- -30V, -54A, $R_{DS(ON)}$<8mΩ@V_{GS}=-10V
- Fast switching
- Suit for -4.5V Gate Drive Applications
- Green Device Available
- DFN5X6-8L package design

Applications

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

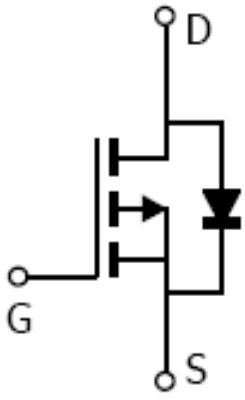
Packages & Pin Assignments

GSM3385XF (DFN5X6-8L)

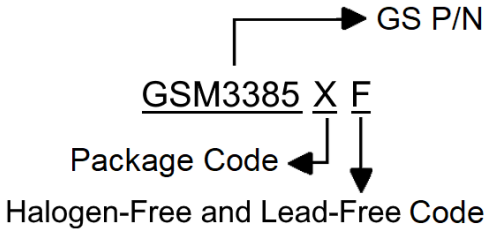


Top View

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

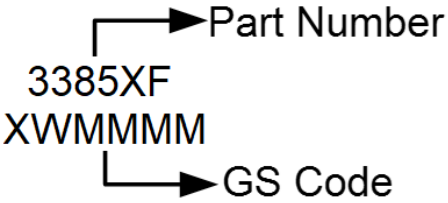


Ordering Information



Part Number	Package	Quantity Reel
GSM3385XF	DFN5X6-8L	3000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-30	V
V_{GS}	Gate-Source Voltage		±25	V
I_D	Continuous Drain Current	T_C=25℃	-54	A
		T_C=100℃	-34	
I_{DM}	Pulsed Drain Current[1]		-180	A
P_D	Power Dissipation	T_C=25℃	37.9	W
		T_C=100℃	15.2	
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		3.3	℃/W

Electrical Characteristics

T_J=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	-1.6	-2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±25V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V, V_{GS}=0V			-1	uA
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V, I_S=-1A			-1	V
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=-10V, I_D=-10A		6.9	7.8	mΩ
		V_{GS}=-4.5V, I_D=-6A		10.7	12.3	
Gate charge characteristics						
Q_g	Total Gate Charge[3,4]	V_{DD}=-15V, V_{GS}=10V, I_D=-15A		68		nC
Q_{gs}	Gate-Source Charge[3,4]			10		
Q_{gd}	Gate-Drain Charge[3,4]			12		
Dynamic characteristics						
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, f=1.0MHz		4319		pF
C_{oss}	Output Capacitance			439		
C_{rss}	Reverse Transfer Capacitance			299		
$t_{d(on)}$	Turn-On Time	V_{DD}=-15V, V_{GS}=-10V, Rg=3.3Ω, I_D=-15A		12		ns
t_r	Rise Time			11		
$t_{d(off)}$	Turn-Off Time			105		
t_f	Fall Time			21		

Typical Performance Characteristics

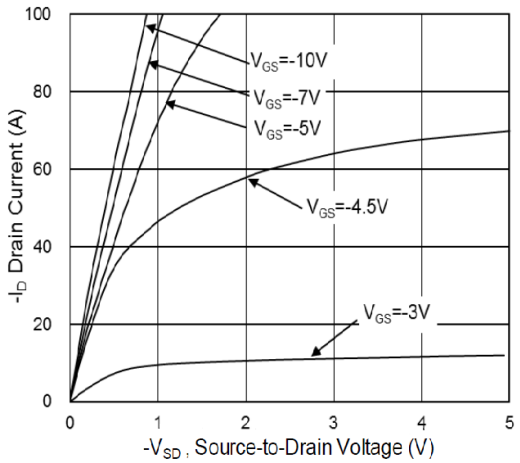


Figure 1. Output Characteristics

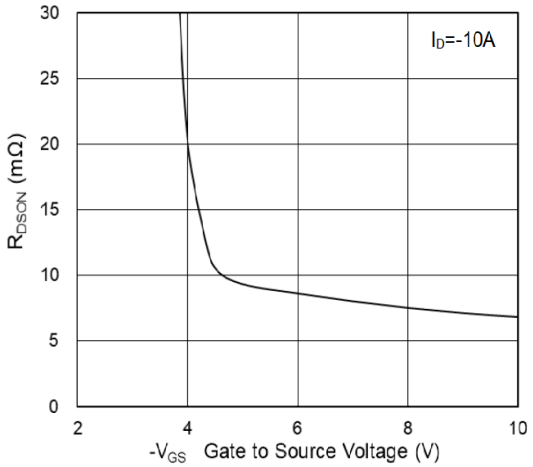


Figure 2. On-Resistance Variation with V_{GS}

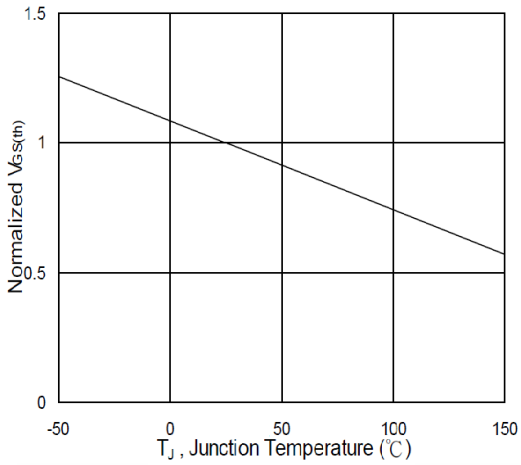


Figure 3. Normalized $V_{GS(th)}$ vs. T_J

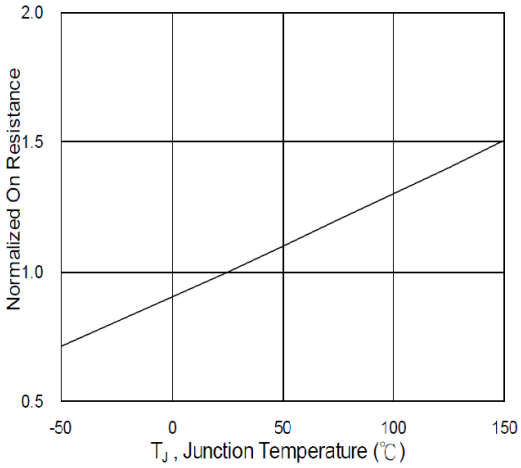


Figure 4. Normalized R_{DSON} vs. T_J

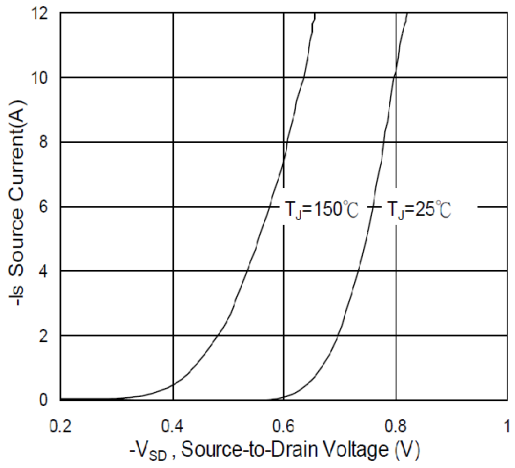


Figure 5. Diode Forward Voltage vs. Current

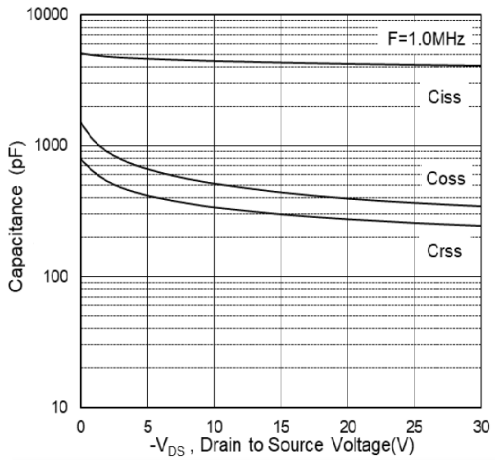


Figure 6. Capacitance

Typical Performance Characteristics (Continue)

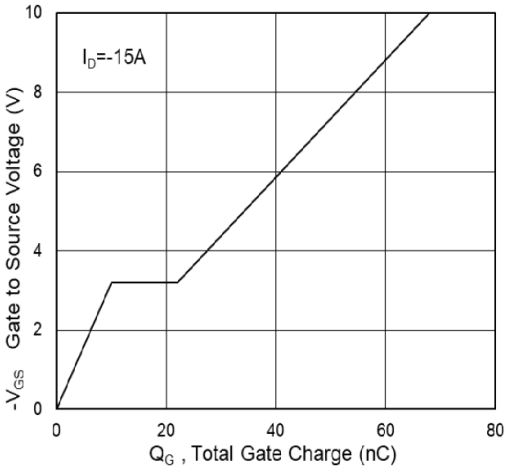


Figure 7. Gate Charge Waveform

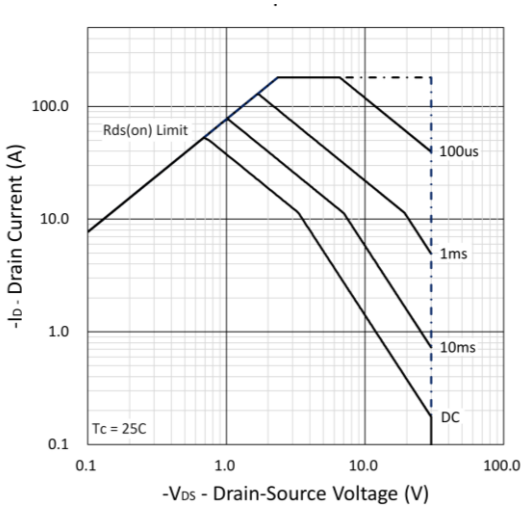


Figure 8. Maximum Safe Operating Area

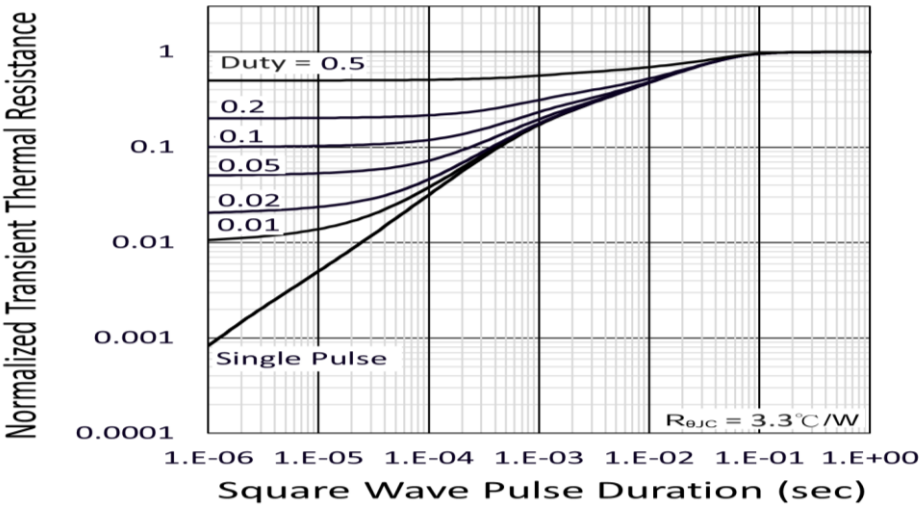
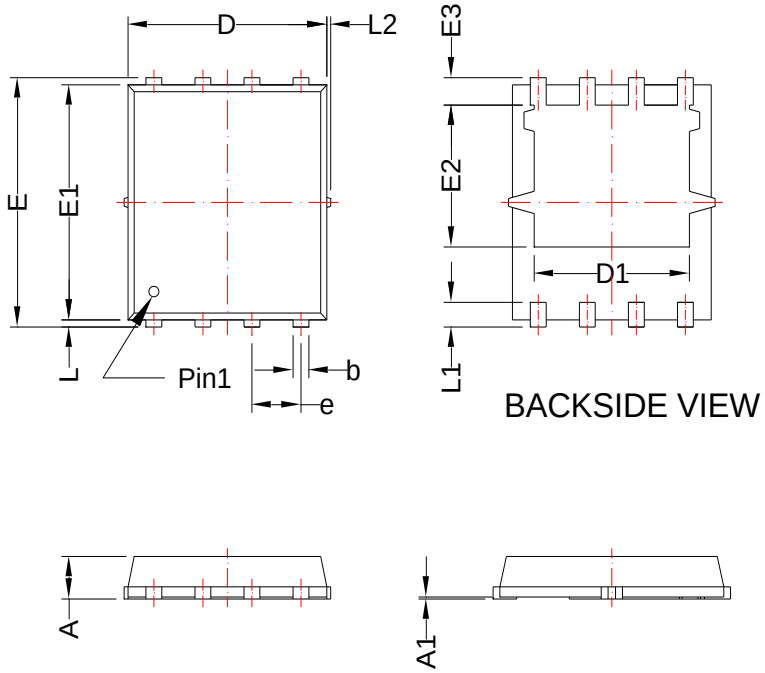


Figure 9. Normalized Transient Thermal Resistance

Package Dimension

DFN5X6-8L



DIMENSION D AND E1 DOES NOT INCLUDE MOLD FLASH,PROTRUSIONS OR GATE BURRS.MOLD FLASH,PROTRUSIONS OR GATE BURRS SHALL HOT EXCEED 0.5mm PER INTERLEAD FLASH OR PROTRUSIOB SHALL NOT EXCEED 0.5mm PER SIDE.

Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.20	0.031	0.047
A1	0.00	0.05	0.000	0.002
b	0.25	0.51	0.010	0.020
c	0.20	0.35	0.008	0.014
D	4.90	5.40	0.193	0.213
D1	3.40	4.60	0.134	0.181
E	5.90	6.20	0.232	0.244
E1	5.40	5.90	0.213	0.232
E2	3.20	3.80	0.126	0.150
E3	0.40	0.80	0.016	0.031
H1	1.27 BSC		0.050 BSC	
L	0.1	0.25	0.004	0.010
L1	0.45	0.75	0.018	0.030
L2	---	0.15	---	0.006

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