

GSM6236S

40V N-Channel Enhancement Mode MOSFET

Product Description

GSM6236S, 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.

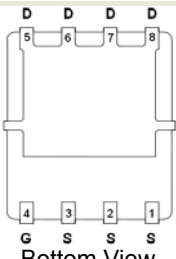
Features

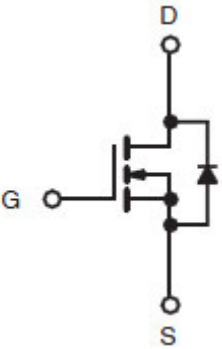
- 40V/20A, $R_{DS(ON)}=3.3m\Omega@V_{GS}=10V$
- 40V/15A, $R_{DS(ON)}=4.3m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN5X6-8L package design

Applications

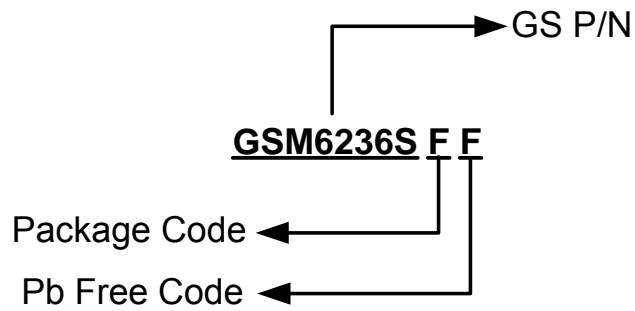
- Synchronous Rectification
- POL

Packages & Pin Assignments

GSM6236SFF (DFN5X6-8L)	
 <p>Bottom View</p>	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

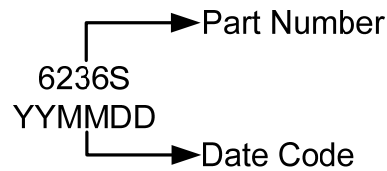


Ordering Information



Part Number	Package	Quantity Reel
GSM6236SFF	DFN5X6-8L	2500 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

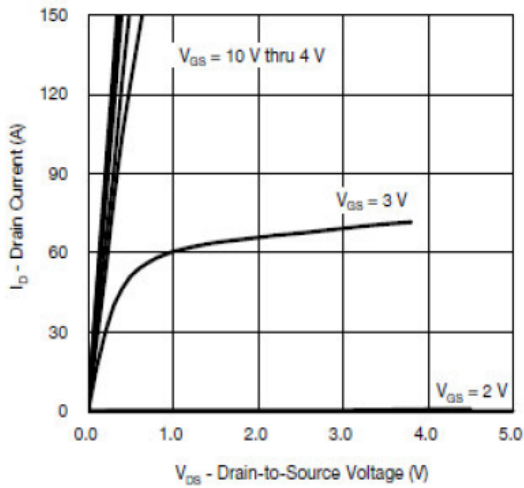
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	40	V
V _{GSS}	Gate –Source Voltage	±20	V
I _D	Continuous Drain Current (T _J =150°C)	T _A =25°C	32
		T _A =70°C	25
I _{DM}	Pulsed Drain Current	150	A
I _S	Continuous Source Current (Diode Conduction)	40	A
P _D	Power Dissipation	T _C =25°C	35
		T _C =70°C	16
P _{DSM}	Power Dissipation	T _A =25°C	4.2
		T _A =70°C	2.7
T _J	Operating Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-55/150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	120	°C/W

Electrical Characteristics

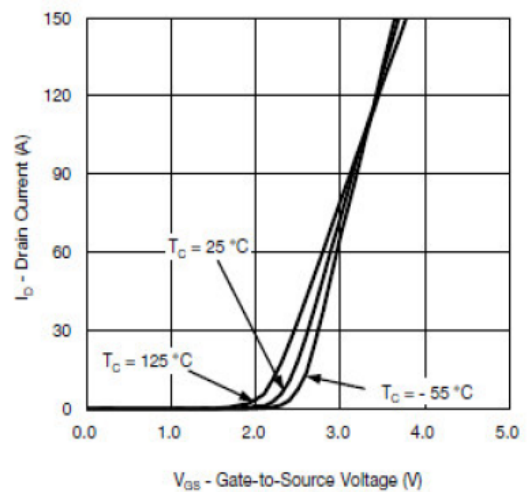
($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.0	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V, T_J=85^{\circ}\text{C}$			10	
$I_{D(ON)}$	On-State Drain Current	$V_{DS} \geq 5V, V_{GS}=10V$	50			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=20A$		2.4	3.3	m Ω
		$V_{GS}=4.5V, I_D=15A$		3.3	4.3	
g_{FS}	Forward Transconductance	$V_{DS}=15V, I_D=10A$		24		S
V_{SD}	Diode Forward Voltage	$I_S=10A, V_{GS}=0V$		0.8	1.3	V
Dynamic						
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V, I_D=20A$		20	35	nC
Q_{gs}	Gate-Source Charge			7		
Q_{gd}	Gate-Drain Charge			12		
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$		3200		pF
C_{oss}	Output Capacitance			2400		
C_{rss}	Reverse Transfer Capacitance			135		
$t_{d(on)}$	Turn-On Time	$V_{DD}=20V, R_L=1.0\Omega, I_D=20A, V_{GEN}=10V, R_G=1.0\Omega$		15	30	ns
t_r				5	15	
$t_{d(off)}$	Turn-Off Time			30	60	
t_f				5	15	

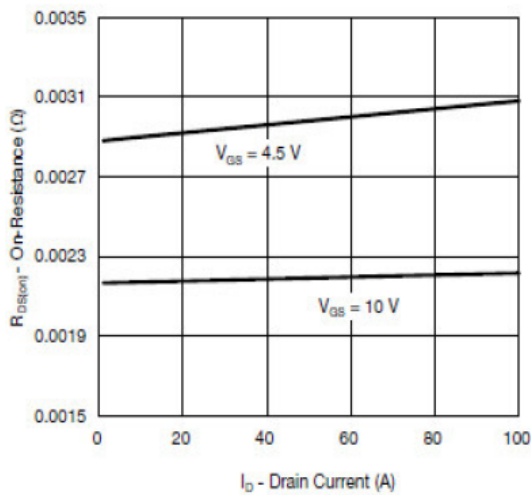
Typical Performance Characteristics



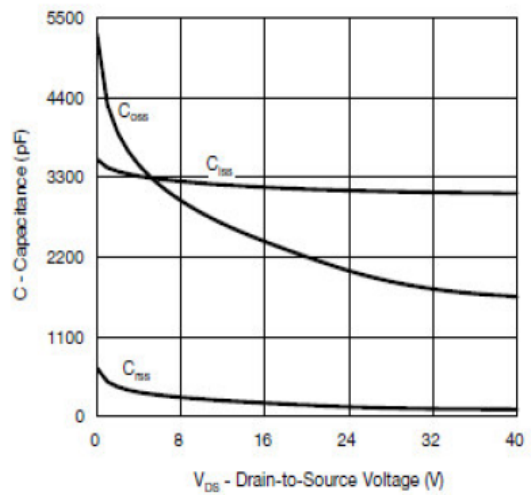
Output Characteristics



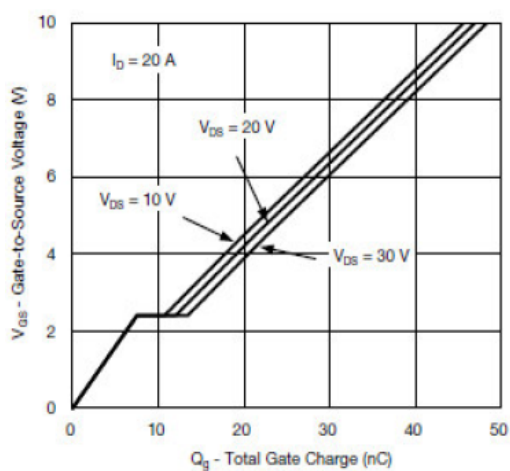
Transfer Characteristics



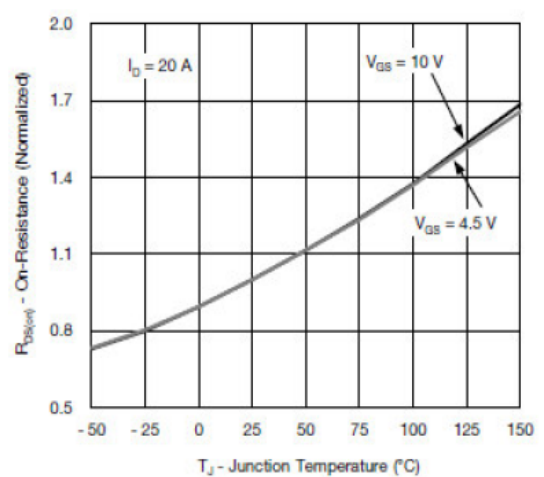
On-Resistance vs. Drain Current



Capacitance

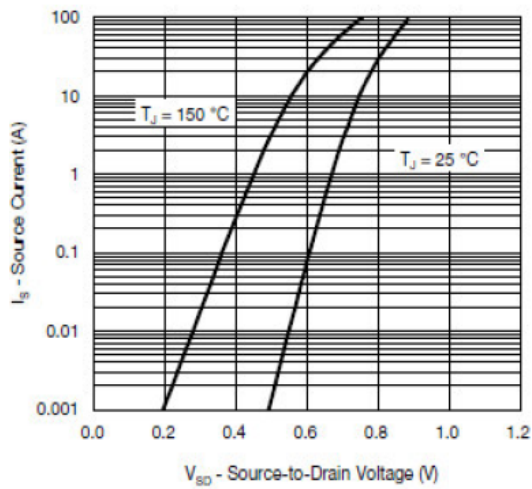


Gate Charge

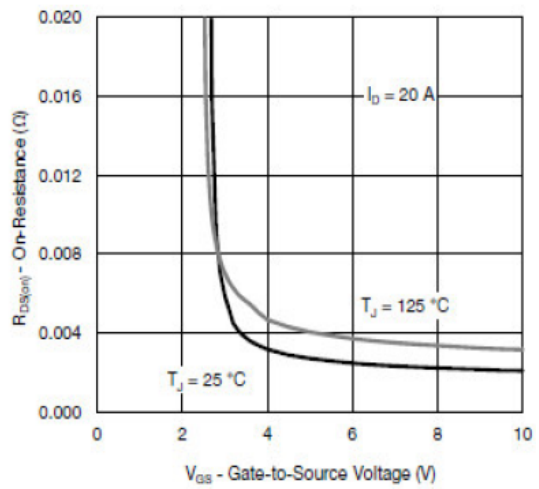


On-Resistance vs. Junction Temperature

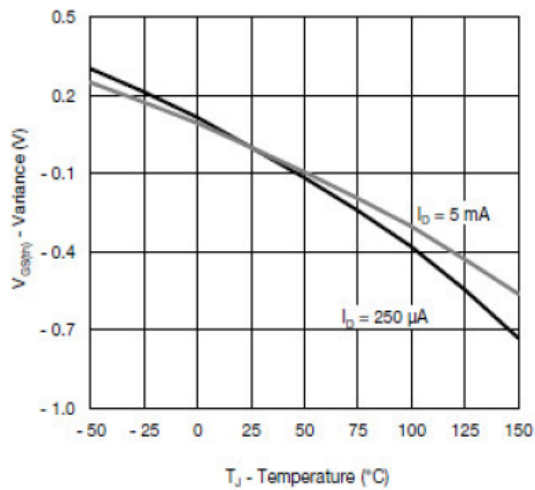
Typical Performance Characteristics (Continue)



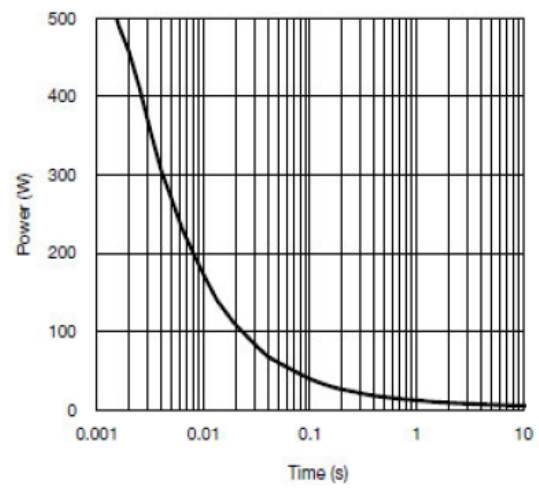
Source-Drain Diode Forward Voltage



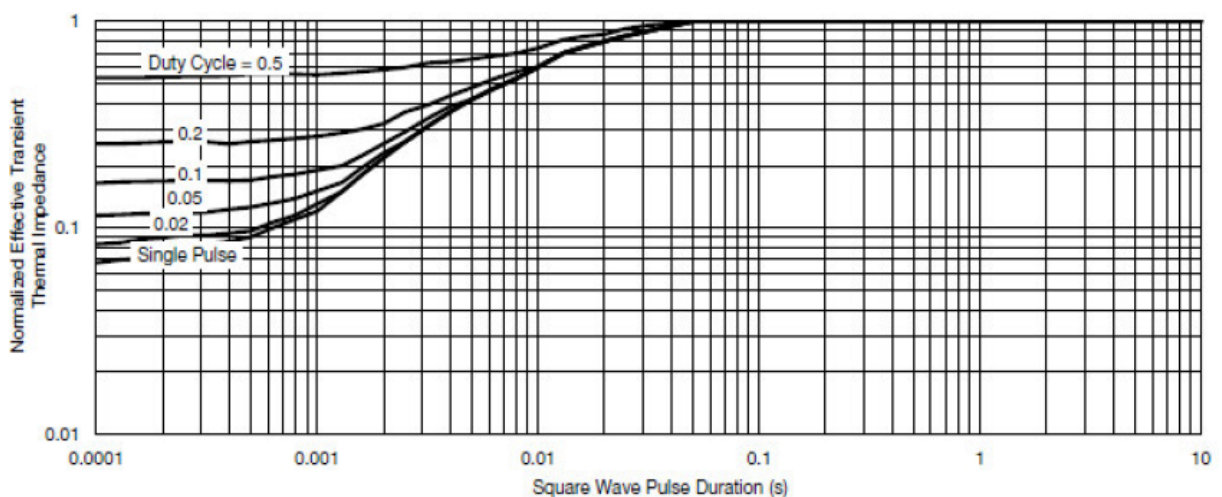
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



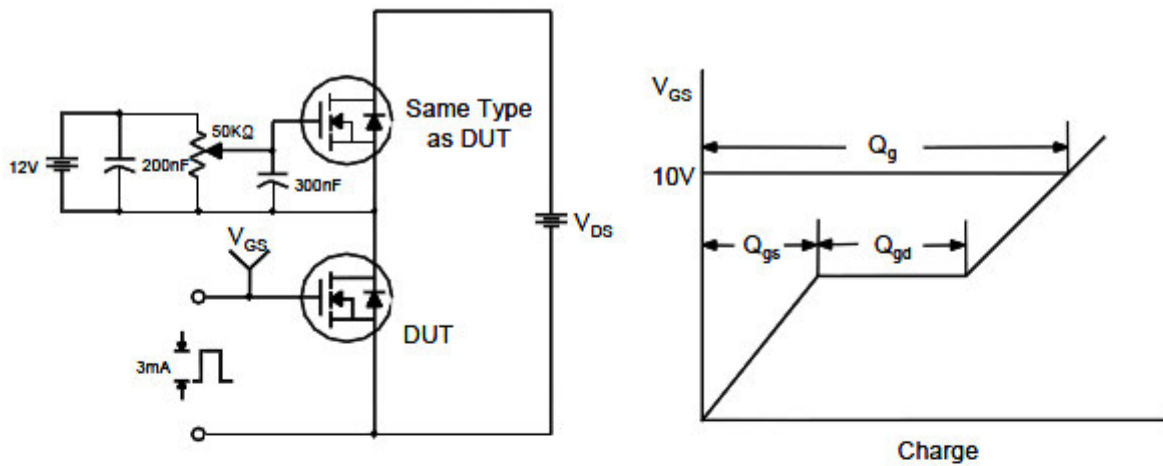
Single Pulse Power, Junction-to-Ambient



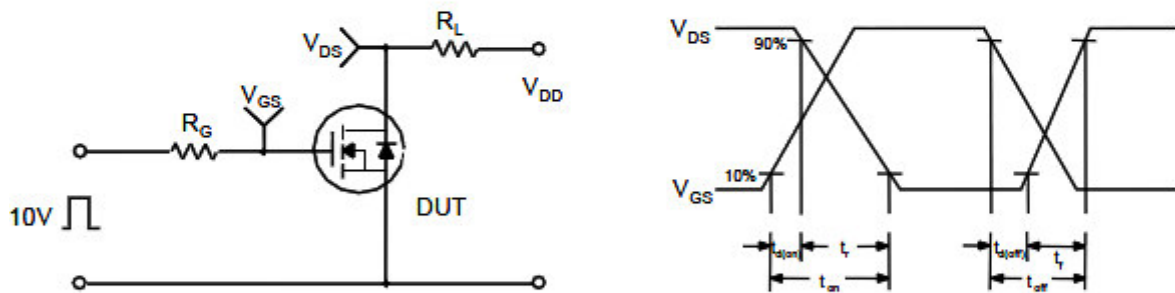
Normalized Thermal Transient Impedance, Junction-to-Case

Typical Performance Characteristics (Continue)

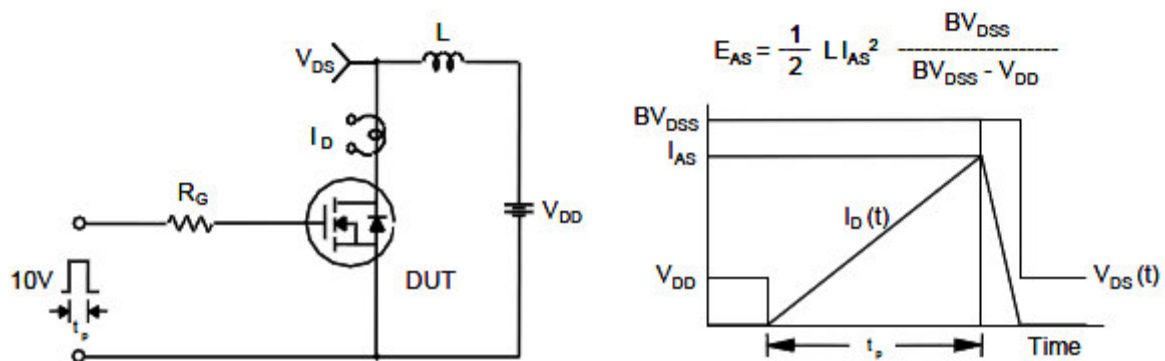
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

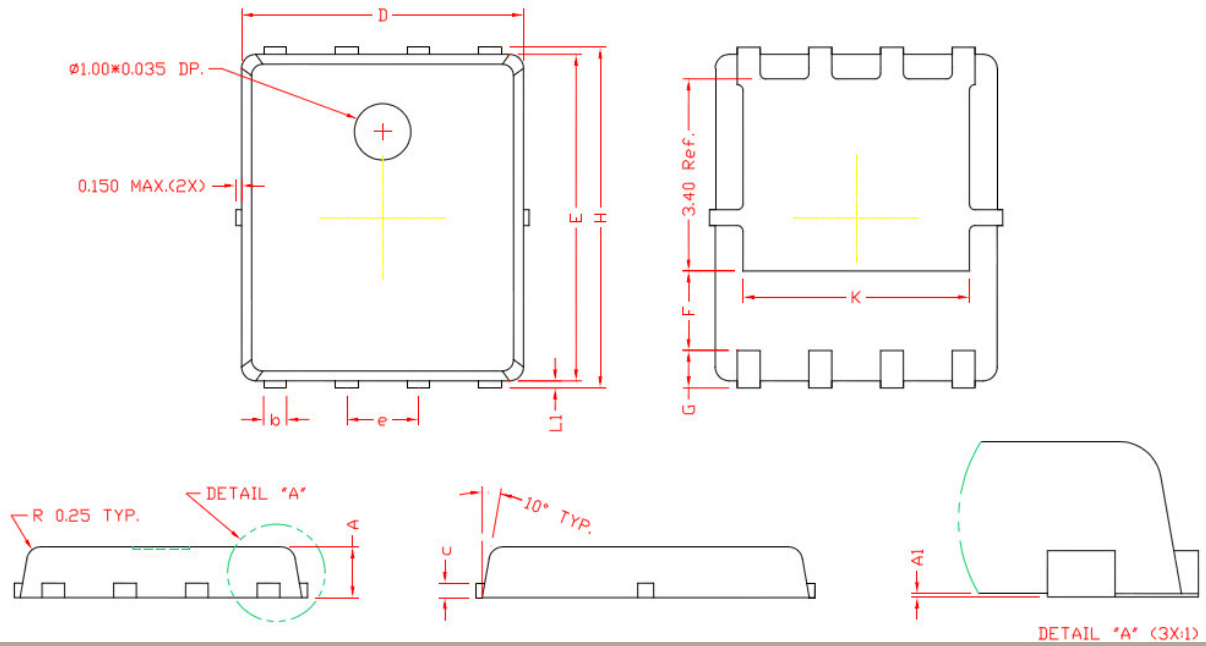


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

DFN5X6-8L








Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.001
b	0.35	0.49	0.013	0.019
c	0.254 (REF)		0.01 (REF)	
D	4.90	5.10	0.192	0.200
E	5.70	5.90	0.224	0.232
F	1.40 (REF)		0.055 (REF)	
e	1.27 (BSC)		0.050 (BSC)	
G	0.60 (REF)		0.023 (REF)	
H	5.95	6.20	0.234	0.244
K	4.00 (REF)		0.157 (REF)	
L1	0.10	0.18	0.003	0.007



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