

GSM4422

30V N-Channel Enhancement Mode MOSFET

Product Description

GSM4422, 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.

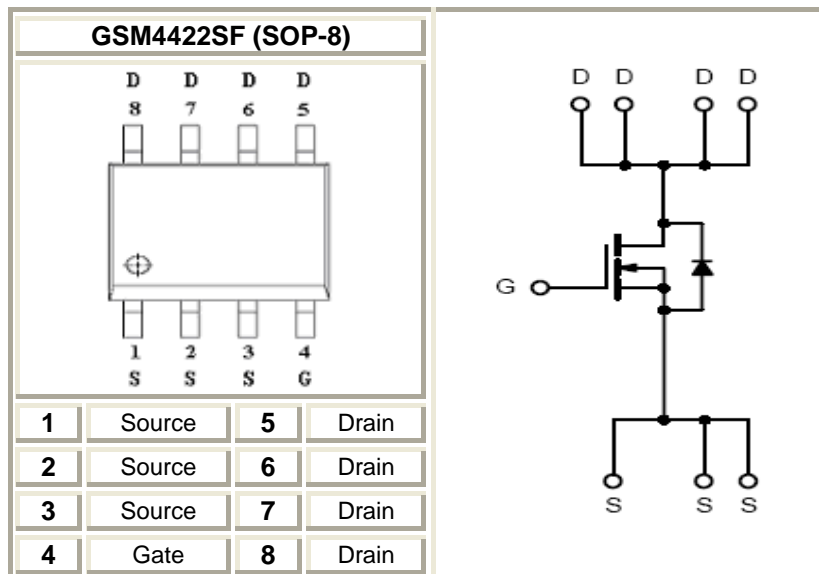
Features

- 30V/ 6.8A, $R_{DS(ON)}=36m\Omega@V_{GS}=10V$
- 30V/ 6.0A, $R_{DS(ON)}=42m\Omega@V_{GS}=4.5V$
- 30V/ 5.2A, $R_{DS(ON)}=50m\Omega@V_{GS}=2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- SOP-8P package design

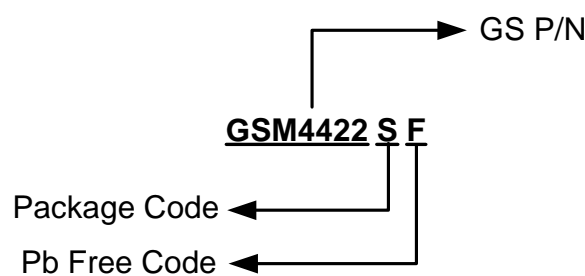
Applications

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

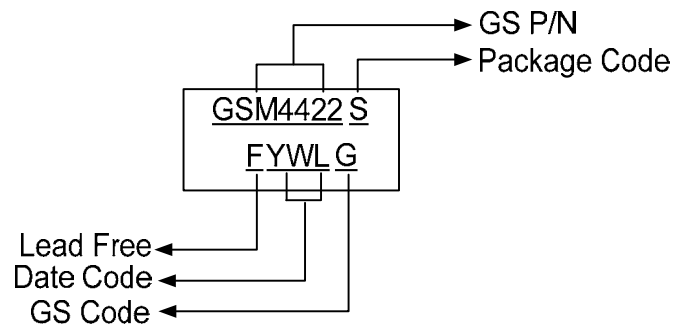
Packages & Pin Assignments



Ordering Information



Marking Information



Absolute Maximum Ratings

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

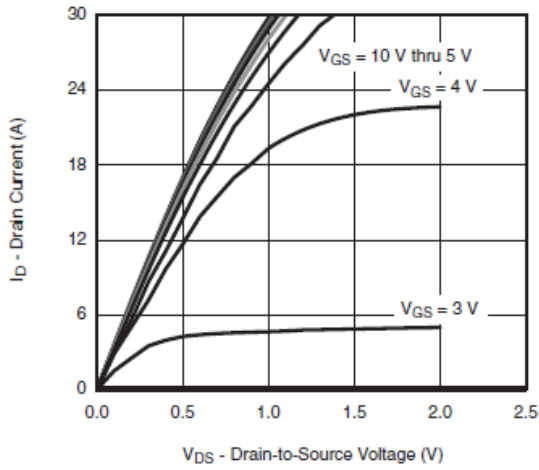
Symbol	Parameter	Typical	Unit
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate –Source Voltage	± 12	V
I_D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_A=25^\circ\text{C}$	6.8
		$T_A=70^\circ\text{C}$	5.2
I_{DM}	Pulsed Drain Current	30	A
I_S	Continuous Source Current(Diode Conduction)	2.6	A
P_D	Power Dissipation	$T_A=25^\circ\text{C}$	2.8
		$T_A=70^\circ\text{C}$	1.8
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	62.5	$^\circ\text{C}/\text{W}$

Electrical Characteristics

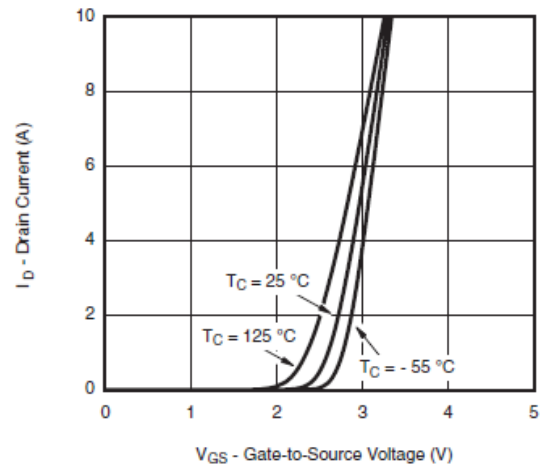
($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		1.0	
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 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	$V_{DS} \geq 5V, V_{GS}=10V$	10			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=6.8A$		26	36	m Ω
		$V_{GS}=4.5V, I_D=6.0A$		30	42	
		$V_{GS}=2.5V, I_D=5.2A$		38	50	
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=5.0A$		16		S
V_{SD}	Diode Forward Voltage	$I_S=3.4A, V_{GS}=0V$		0.85	1.2	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		520		pF
C_{oss}	Output Capacitance			80		
C_{riss}	Reverse Transfer Capacitance			40		
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V$ $I_D=5A$		4	8	nC
Q_{gs}	Gate-Source Charge			2		
Q_{gd}	Gate-Drain Charge			1.2		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=3\Omega$ $I_D=5A, V_{GEN}=10V$ $R_G=1\Omega$		5	10	ns
t_r				10	18	
$t_{d(off)}$	Turn-Off Time			10	20	
t_f				6	12	

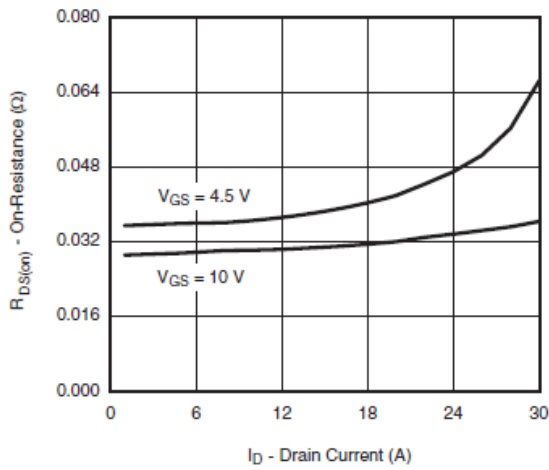
Typical Performance Characteristics



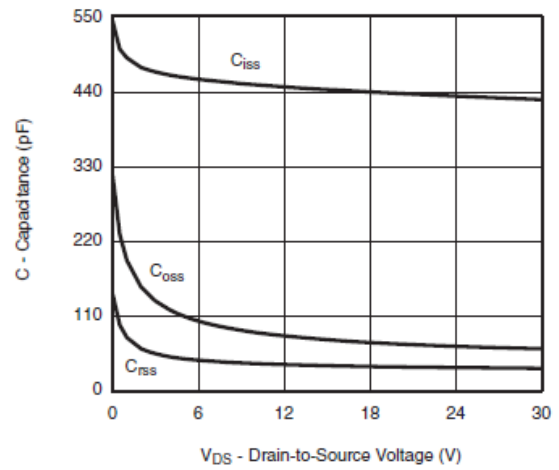
Output Characteristics



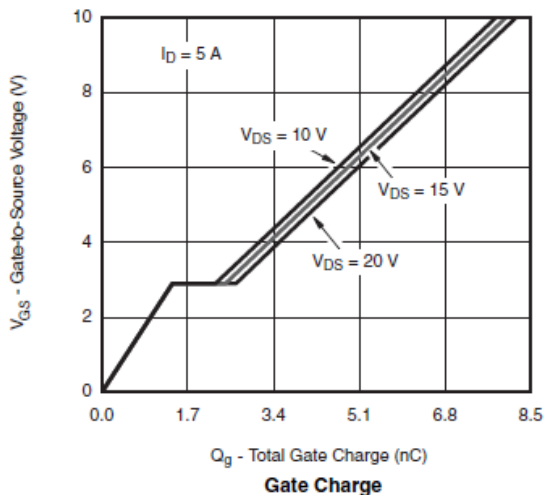
Transfer Characteristics



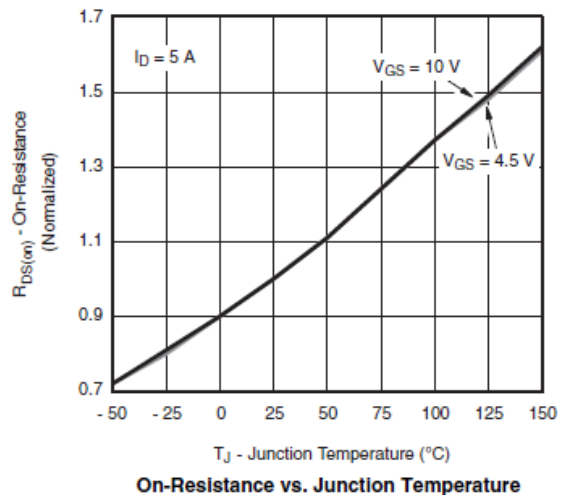
On-Resistance vs. Drain Current



Capacitance

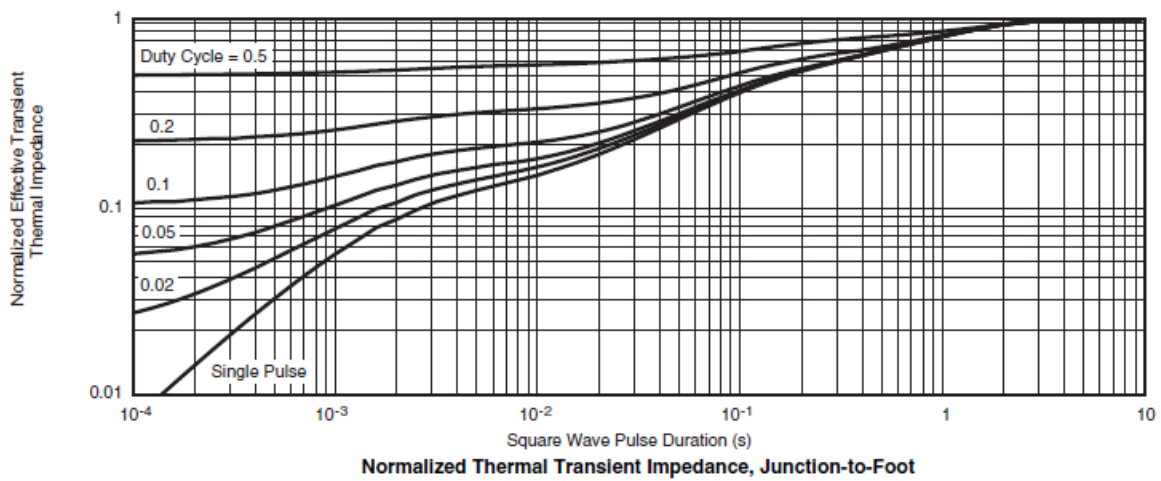
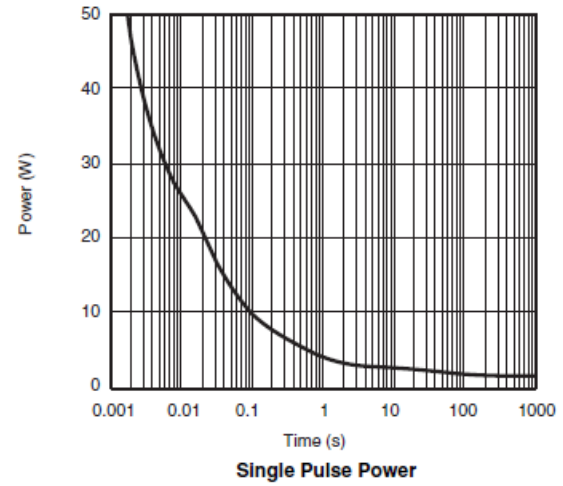
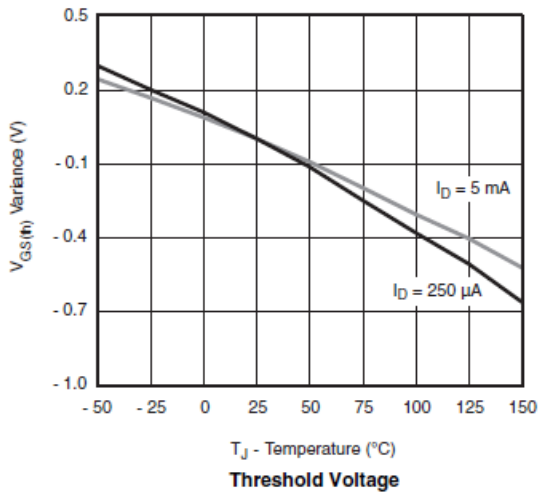
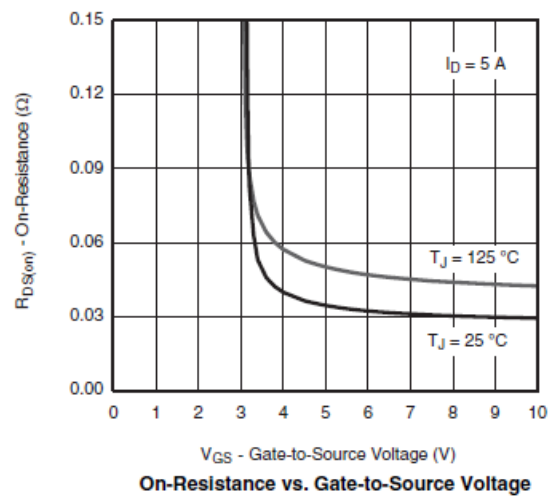
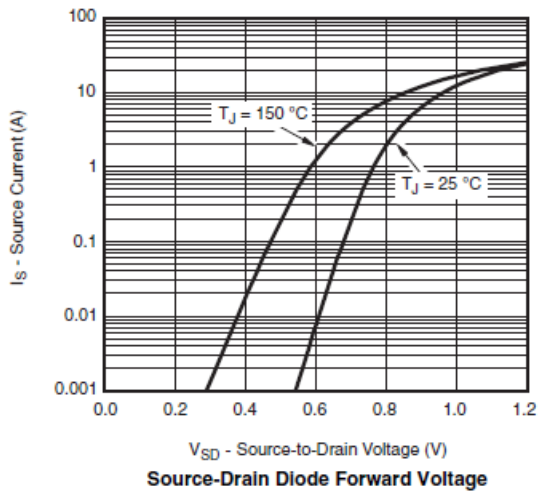


Gate Charge



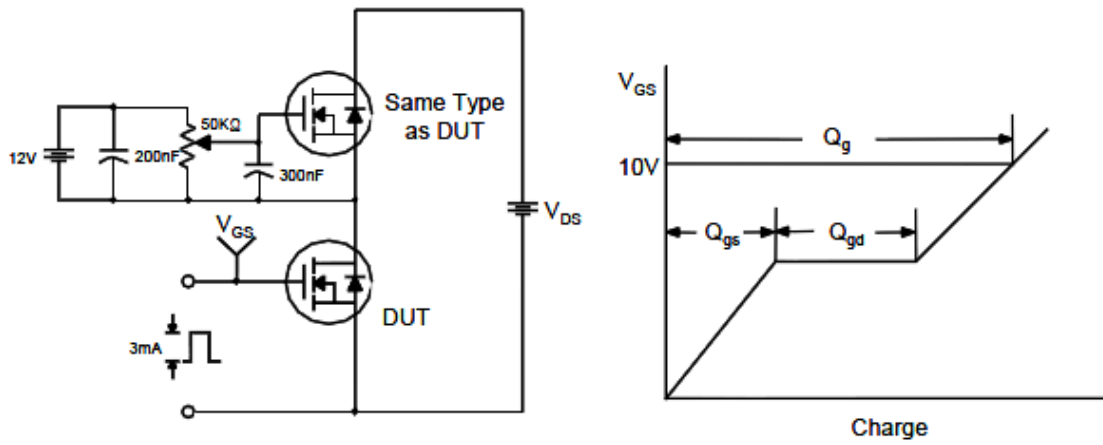
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (continue)

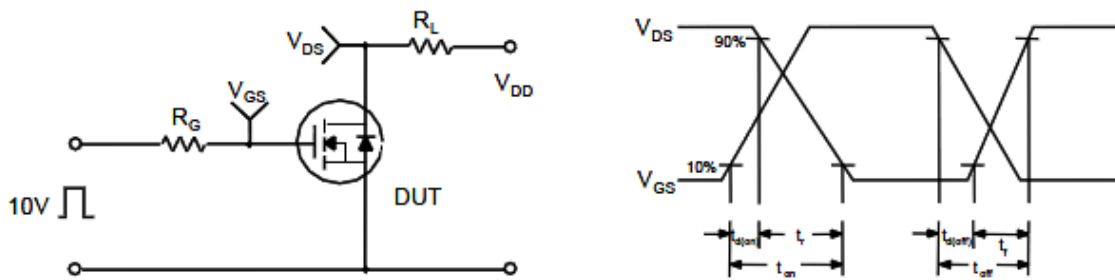


Typical Characteristics

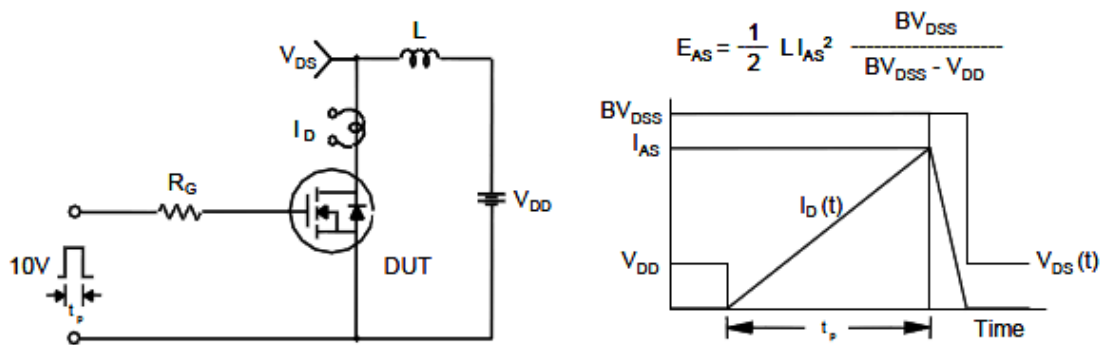
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

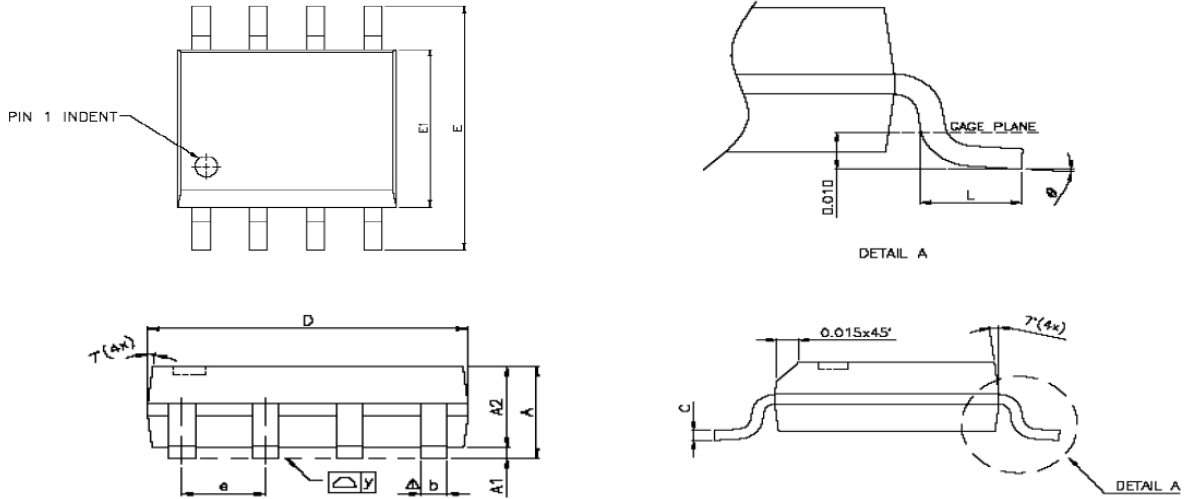


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8







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
Δy	-	-	0.076	-	-	0.003
θ	0°	-	8°	0°	-	8°



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