

GSM2312A

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM2312A, 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.

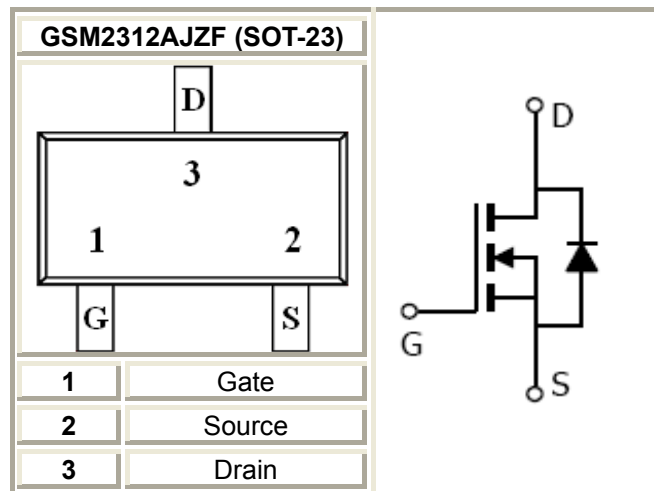
Features

- 20V/2.8A, $R_{DS(ON)}=45m\Omega@V_{GS}=4.5V$
- 20V/2.2A, $R_{DS(ON)}=48m\Omega@V_{GS}=2.5V$
- 20V/1.8A, $R_{DS(ON)}=64m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

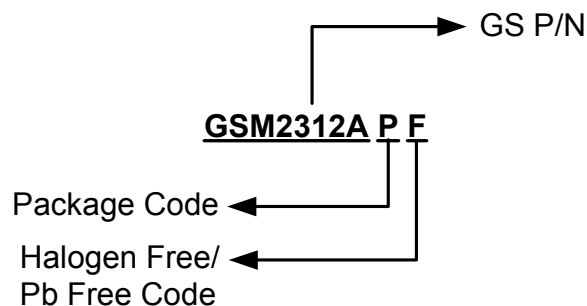
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

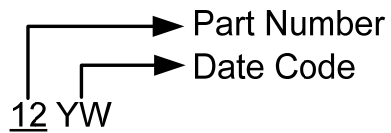
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM2312AJZF	SOT-23	<u>12</u> YW

Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

Symbol	Parameter	Typical	Unit
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate –Source Voltage	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	2.8
		T _A =70°C	1.8
I _{DM}	Pulsed Drain Current	6	A
I _S	Continuous Source Current(Diode Conduction)	1.6	A
P _D	Power Dissipation	T _A =25°C	1.25
		T _A =70°C	0.8
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

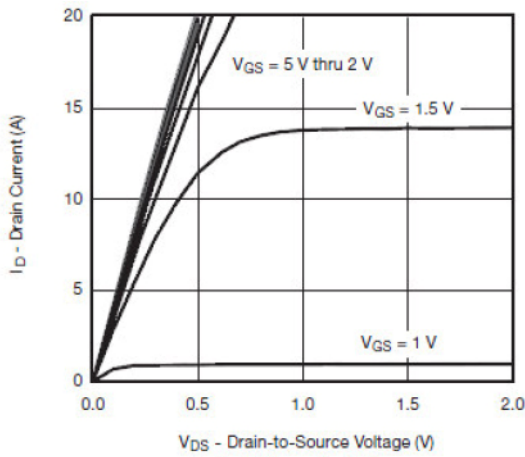
Electrical Characteristics

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

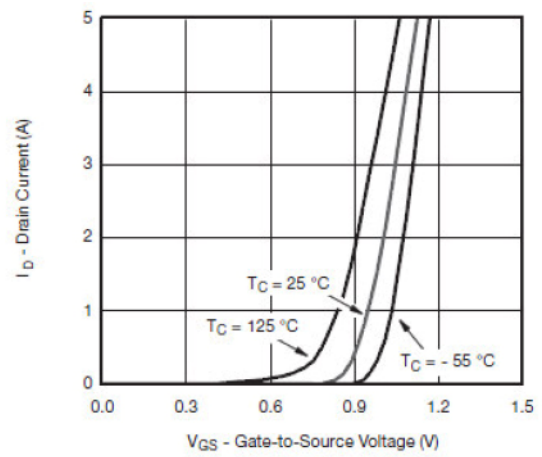
Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		0.8	
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1	uA
		$V_{DS}=16V, V_{GS}=0V, T_J=85^\circ\text{C}$			10	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=4.5V$	4			A
		$V_{DS}\geq 5V, V_{GS}=2.5V$	3			
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=2.8A$		42	45	m Ω
		$V_{GS}=2.5V, I_D=2.2A$		44	48	
		$V_{GS}=1.8V, I_D=1.8A$		60	64	
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=2.8A$		10		S
V_{SD}	Diode Forward Voltage	$I_S=1.6A, V_{GS}=0V$		0.85	1.2	V
Dynamic						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$		850		pF
C_{oss}	Output Capacitance			120		
C_{riss}	Reverse Transfer Capacitance			60		
Q_g	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=2.8A$		8.2	14	nC
Q_{gs}	Gate-Source Charge			1.2		
Q_{gd}	Gate-Drain Charge			1.0		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, R_L=2.2\Omega, I_D=2.8A, V_{GEN}=4.5V, R_G=1\Omega$		10	16	ns
t_r				16	25	
$t_{d(off)}$	Turn-Off Time			31	45	
t_f				10	16	

Typical Performance Characteristics

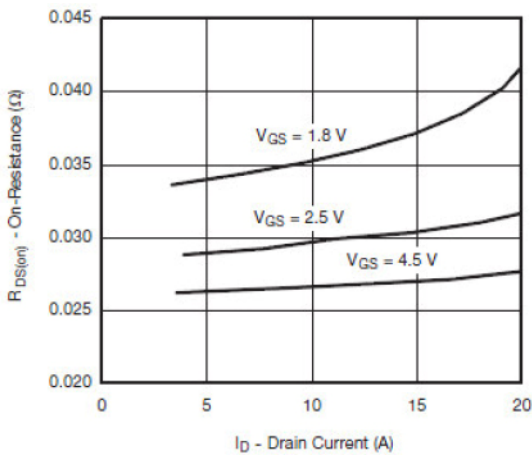
Output Characteristics



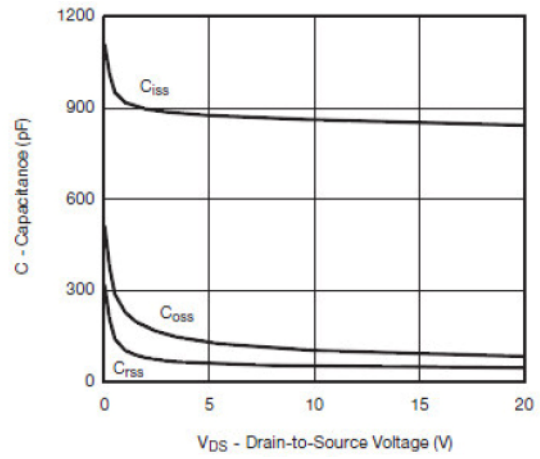
Transfer Characteristics



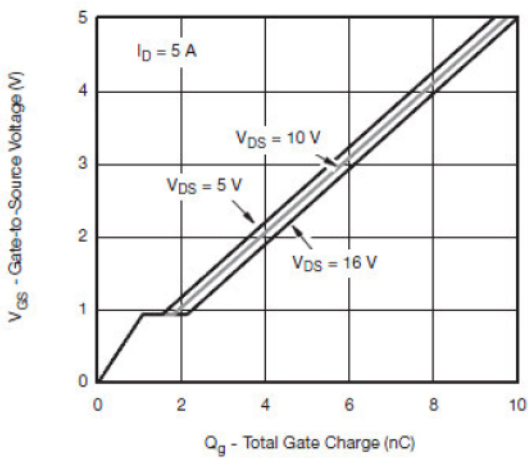
On-Resistance vs. Drain Current and Gate Voltage



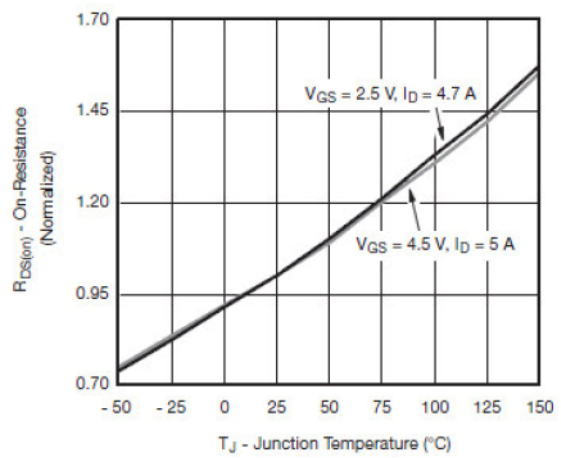
Capacitance



Gate Charge

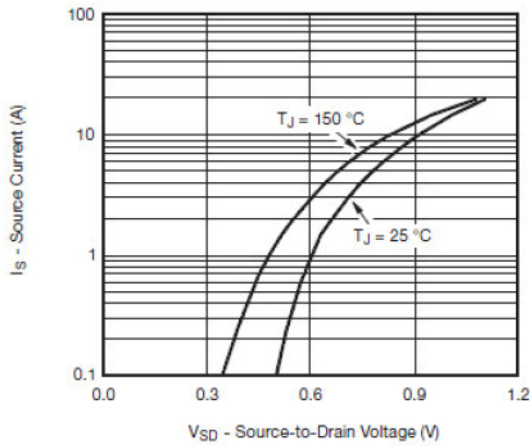


On-Resistance vs. Junction Temperature

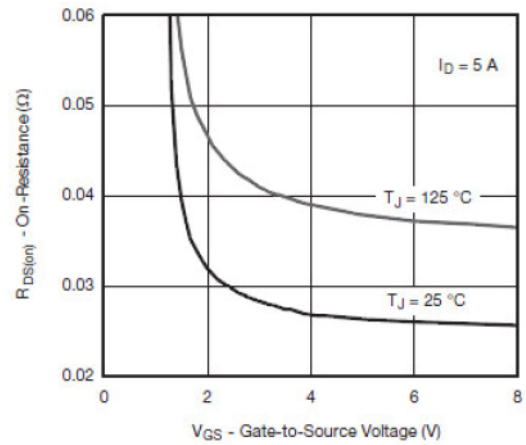


Typical Performance Characteristics (continue)

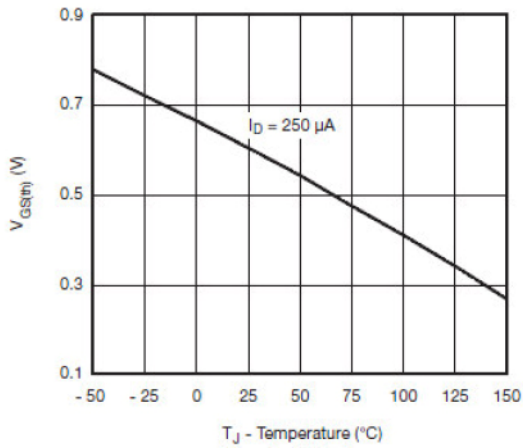
Source-Drain Diode Forward Voltage



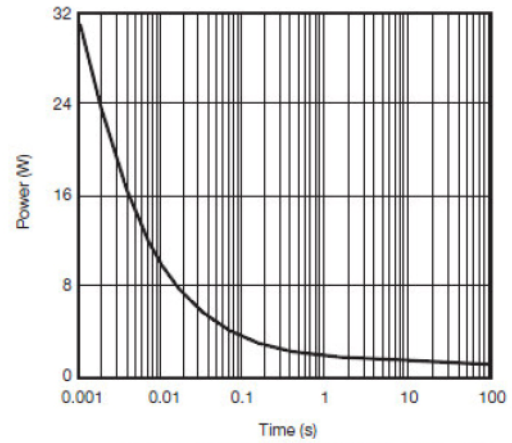
On-Resistance vs. Gate-to-Source Voltage



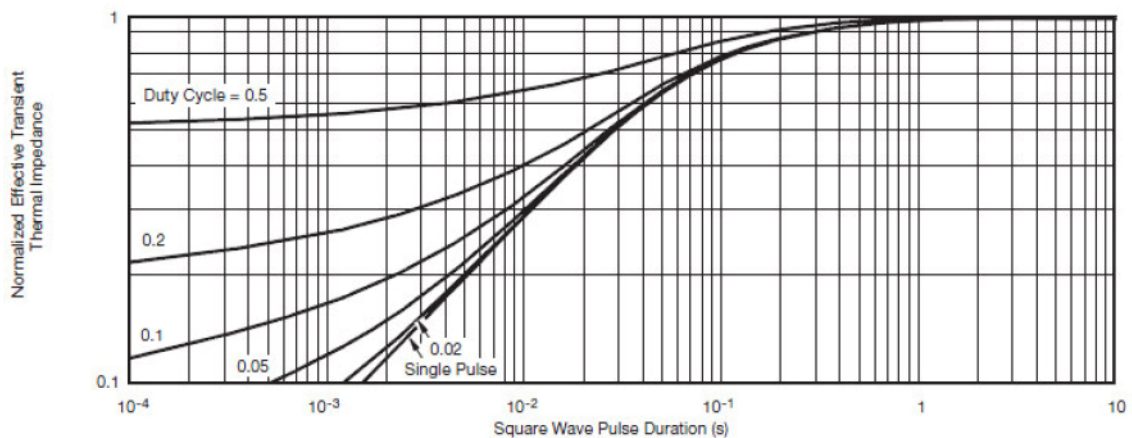
Threshold Voltage



Single Pulse Power (Junction-to-Ambient)

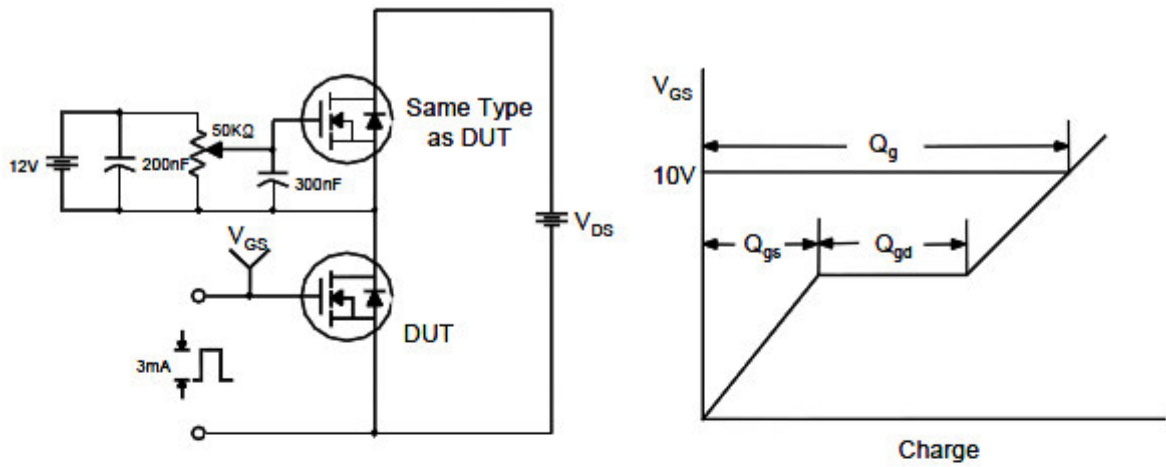


Normalized Thermal Transient Impedance, Junction-to-Foot

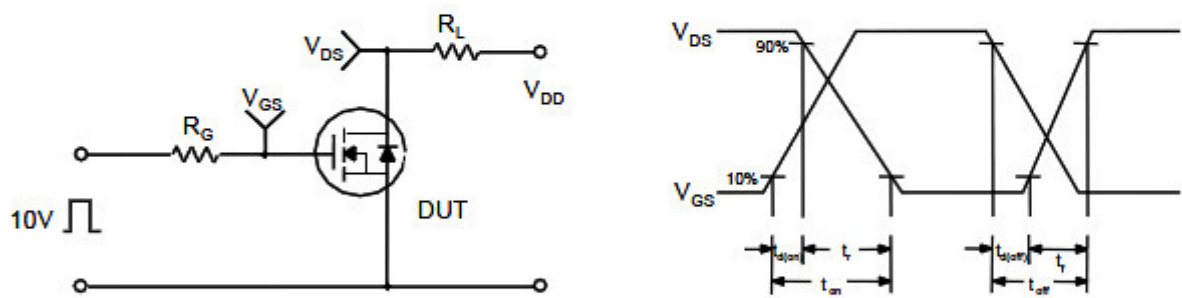


Typical Characteristics

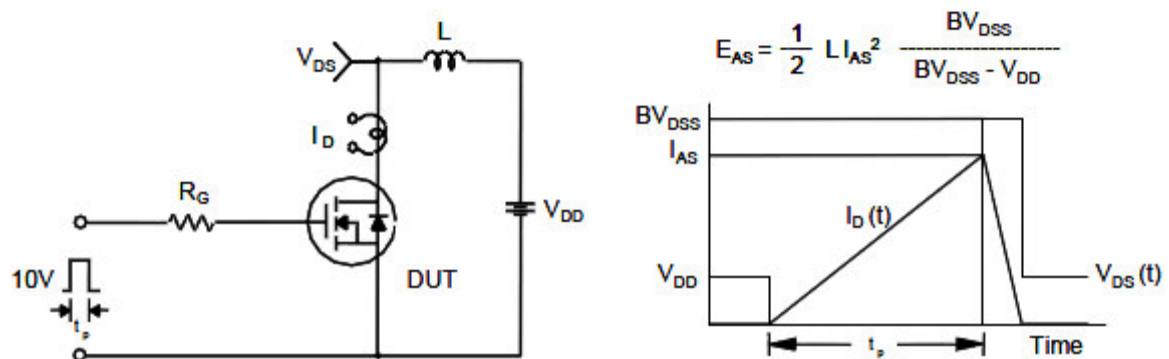
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

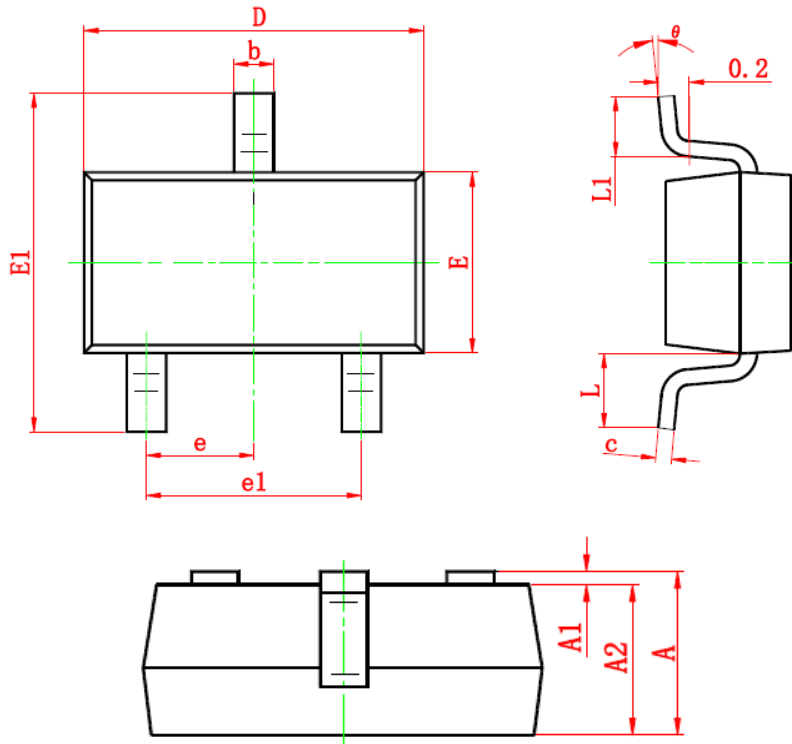


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-23







Dimensions





Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°



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