

# GSM3306WS

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM3306WS, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

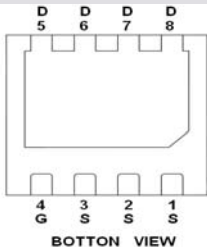
### Features

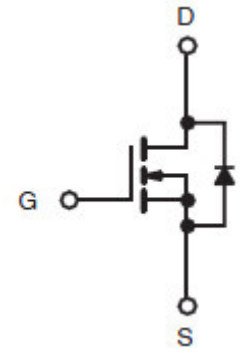
- 30V/20A,  $R_{DS(ON)}=5.6m\Omega@V_{GS}=10V$
- 30V/15A,  $R_{DS(ON)}=7.4m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3X3-8L package design

### Applications

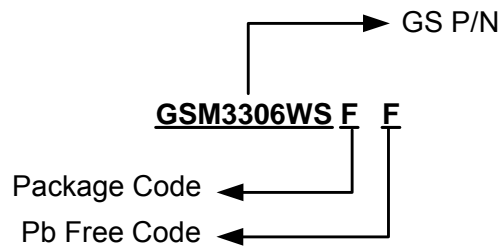
- DC/DC Converter
- POL

### Packages & Pin Assignments

GSM3306WSFF (DFN3X3-8L)		
 <p style="text-align: center;">BOTTON VIEW</p>		
Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

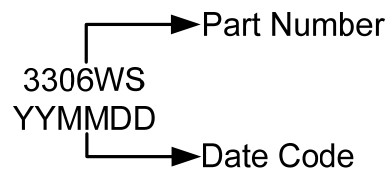


## Ordering Information



Part Number	Package	Quantity Reel
GSM3306WSFF	DFN3X3-8L	5000 PCS

## Marking Information



## Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  Unless otherwise noted

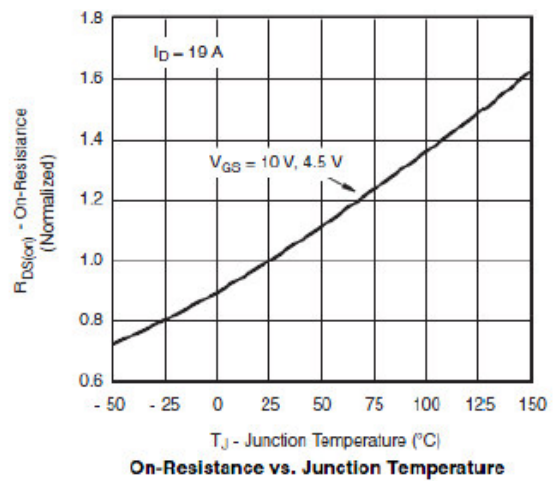
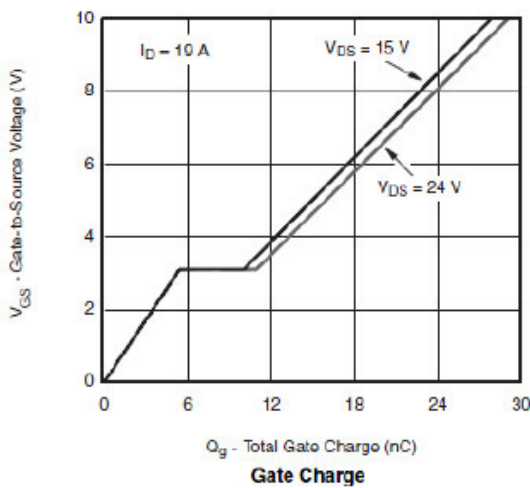
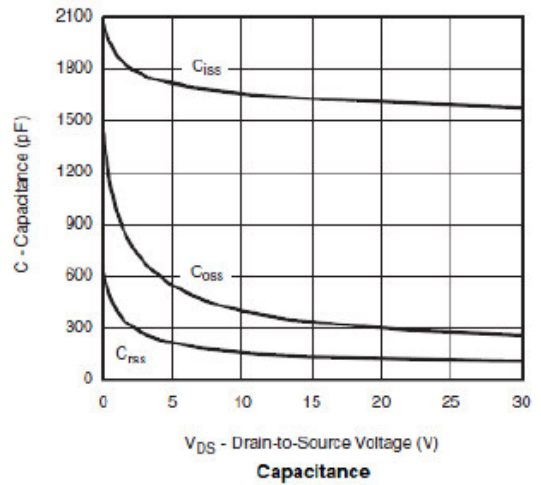
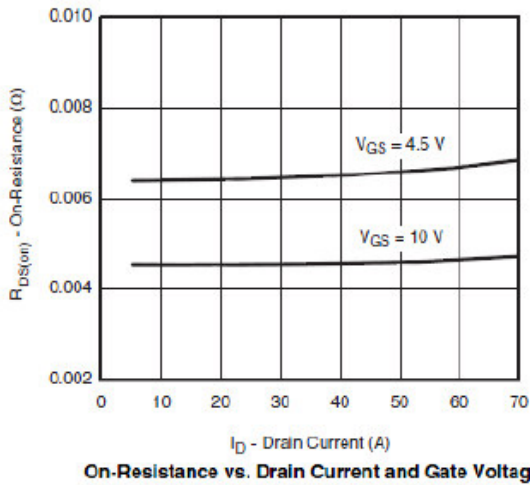
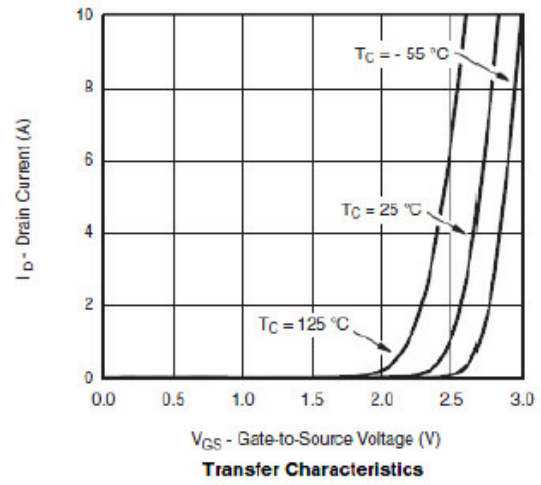
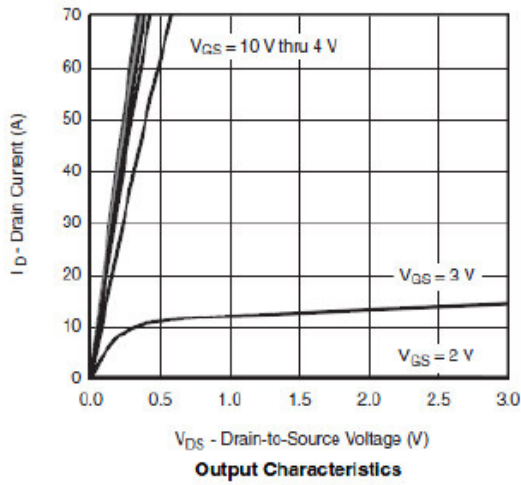
Symbol	Parameter	Typical	Unit
$V_{DSS}$	Drain-Source Voltage	30	V
$V_{GSS}$	Gate –Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current ( $T_J=150^{\circ}\text{C}$ )	$T_A=25^{\circ}\text{C}$	40
		$T_A=70^{\circ}\text{C}$	30
$I_{DM}$	Pulsed Drain Current	80	A
$I_S$	Continuous Source Current (Diode Conduction)	40	A
$P_D$	Power Dissipation	$T_A=25^{\circ}\text{C}$	2
		$T_A=70^{\circ}\text{C}$	1.5
$T_J$	Operating Junction Temperature	150	$^{\circ}\text{C}$
$T_{STG}$	Storage Temperature Range	-55/150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	120	$^{\circ}\text{C}/\text{W}$

## Electrical Characteristics

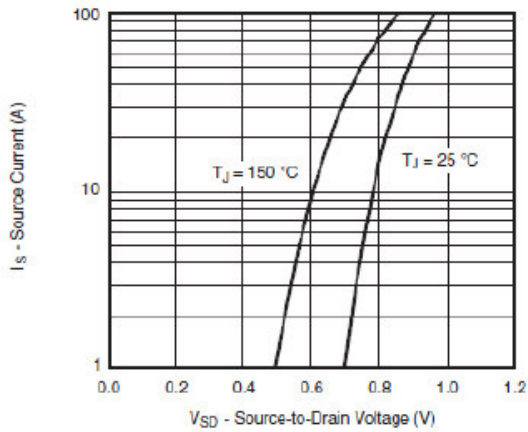
T<sub>A</sub>=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0		2.0	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	uA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			10	
I <sub>D(ON)</sub>	On-State Drain Current	V <sub>DS</sub> ≥ 5V, V <sub>GS</sub> =10V	15			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> = 10V, I <sub>D</sub> =20A		2.5	5.6	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =15A		4.2	7.4	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =15V, I <sub>D</sub> =10A		24		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =10A, V <sub>GS</sub> =0V		0.8	1.3	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> ≅15A		50	70	nC
Q <sub>gs</sub>	Gate-Source Charge			10		
Q <sub>gd</sub>	Gate-Drain Charge			8		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		2800		pF
C <sub>oss</sub>	Output Capacitance			550		
C <sub>rss</sub>	Reverse Transfer Capacitance			300		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =15V, R <sub>L</sub> =0.3Ω, I <sub>D</sub> =15A, V <sub>GEN</sub> =10V, R <sub>G</sub> =2.5Ω		12	20	ns
t <sub>r</sub>				12	20	
t <sub>d(off)</sub>	Turn-Off Time			30	45	
t <sub>f</sub>				10	20	

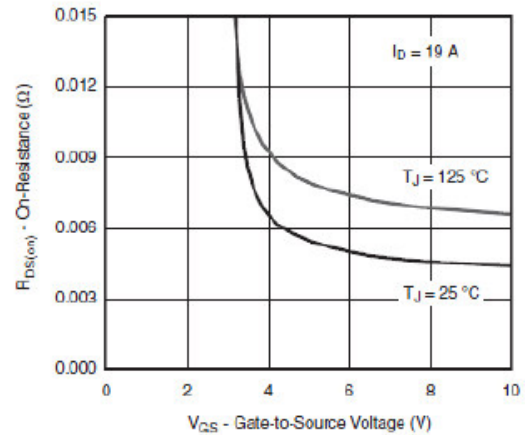
## Typical Performance Characteristics



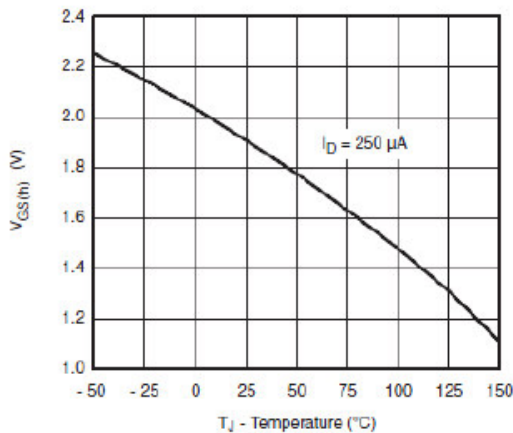
## Typical Performance Characteristics (Continue)



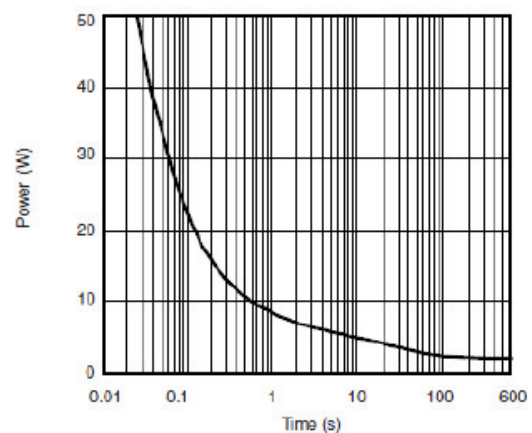
Source-Drain Diode Forward Voltage



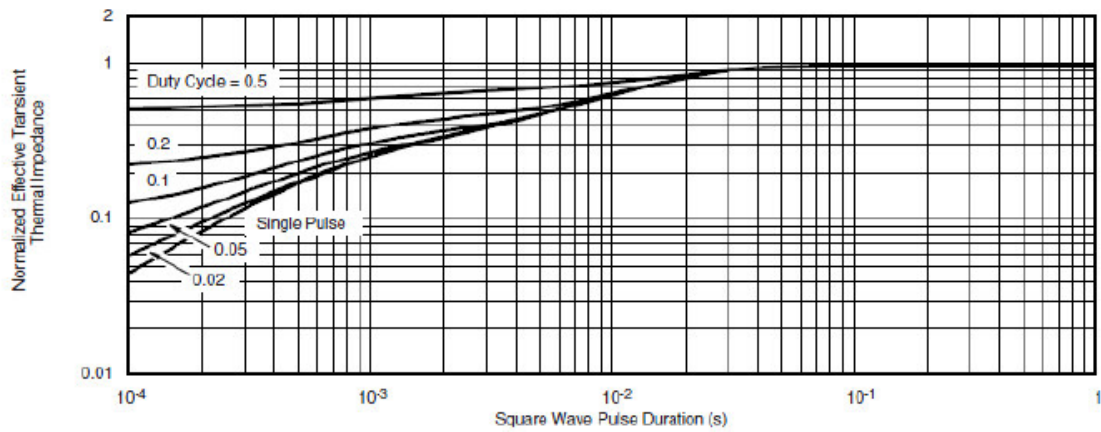
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



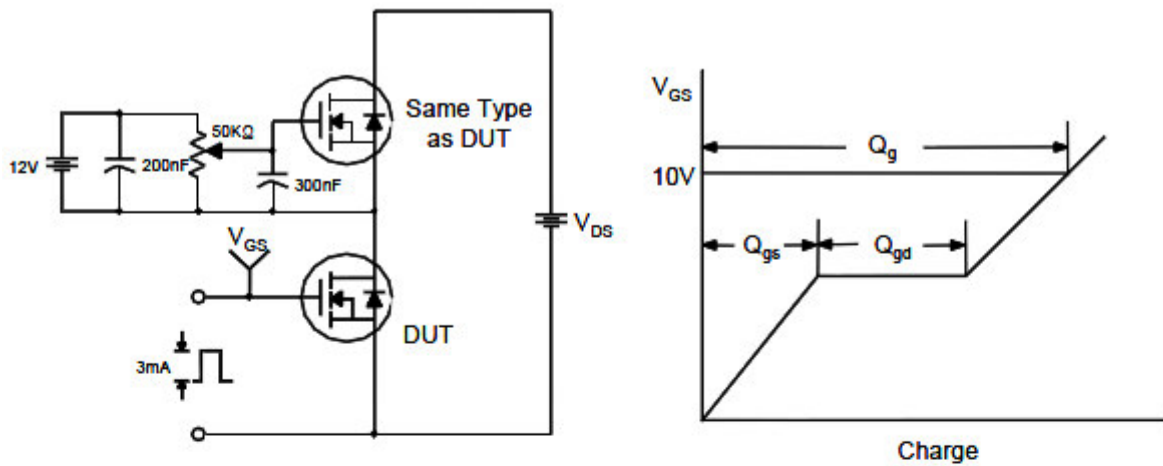
Single Pulse Power (Junction-to-Ambient)



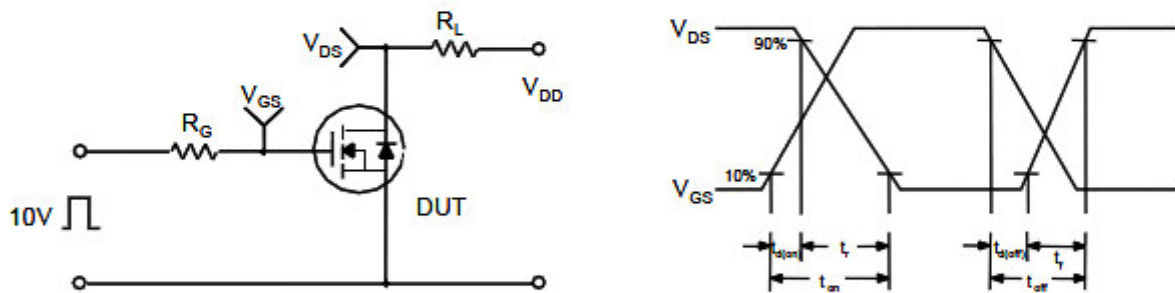
Normalized Thermal Transient Impedance, Junction-to-Case

## Typical Performance Characteristics (Continue)

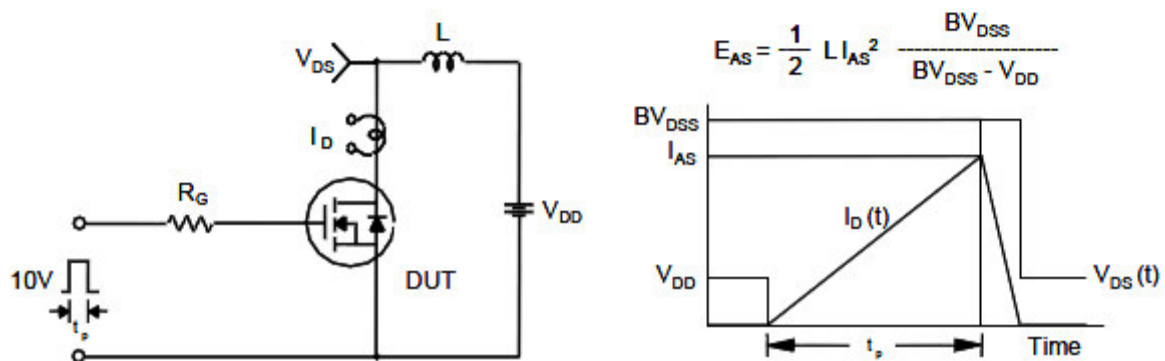
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

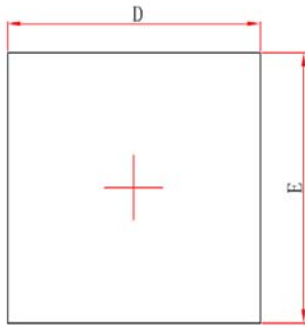


### Unclamped Inductive Switching Test Circuit & Waveforms

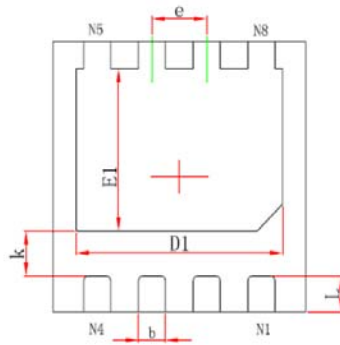


## Package Dimension

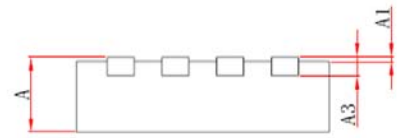
### DFN3x3-8L



Top View



Bottom View







Side View

Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.800	0.900	0.031	0.035
A1	0.000	0.05	0.000	0.002
A3	0.203REF		0.008REF	
D	2.924	3.076	0.115	0.121
E	2.924	3.076	0.115	0.121
D1	2.350	2.550	0.093	0.100
E1	1.700	1.90	0.067	0.075
k	0.450	0.550	0.018	0.022
b	0.270	0.370	0.011	0.015
e	0.650TYP		0.026TYP	
L	0.324	0.476	0.013	0.019



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