

GSM4401S

40V P-Channel Enhancement Mode MOSFET

Product Description

GSM4401S, P-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

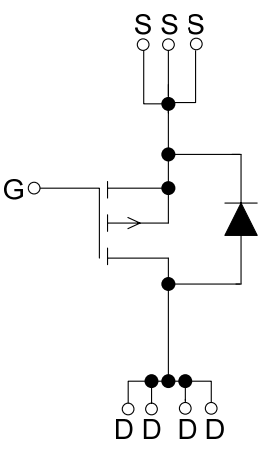
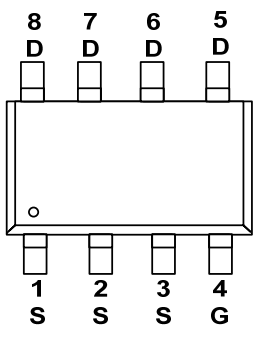
- $-40V/-10.2A, R_{DS(ON)}=13m\Omega@V_{GS}=-10V$
- $-40V/-8.4A, R_{DS(ON)}=16m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- SOP-8 package design

Applications

- LED Display
- Load Switch
- POL
- Power Management in Notebook Computer

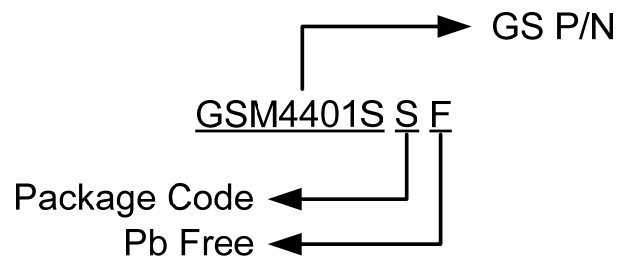
Packages & Pin Assignments

GSM4401SSF (SOP-8)



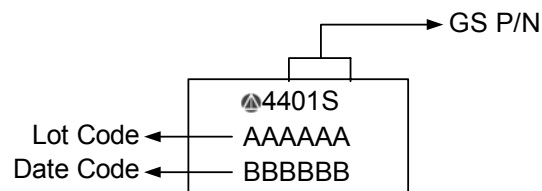
Pin	Description	Pin	Description
1	Source	5	Drain
2	Source	6	Drain
3	Source	7	Drain
4	Gate	8	Drain

Ordering Information



Part Number	Package	Quantity Reel
GSM4401SSF	SOP-8	3000PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

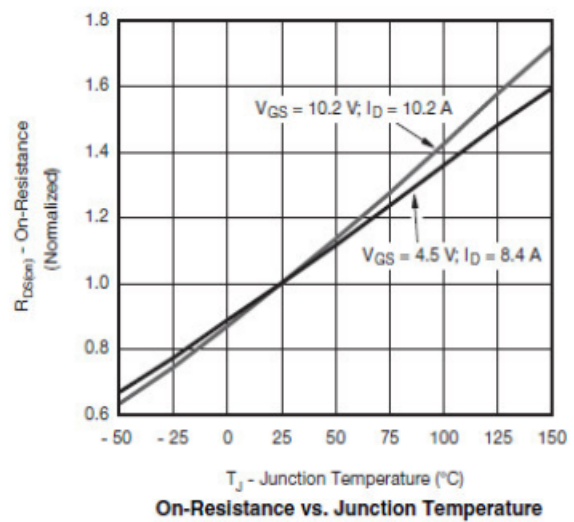
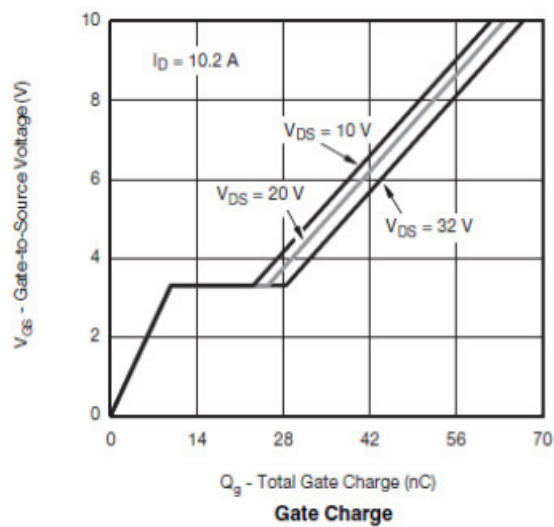
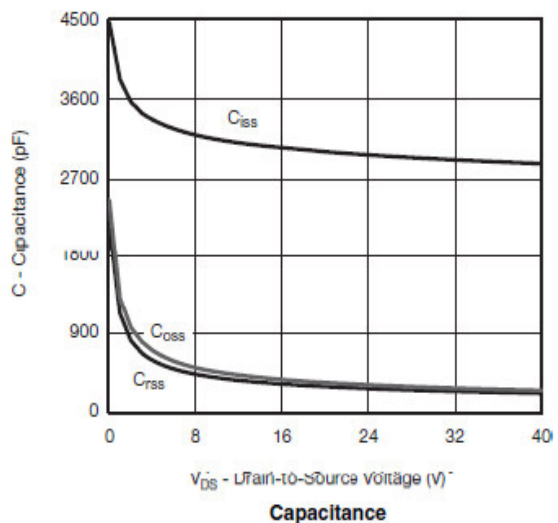
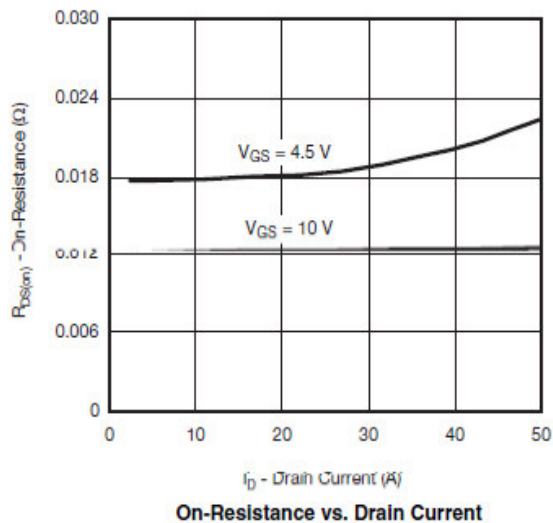
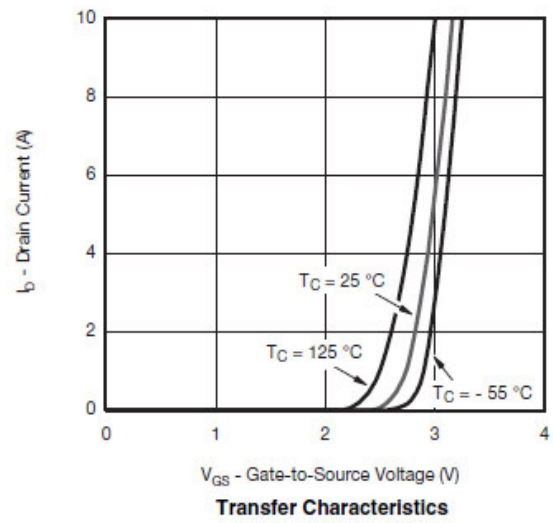
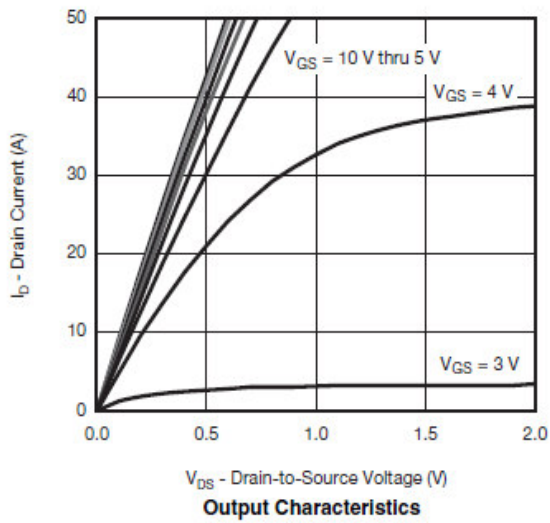
Symbol	Parameter	Typical	Unit	
V _{DSS}	Drain-Source Voltage	-40	V	
V _{GSS}	Gate -Source Voltage	±20	V	
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	-10.2	A
		T _A =70°C	-8.4	
I _{DM}	Pulsed Drain Current	-50	A	
I _S	Continuous Source Current(Diode Conduction)	-2.1	A	
P _D	Power Dissipation	T _A =25°C	2.8	W
		T _A =70°C	1.8	
T _J	Operating Junction Temperature	150	°C	
T _{STG}	Storage Temperature Range	-55/150	°C	
R _{θJA}	Thermal Resistance-Junction to Ambient	62.5	°C/W	

Electrical Characteristics

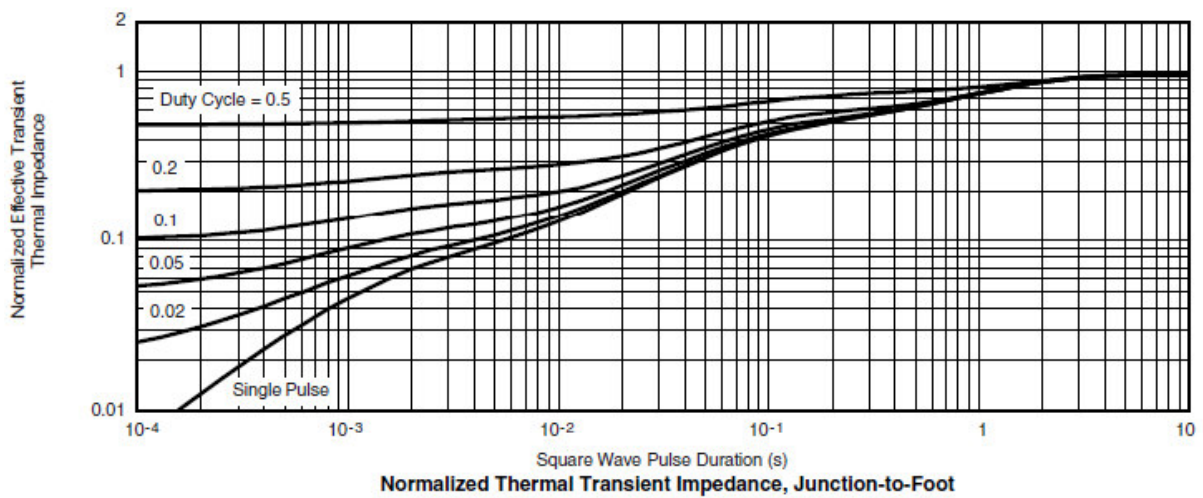
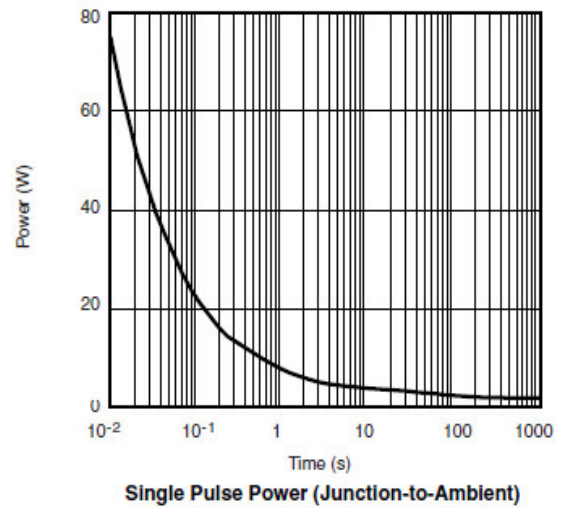
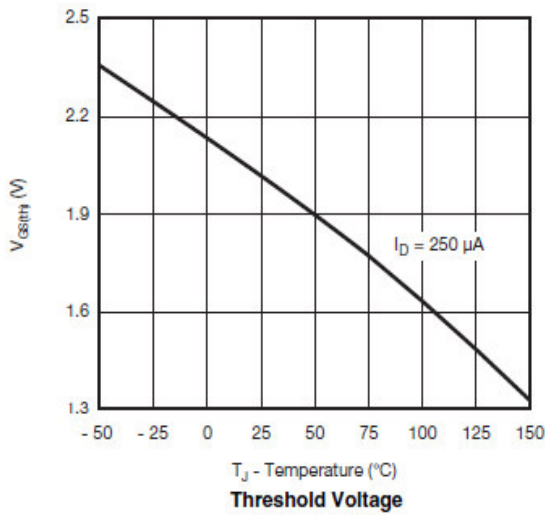
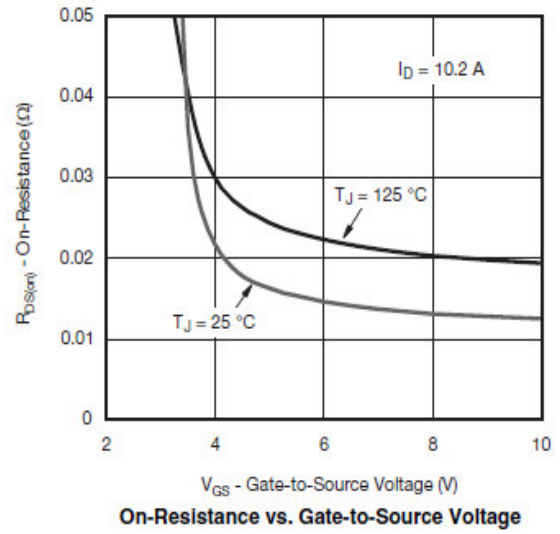
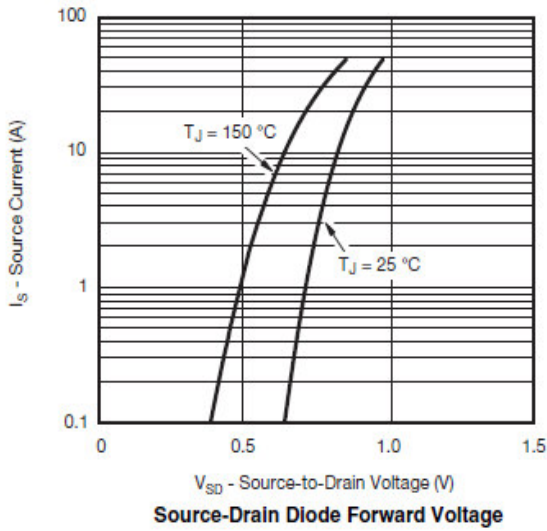
T_A=25°C Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-40			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} =-32V, V _{GS} =0V			-1	uA
		V _{DS} =-32V, V _{GS} =0V, T _J =85°C			-20	
I _{D(on)}	On-State Drain Current	V _{DS} ≤-5V, V _{GS} =-10V	-25			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-10V, I _D =-10.2A		9.6	13	mΩ
		V _{GS} =-4.5V, I _D =-8.4A		12.7	16	
g _{FS}	Forward Transconductance	V _{DS} =-15V, I _D =-10.2A		37		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.7	-1.3	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-4.5V, I _D =-10.2A		30	50	nC
Q _{gs}	Gate-Source Charge			10		
Q _{gd}	Gate-Drain Charge			16		
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, f=1MHz		3000		pF
C _{oss}	Output Capacitance			350		
C _{rss}	Reverse Transfer Capacitance			300		
t _{d(on)}	Turn-On Time	V _{DD} =-20V, R _L =2.4Ω, I _D =-8.2A, V _{GEN} =-10V, R _G =1Ω		15	30	ns
t _r				10	20	
t _{d(off)}	Turn-Off Time			45	80	
t _f				10	20	

Typical Performance Characteristics

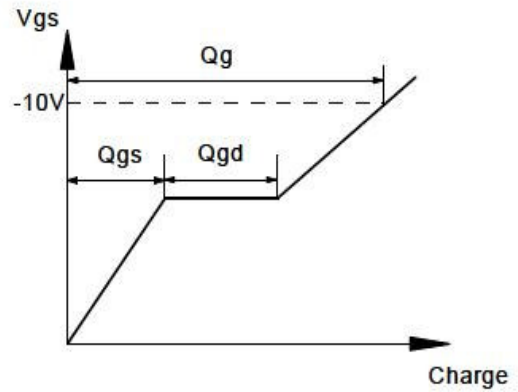
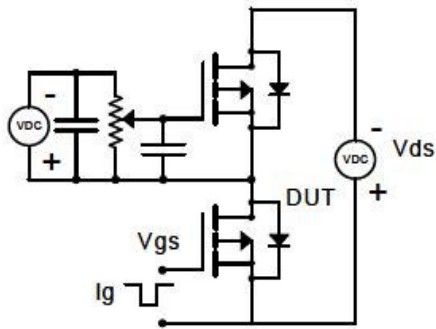


Typical Performance Characteristics (Continue)

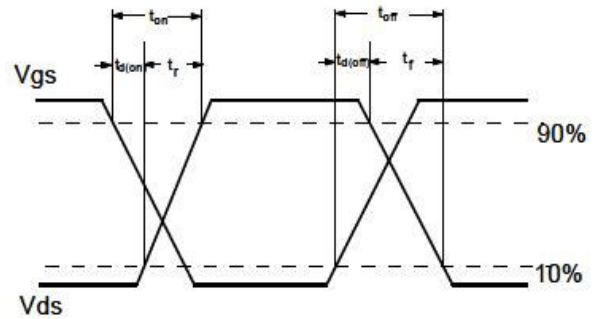
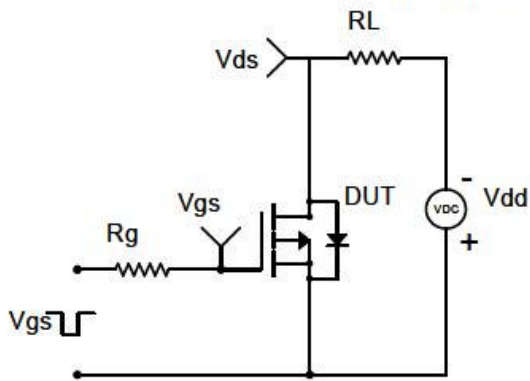


Typical Performance Characteristics(Continue)

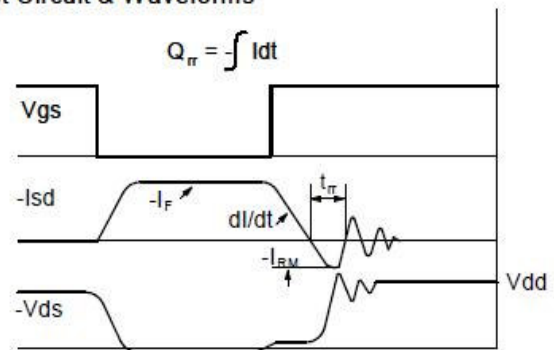
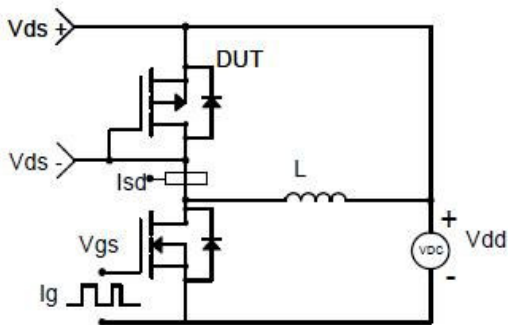
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

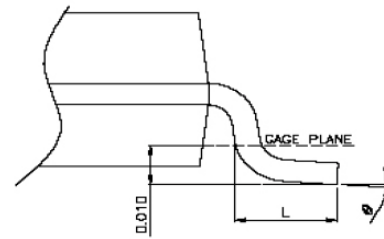
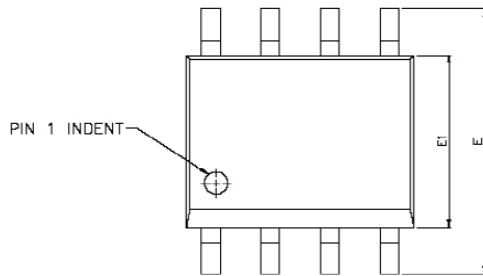


Diode Recovery Test Circuit & Waveforms

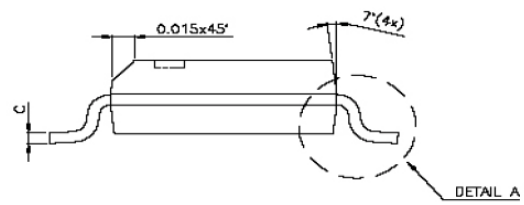
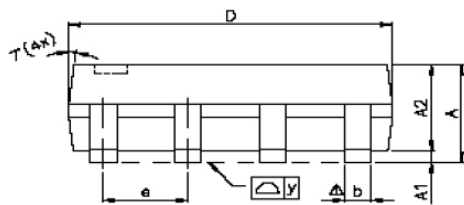


Package Dimension

SOP-8



DETAIL A







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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