GSM30N15X

150V 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

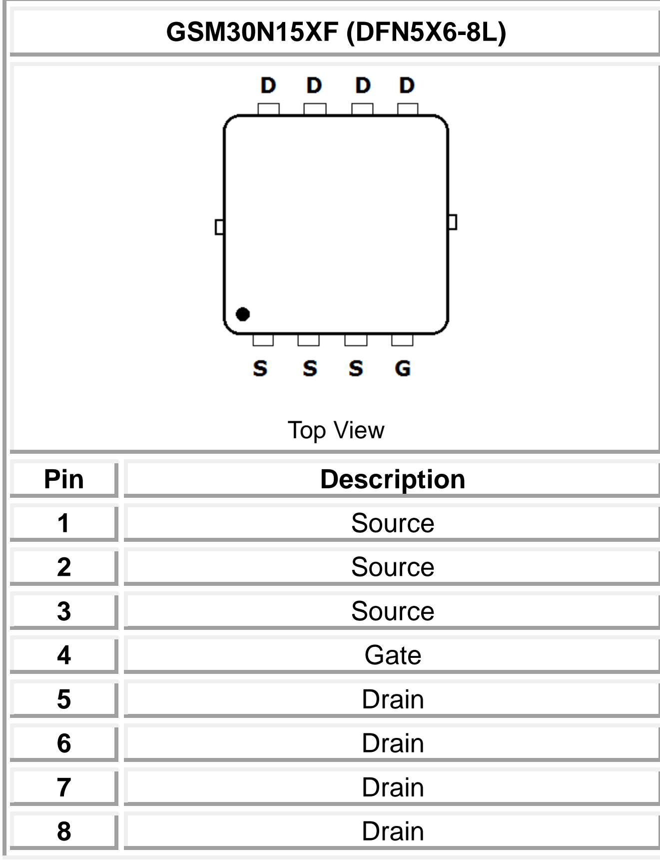
- 150V, 25A, $R_{DS(ON)}$=43mΩ@V_{GS}=10V
- 100% EAS Tested
- Green Device Available
- DFN5X6-8L package design

Applications

- Motor Drive
- Power Tools
- LED Lighting
- Power Management in TV Converter
- DC/DC Converter

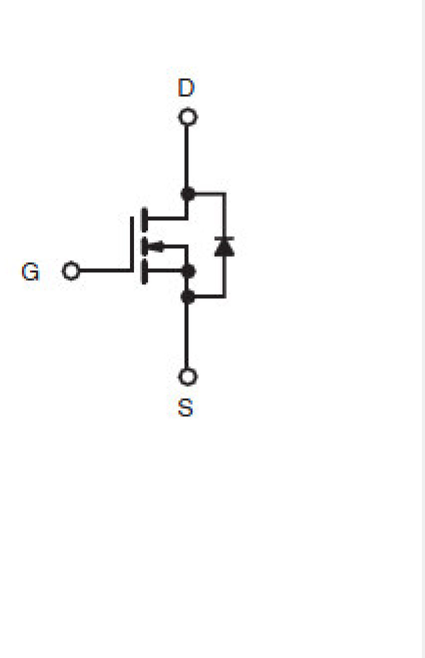
Packages & Pin Assignments

GSM30N15XF (DFN5X6-8L)



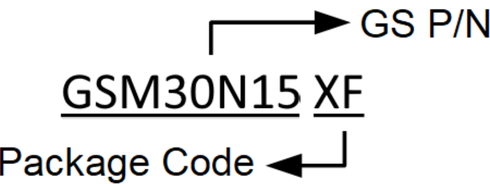
Top View

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



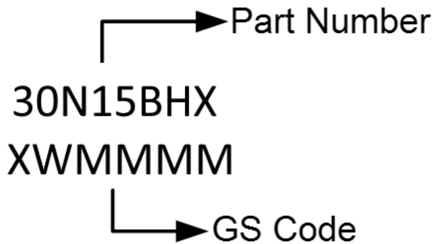
GSM30N15X

Ordering Information



Part Number	Package	Quantity Reel
GSM30N15XF	DFN5X6-8L	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		150	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	25	A
		T_C=100℃	16	
I_{DM}	Pulsed Drain Current[1]		100	A
EAS	Single Pulse Avalanche Energy[2]		29	mJ
IAS	Single Pulse Avalanche Current[2]		24	A
P_D	Power Dissipation (T_C=25℃)		101	W
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{θJA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case		1.23	℃/W

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	150			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2.5	3.5	4.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V, V_{GS}=0V			1	uA
		V_{DS}=120V, V_{GS}=0V, T_J=85℃			10	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=20A		36	43	mΩ
gfs	Forward Transconductance	V_{DS}=10V, I_D=3A		7		S
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			25	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A			1	V
t_{rr}	Reverse Recovery Time	V_R=100V, I_F=10A, dI/dt=100A/μs, T_J=25℃		70		nS
Q_{rr}	Reverse Recovery Charge			250		nC
Dynamic						
Q_g	Total Gate Charge	V_{DS}=75V, V_{GS}=10V, I_D=15A		17.4		nC
Q_{gs}	Gate-Source Charge			2.7		
Q_{gd}	Gate-Drain Charge			6.1		
C_{iss}	Input Capacitance	V_{DS}=75V,V_{GS}=0V, f=1MHz		835		pF
C_{oss}	Output Capacitance			75		
C_{rss}	Reverse Transfer Capacitance			7		
$t_{d(on)}$	Turn-On Time	V_{DD}=75V, I_D=15A, V_{GS}=10V, R_G=6Ω		4.6		ns
t_r				15		
$t_{d(off)}$	Turn-Off Time			27		
t_f				8		

Typical Performance Characteristics

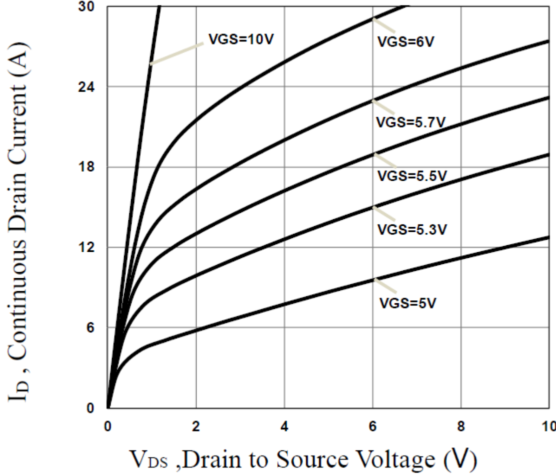


Figure 1. Output Characteristics

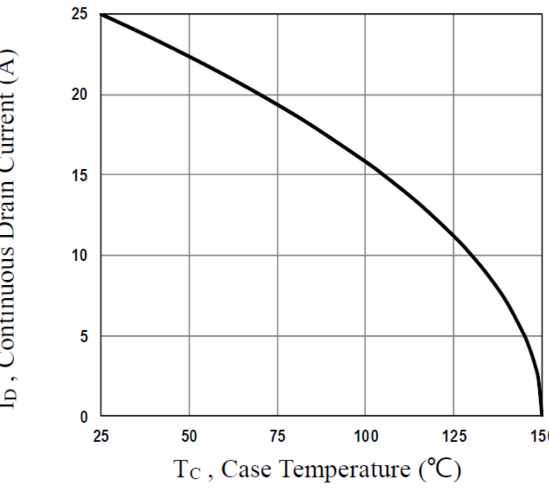


Fig 2. Continuous Drain Current vs. T_C

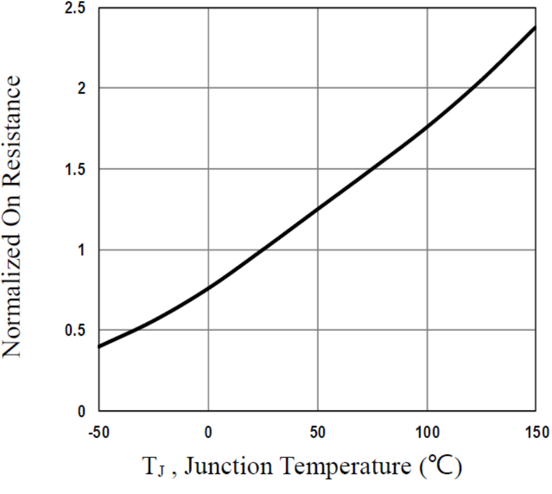


Fig.3 Normalized R_{DSON} vs. T_J

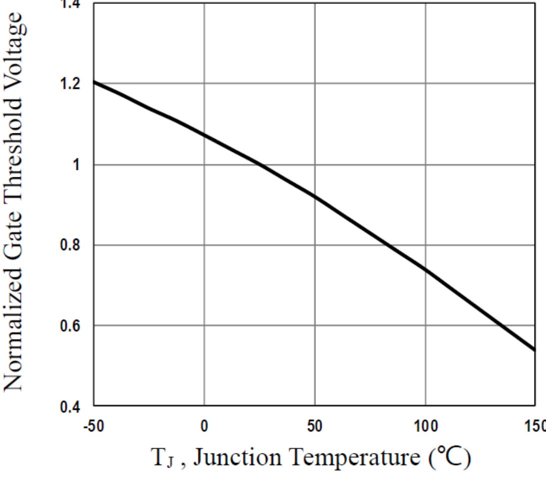


Fig 4. Normalize d Vth vs. T_J

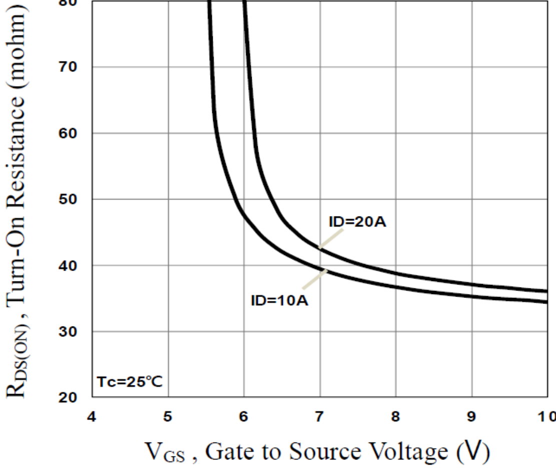


Fig.5 Turn-On Resistance vs. V_{GS}

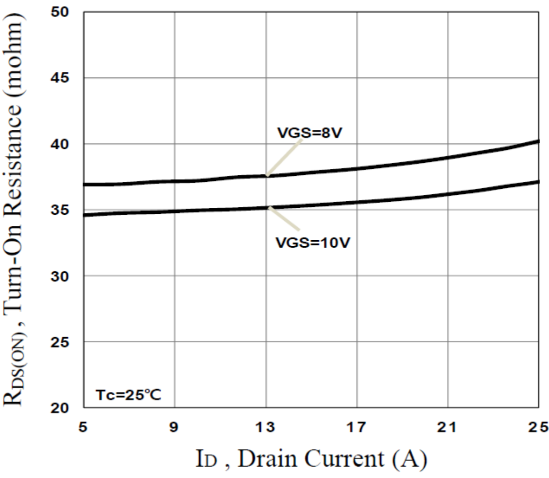


Fig 6. Turn-On Resistance vs. I_D

Typical Performance Characteristics (Continue)

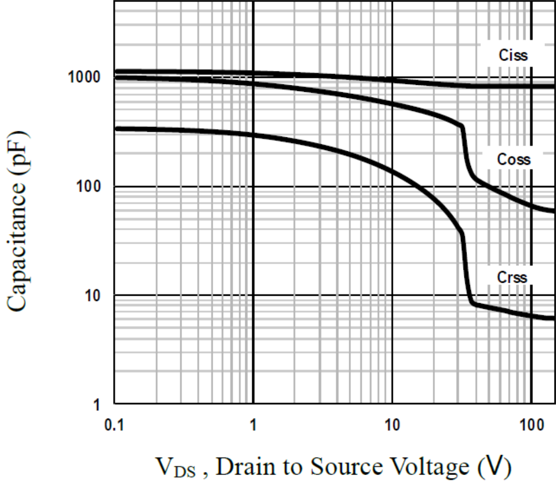


Figure 7. Capacitance

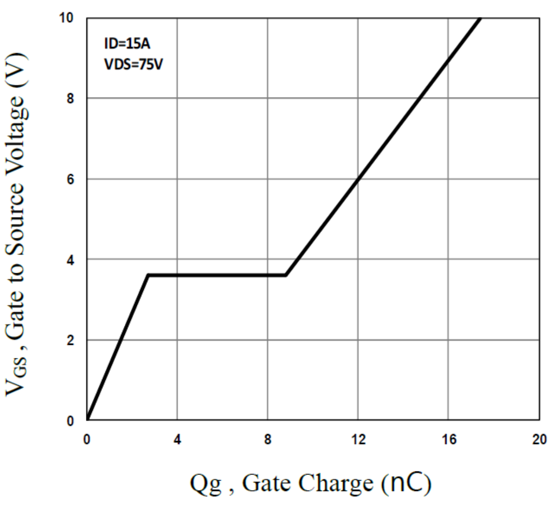


Fig 8. Gate Charge Characteristics

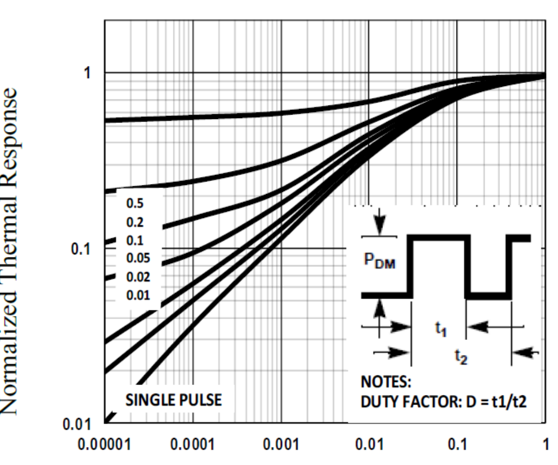


Fig.9 Normalized Transient Impedance

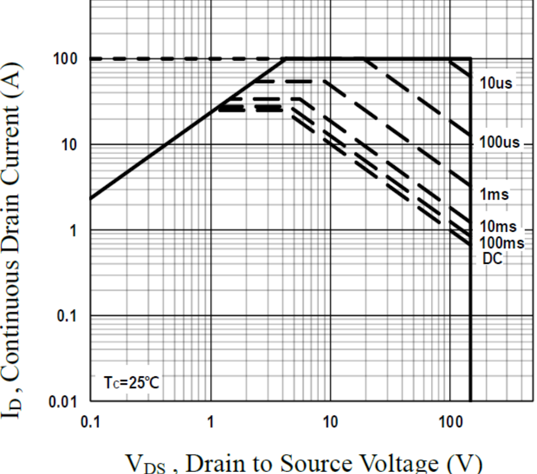


Figure 10. Maximum Safe Operating Area

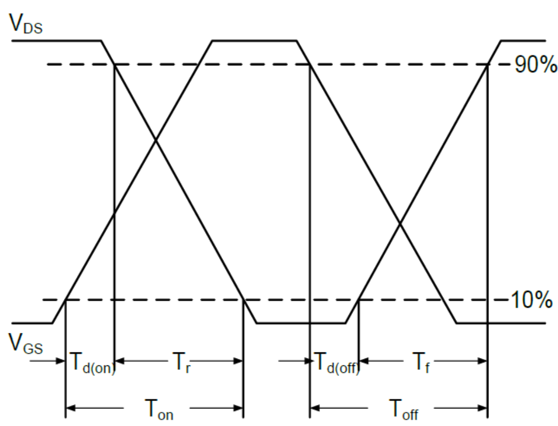


Fig 11. Switching Time Waveform

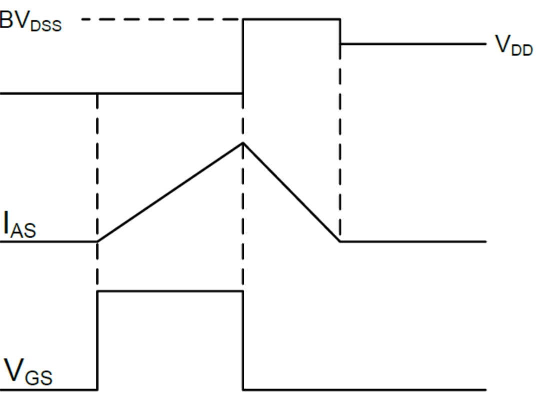
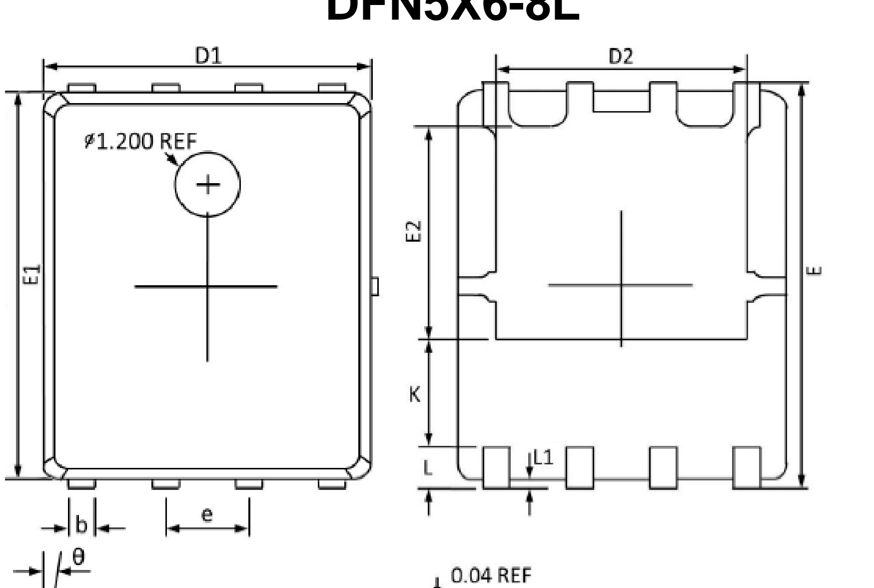


Fig 12. EAS Waveform

Package Dimension

DFN5X6-8L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.800	1.200	0.031	0.047
b	0.250	0.510	0.009	0.020
c	0.200	0.300	0.008	0.012
D1	4.800	5.400	0.189	0.212
D2	3.610	4.310	0.142	0.170
E	5.850	6.300	0.230	0.248
E1	5.450	5.960	0.215	0.235
E2	3.270	3.920	0.128	0.154
e	1.270 BSC		0.050 BSC	
H	0.380	0.650	0.015	0.026
K	1.400 REF		0.055 REF	
L	0.380	0.710	0.015	0.028
L1	0.050	0.250	0.002	0.009
θ	0°	12°	0°	12°

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

CONTACT US

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

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