GSM4172S

30V N-Channel Enhancement Mode MOSFET

Product Description

GSM4172S, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

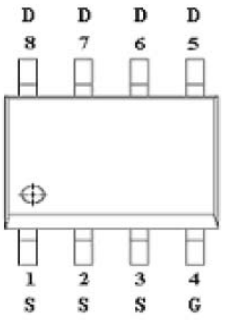
- 30V/15A,$R_{DS(ON)}$=12mΩ@V_{GS}=10V
- 30V/13A,$R_{DS(ON)}$=15mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- SOP-8P package design

Applications

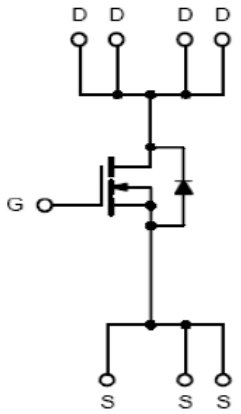
- DC/DC Converter
- Load Switch
- Power Management in Notebook Computer

Packages & Pin Assignments

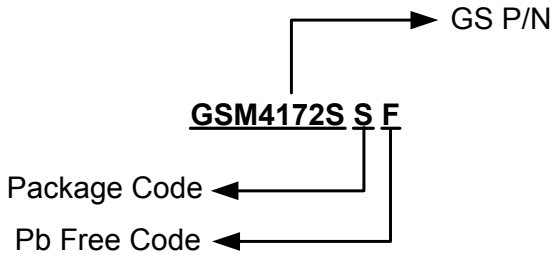
GSM4172SSF (SOP-8P)



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

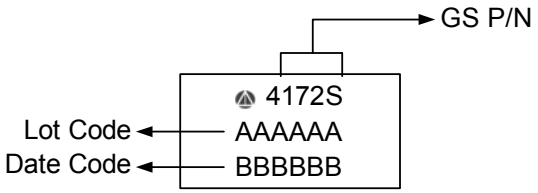


Ordering Information



Part Number	Package	Quantity Reel
GSM4172SSF	SOP-8P	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC unless otherwise noted

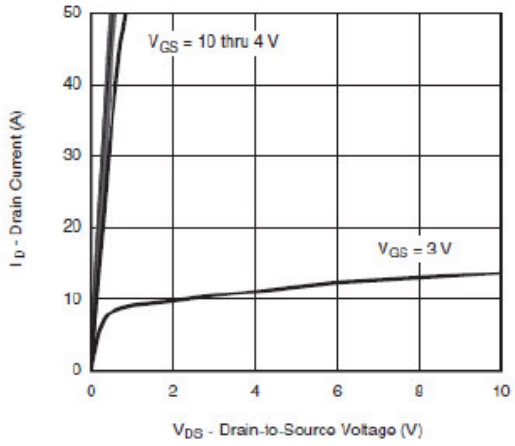
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate –Source Voltage		±20	V
I_D	Continuous Drain Current(T_J=150℃)	T_A=25ºC	15	A
		T_A=70ºC	12	
I_{DM}	Pulsed Drain Current		50	A
I_S	Continuous Source Current(Diode Conduction)		3.8	A
P_D	Power Dissipation	T_A=25ºC	2.8	W
		T_A=70ºC	1.8	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	ºC/ W

Electrical Characteristics

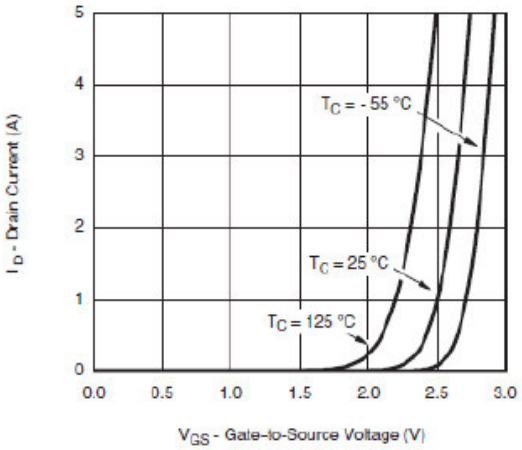
T_A=25ºC unless otherwise noted

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		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=85ºC			10	
$I_{D(on)}$	On-State Drain Current	V_{DS}≥5V,V_{GS}=10V	15			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=15A		8	12	mΩ
		V_{GS}=4.5V,I_D=13A		12	15	
g_{FS}	Forward Transconductance	V_{DS}=15V,I_D=10A		24		S
V_{SD}	Diode Forward Voltage	I_S=12A,V_{GS}=0V		0.8	1.3	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V,f=1MHz		950		pF
C_{oss}	Output Capacitance			200		
C_{rss}	Reverse Transfer Capacitance			85		
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V,I_D=10A		10	15	nC
Q_{gs}	Gate-Source Charge			3.8		
Q_{gd}	Gate-Drain Charge			3.2		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, R_L=1.5Ω,I_D=10A, V_{GEN}=10V,R_G=1Ω		10	20	ns
t_r				10	20	
$t_{d(off)}$	Turn-Off Time			20	35	
t_f				10	20	

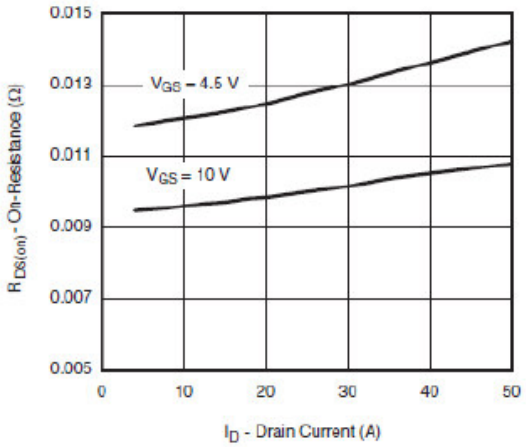
Typical Performance Characteristics



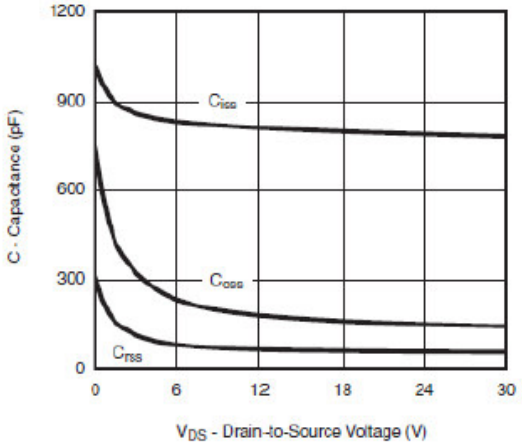
Output Characteristics



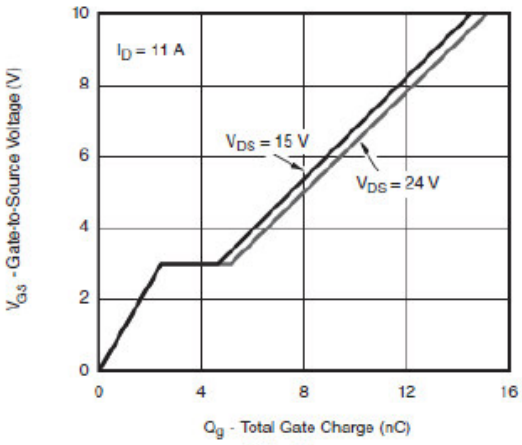
Transfer Characteristics



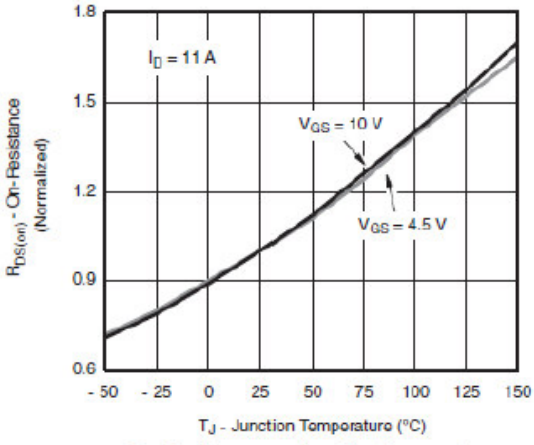
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

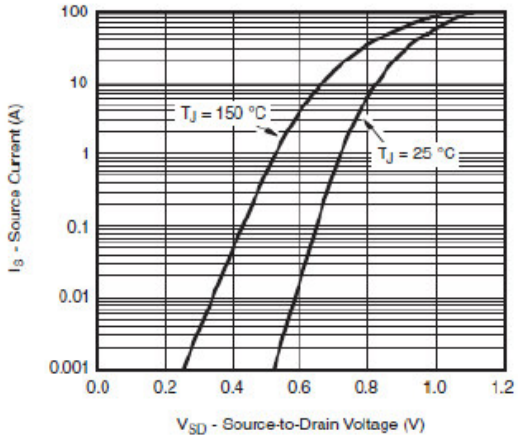


Gate Charge

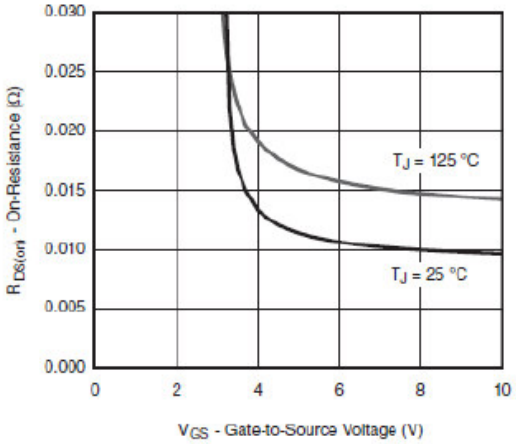


On-Resistance vs. Junction Temperature

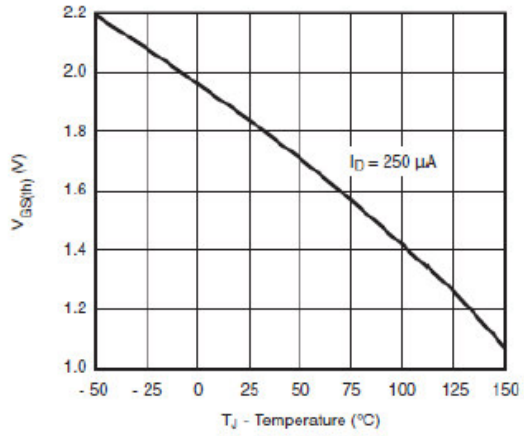
Typical Performance Characteristics (continue)



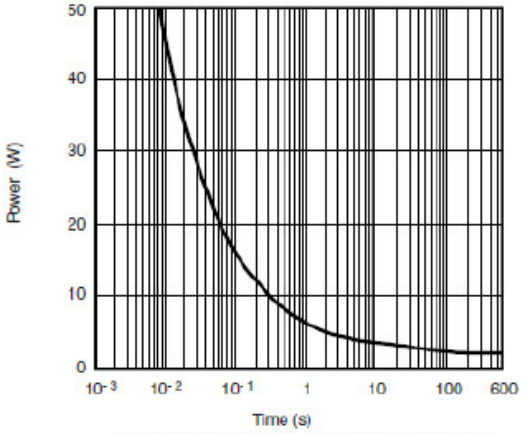
Source-Drain Diode Forward Voltage



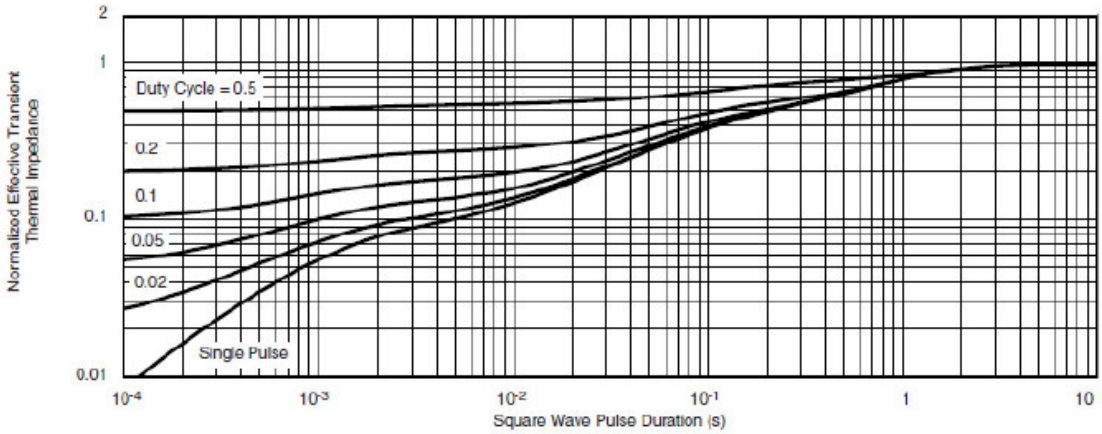
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



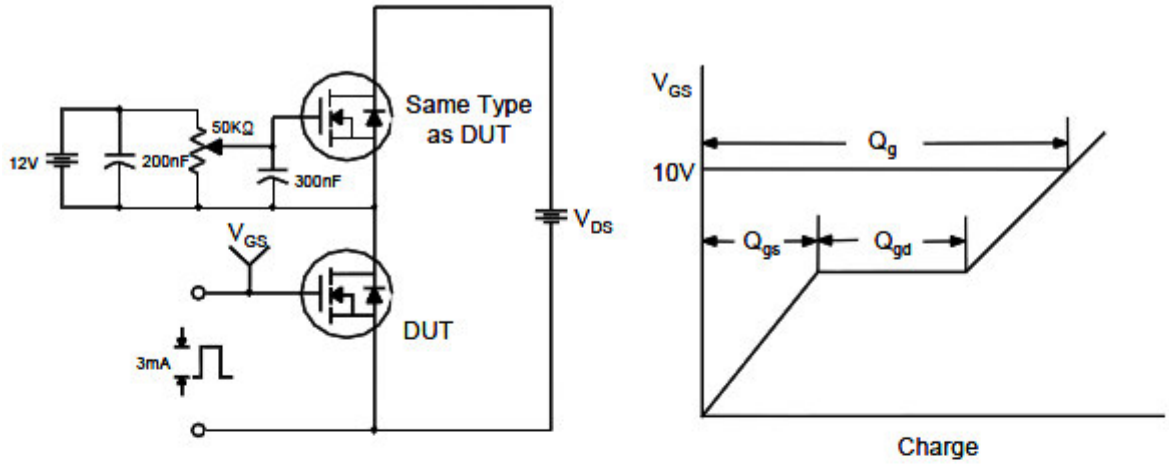
Single Pulse Power, Junction-to-Ambient



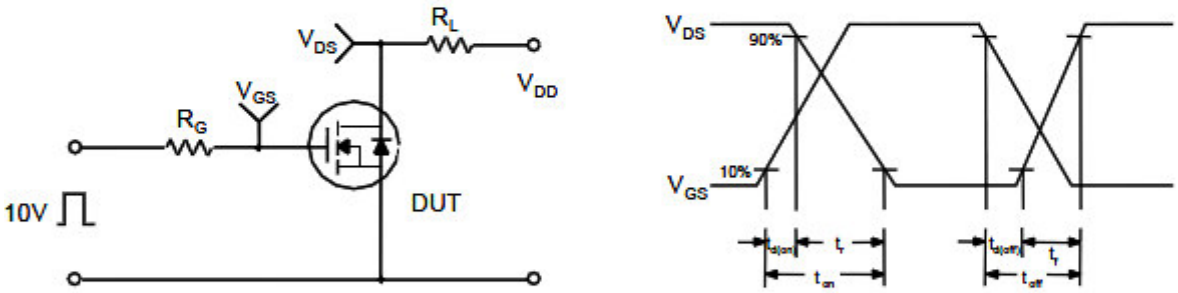
Normalized Thermal Transient Impedance, Junction-to-Foot

Typical Performance Characteristics (continue)

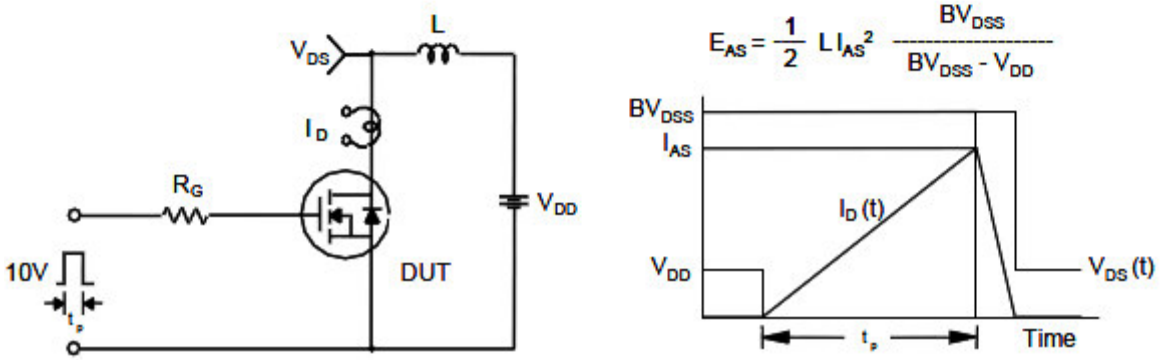
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

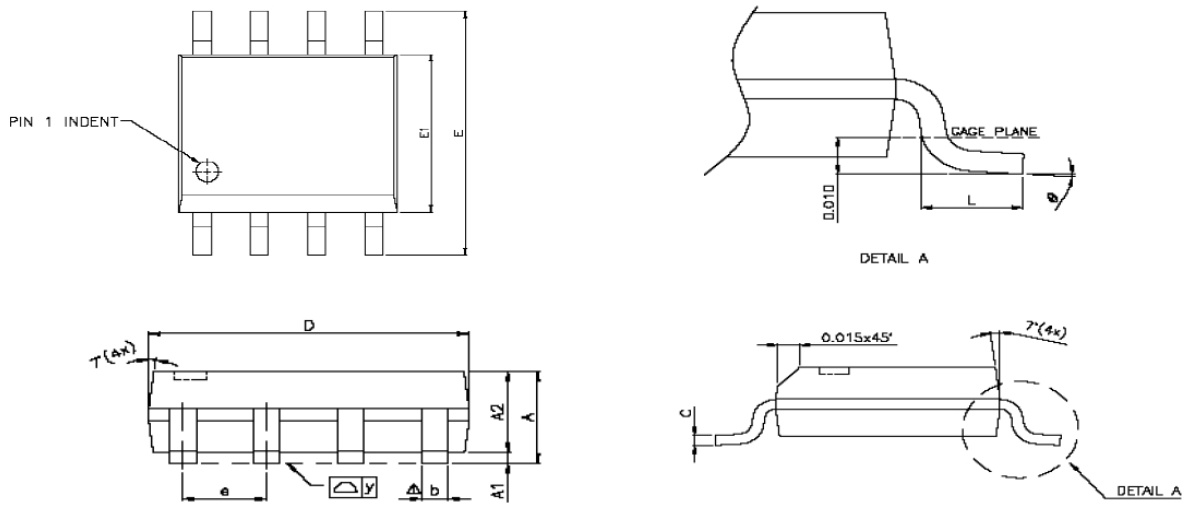


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8P



Dimensions						
Symbol	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	-	0.25	0.004	-	0.010
A2	-	1.45	-	-	0.057	-
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	-	1.27	-	-	0.050	-
L	0.38	0.71	1.27	0.015	0.028	0.050
y	-	-	0.076	-	-	0.003
θ	0°	-	8°	0°	-	8°

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