

GSM6506S

30V N-Channel Enhancement Mode MOSFET

Product Description

GSM6506S, 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.

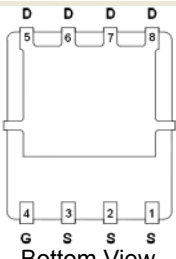
Features

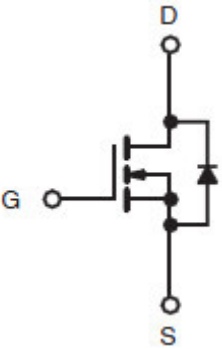
- 30V/18A, $R_{DS(ON)}=2.5m\Omega@V_{GS}=10V$
- 30V/12A, $R_{DS(ON)}=3.5m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN5X6-8L package design

Applications

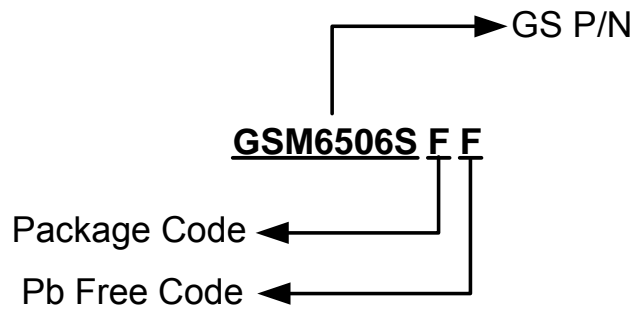
- Synchronous Rectification
- High Power Density DC/DC
- V_{RMS} and Embedded DC/DC

Packages & Pin Assignments

GSM6506SFF (DFN5X6-8L)	
 <p>Bottom View</p>	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

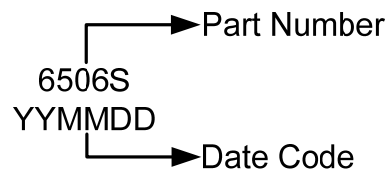


Ordering Information



Part Number	Package	Quantity Reel
GSM6506SFF	DFN5X6-8L	2500 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

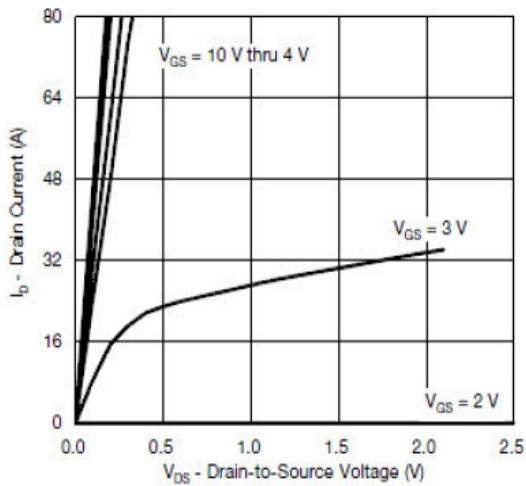
Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	30	V
V _{GSS}	Gate –Source Voltage	±20	V
I _D	Continuous Drain Current (T _J =150°C)	T _A =25°C	34
		T _A =70°C	27
I _{DM}	Pulsed Drain Current	80	A
I _S	Continuous Source Current (Diode Conduction)	40	A
P _D	Power Dissipation	T _C =25°C	48
		T _C =70°C	31
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

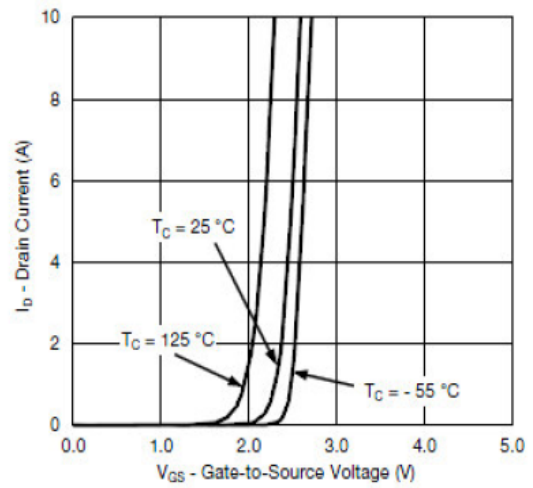
(T_A=25°C Unless otherwise noted)

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	1.62	2.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±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°C			10	
I _{D(ON)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =10V	40			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =18A		1.75	2.5	mΩ
		V _{GS} =4.5V, I _D =12A		2.56	3.5	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =15A		105		S
V _{SD}	Diode Forward Voltage	I _S =5A, V _{GS} =0V		0.7	1.3	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _D =10A		22	35	nC
Q _{gs}	Gate-Source Charge			8.5		
Q _{gd}	Gate-Drain Charge			4.8		
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz		3200		pF
C _{oss}	Output Capacitance			1120		
C _{rss}	Reverse Transfer Capacitance			125		
t _{d(on)}	Turn-On Time	V _{DD} =15V, R _L =1.5Ω, I _D =10A, V _{GEN} =10V, R _G =1.0Ω		12	25	ns
t _r				10	20	
t _{d(off)}	Turn-Off Time			30	60	
t _f				10	20	

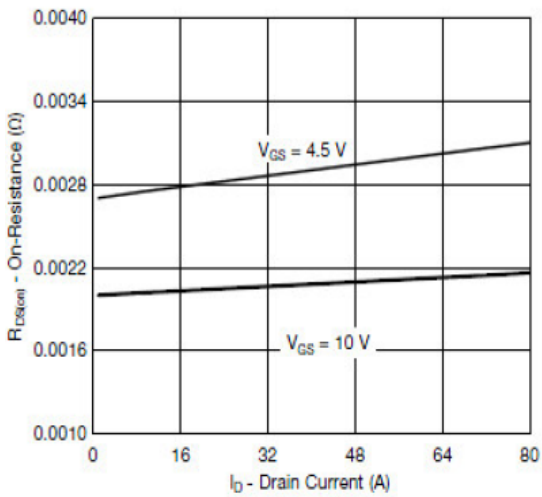
Typical Performance Characteristics



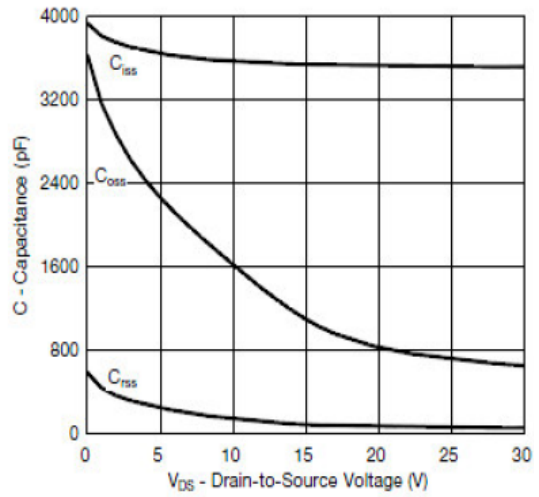
Output Characteristics



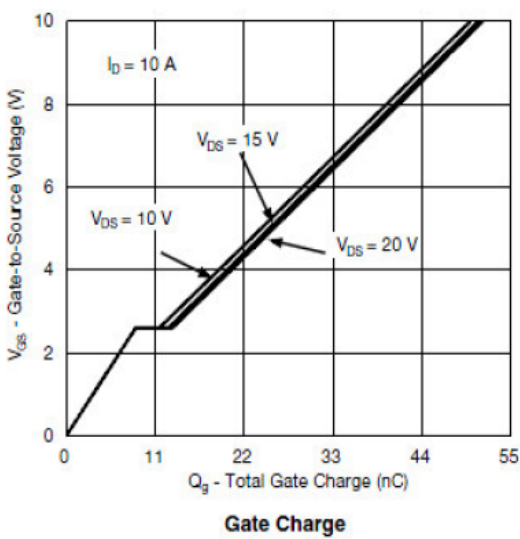
Transfer Characteristics



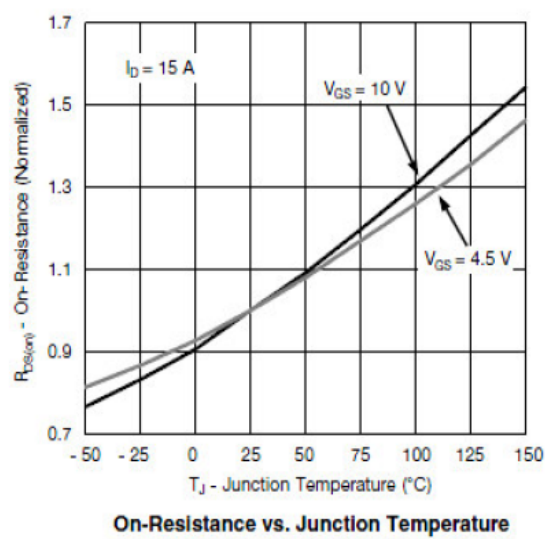
On-Resistance vs. Drain Current



Capacitance

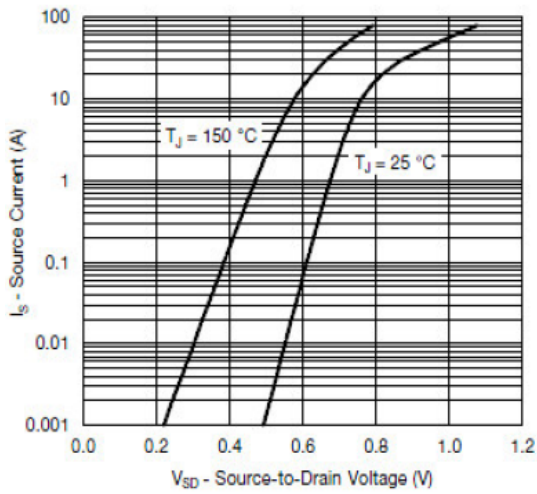


Gate Charge

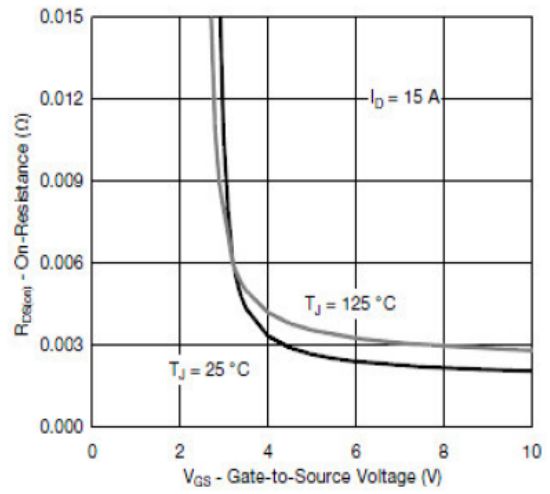


On-Resistance vs. Junction Temperature

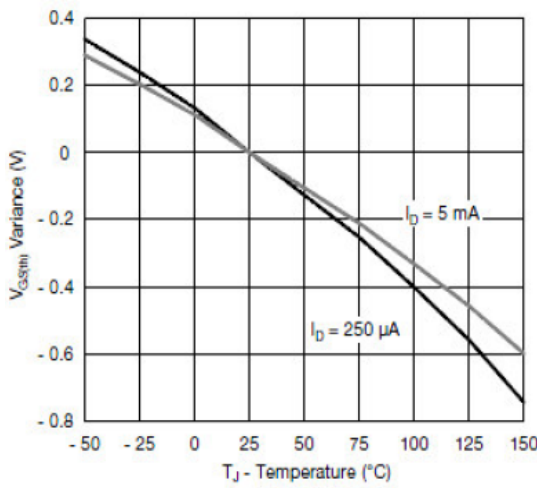
Typical Performance Characteristics (Continue)



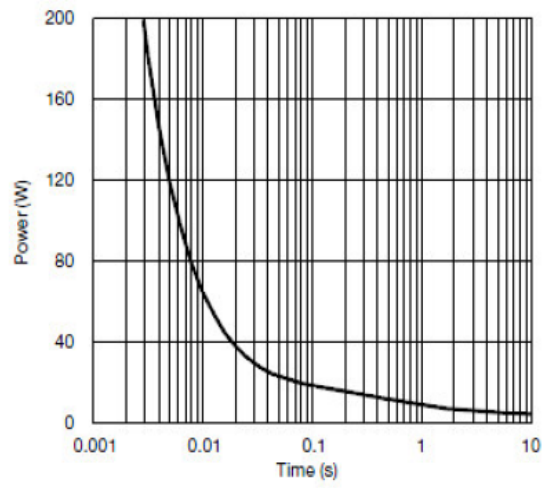
Source-Drain Diode Forward Voltage



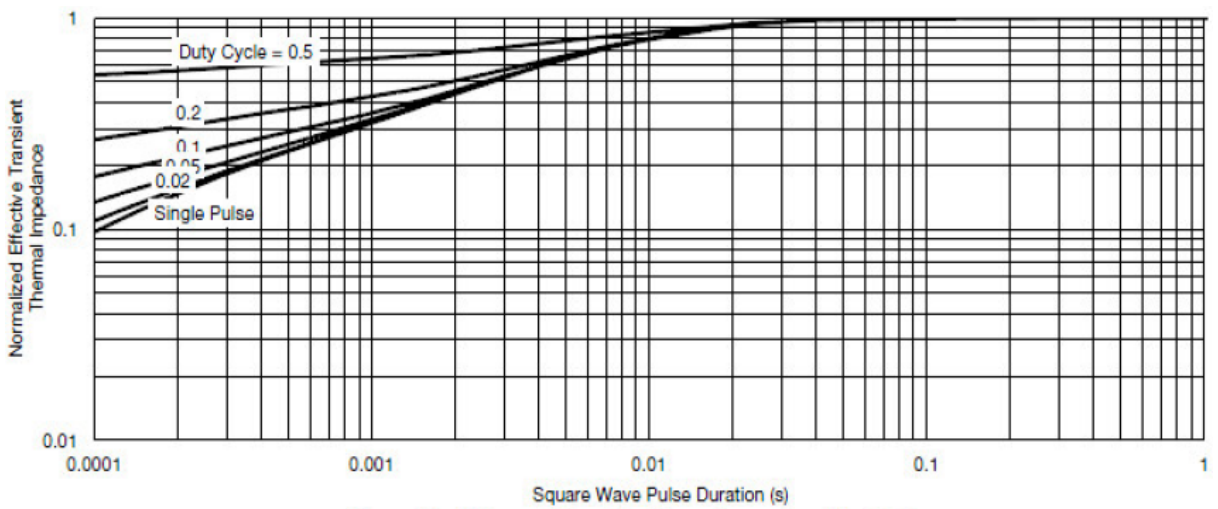
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



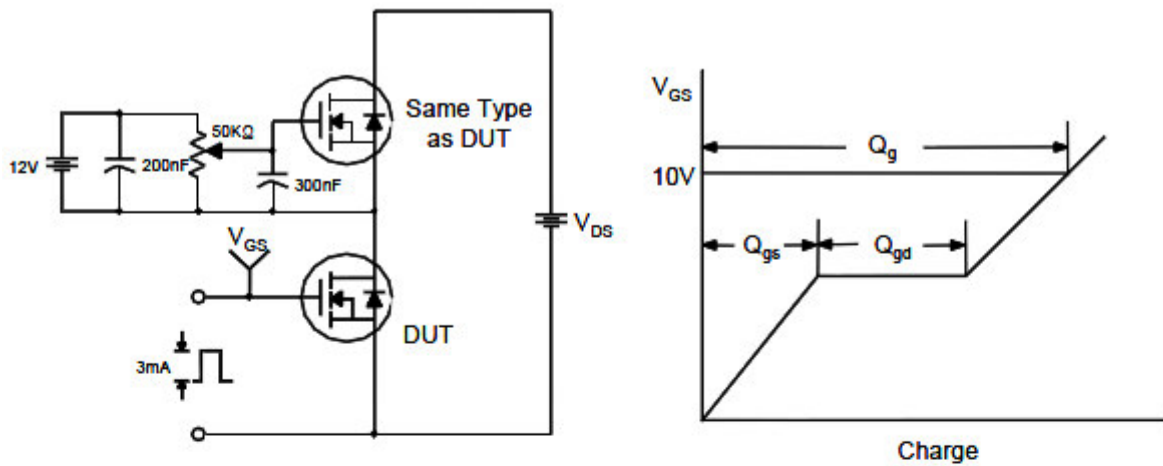
Single Pulse Power, Junction-to-Ambient



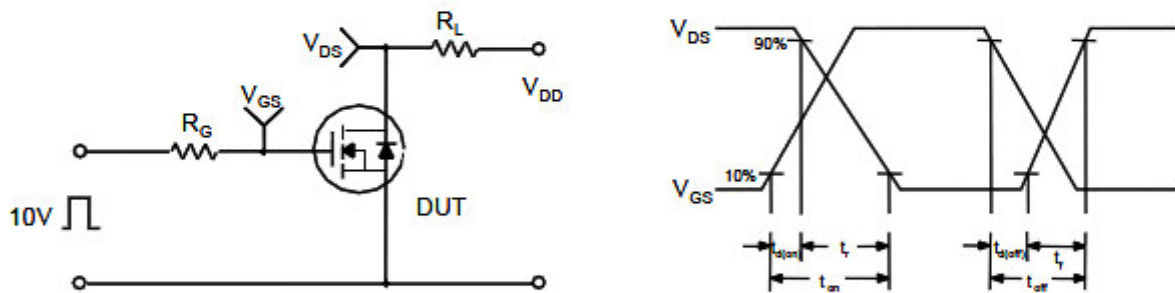
Normalized Thermal Transient Impedance, Junction-to-Case

Typical Performance Characteristics (Continue)

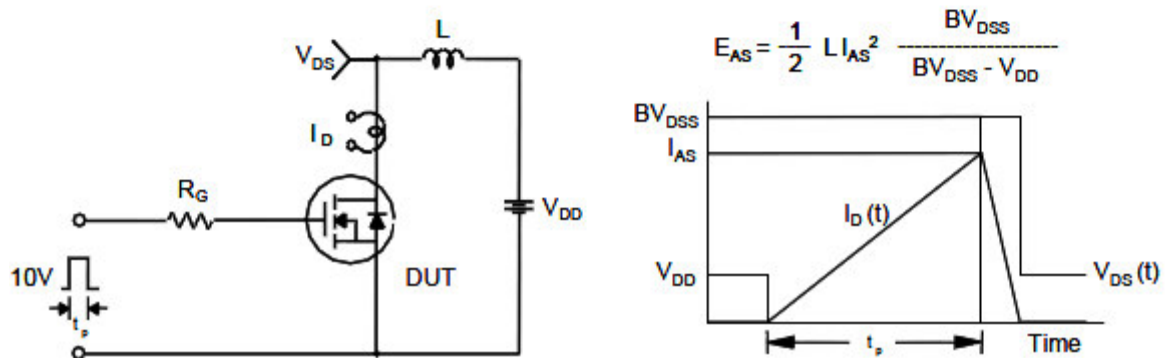
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

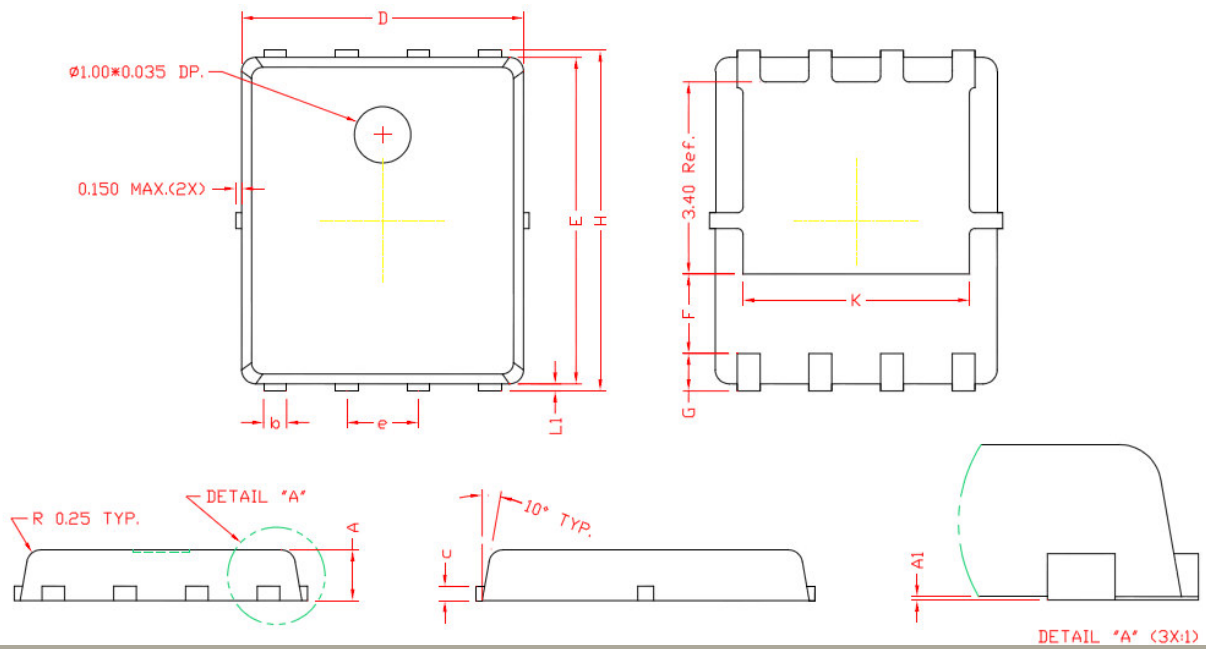


Unclamped Inductive Switching Test Circuit & Waveforms



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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