GSM2302AS

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM2302AS, 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

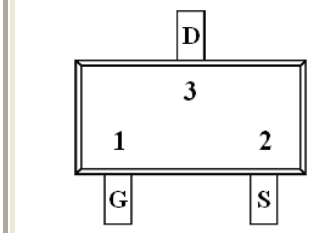
- 20V/2.4A,$R_{DS(ON)}$=90mΩ@V_{GS}=4.5V
- 20V/2.0A,$R_{DS(ON)}$=110mΩ@V_{GS}=2.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

Applications

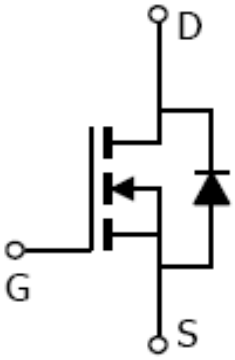
- Portable Equipment
- Battery Powered System
- Net Working System

Packages & Pin Assignments

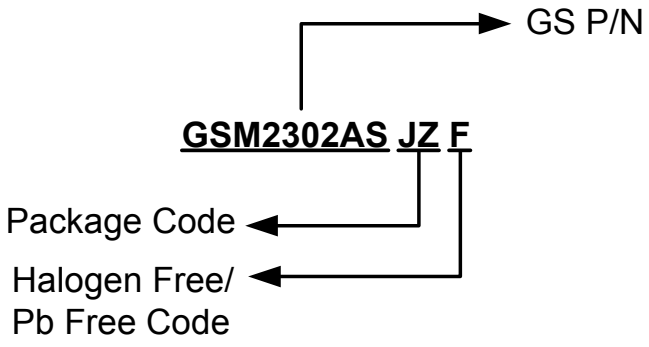
GSM2302ASJZF (SOT-23)



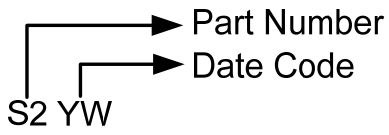
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM2302ASJZF	SOT-23	S2YW	3000pcs

Absolute Maximum Ratings

T_A=25ºC 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℃)	T_A=25ºC	2.4	A
		T_A=70ºC	2.0	
I_{DM}	Pulsed Drain Current		10	A
I_S	Continuous Source Current(Diode Conduction)		1.6	A
P_D	Power Dissipation	T_A=25ºC	1.25	W
		T_A=70ºC	0.8	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		120	ºC/W

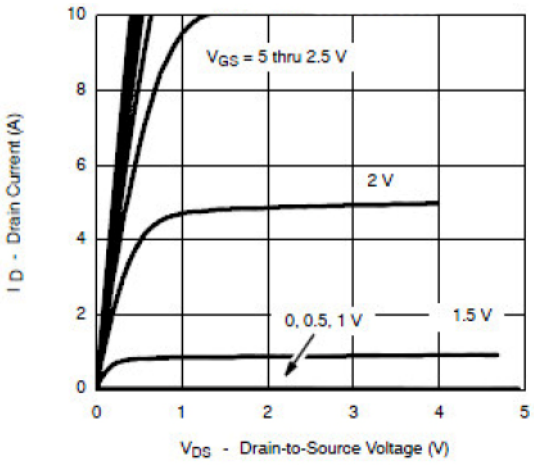
Electrical Characteristics

T_A=25ºC unless otherwise noted

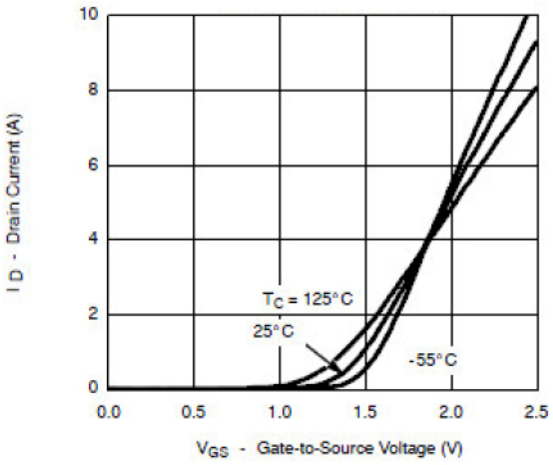
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.5		1.0	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 16V,V_{GS}=0V			1	uA
		V_{DS}= 16V, V_{GS}=0V,T_J=85ºC			10	
$I_{D(on)}$	On-State Drain Current	V_{DS}≥5V,V_{GS}=4.5V	6			A
		V_{DS}≥5V,V_{GS}=2.5V	4			
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V,I_D=2.4A		70	90	mΩ
		V_{GS}=2.5V,I_D=2.0A		90	110	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=3.6A		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=1MHz		340		pF
C_{oss}	Output Capacitance			115		
C_{rss}	Reverse Transfer Capacitance			33		
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D≡3.6A		5.4	10	nC
Q_{gs}	Gate-Source Charge			0.65		
Q_{gd}	Gate-Drain Charge			1.4		
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, R_L=5.5Ω,I_D=3.6A, V_{GEN}=4.5V,R_G=6Ω		12	25	ns
t_r				36	60	
$t_{d(off)}$	Turn-Off Time			34	60	
t_f				10	25	

Typical Performance Characteristics

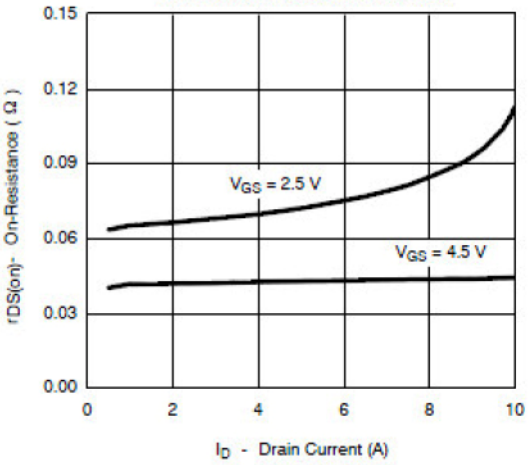
Output Characteristics



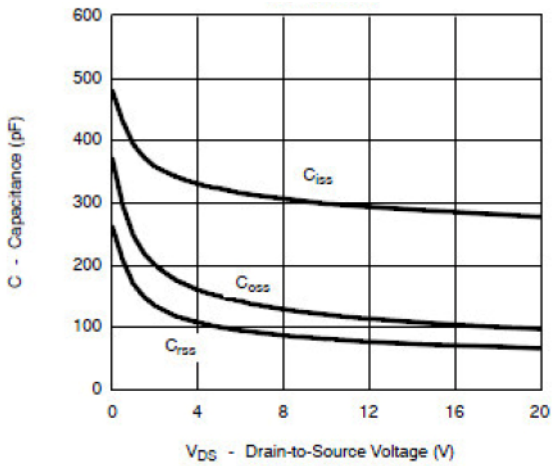
Transfer Characteristics



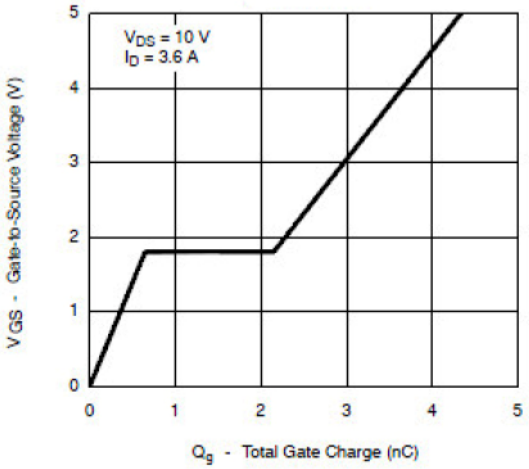
On-Resistance vs. Drain Current



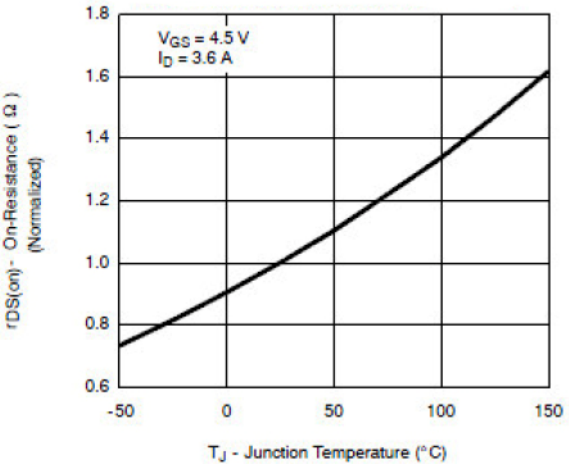
Capacitance



Gate Charge

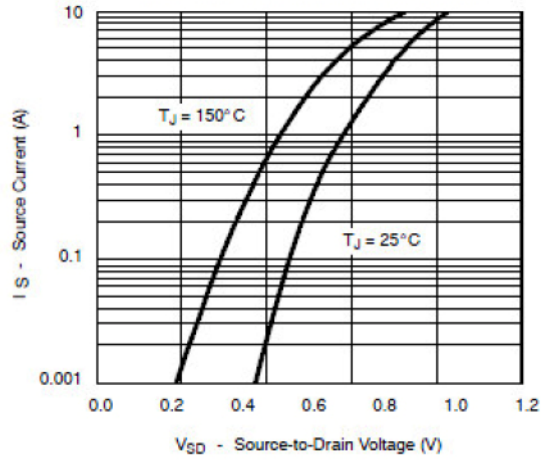


On-Resistance vs. Junction Temperature

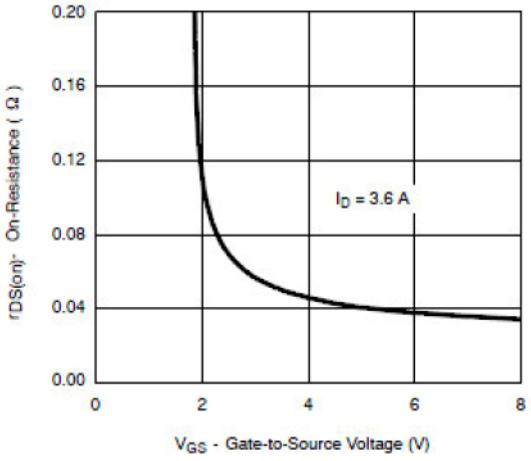


Typical Performance Characteristics (continue)

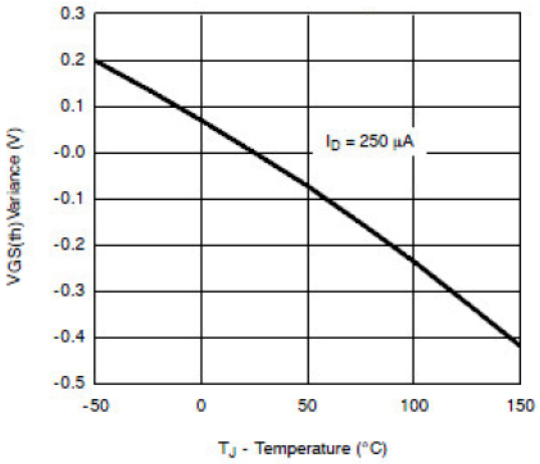
Source-Drain Diode Forward Voltage



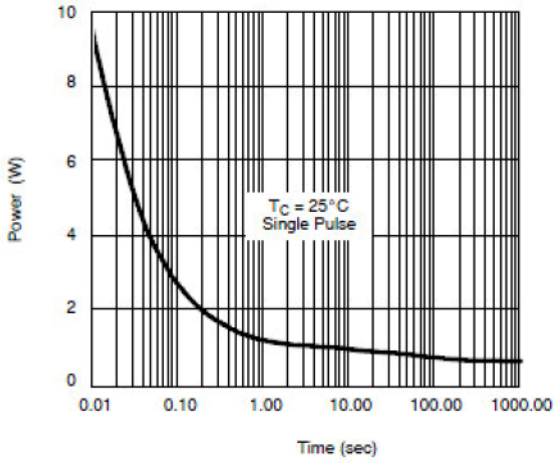
On-Resistance vs. Gate-to-Source Voltage



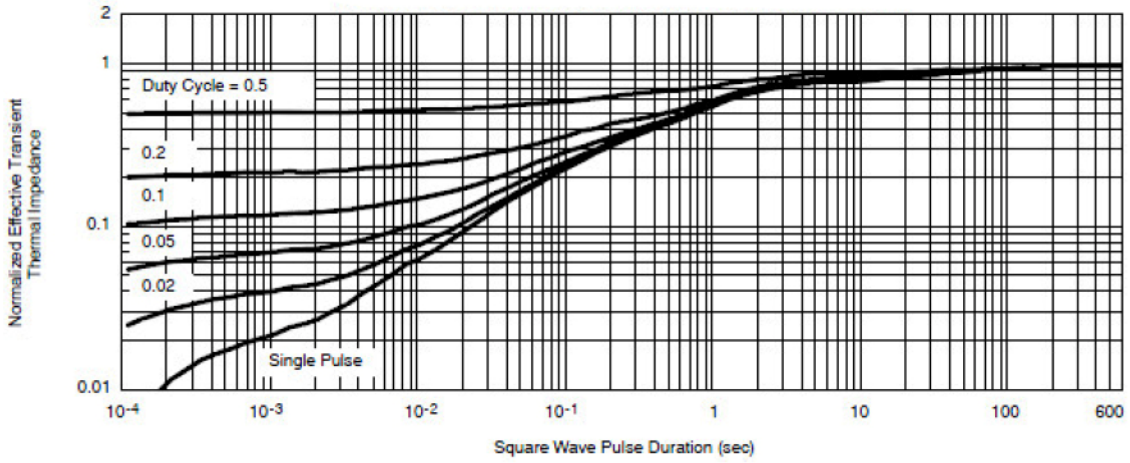
Threshold Voltage



Single Pulse Power

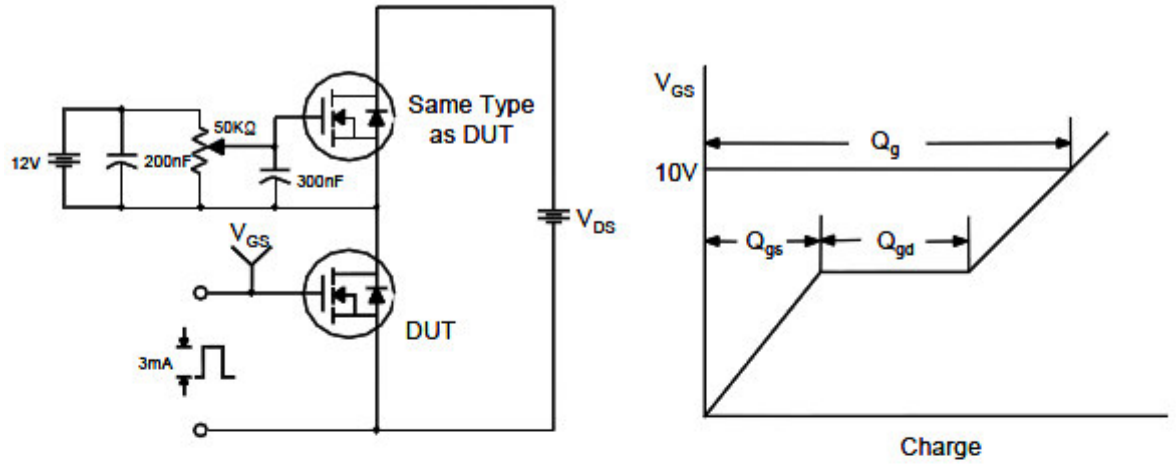


Normalized Thermal Transient Impedance , Junction-to-Ambient

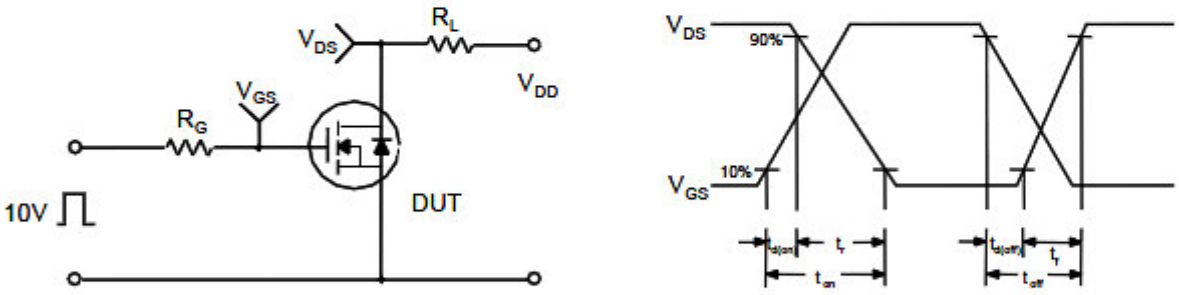


Typical Performance Characteristics (continue)

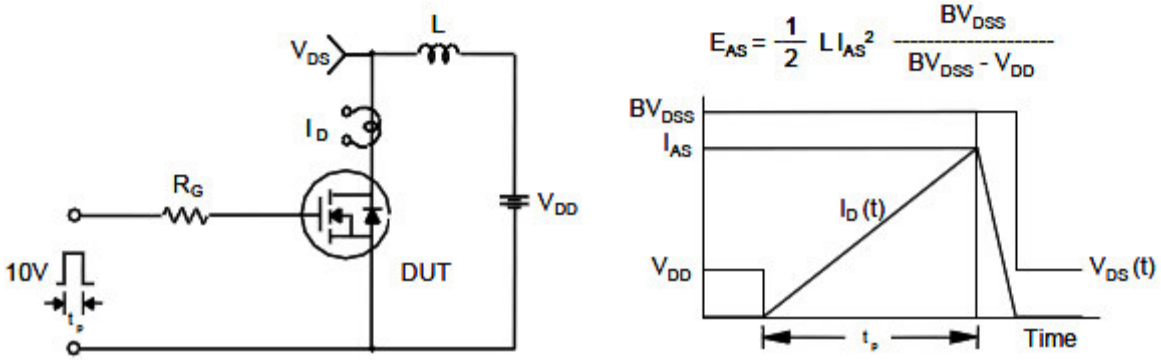
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

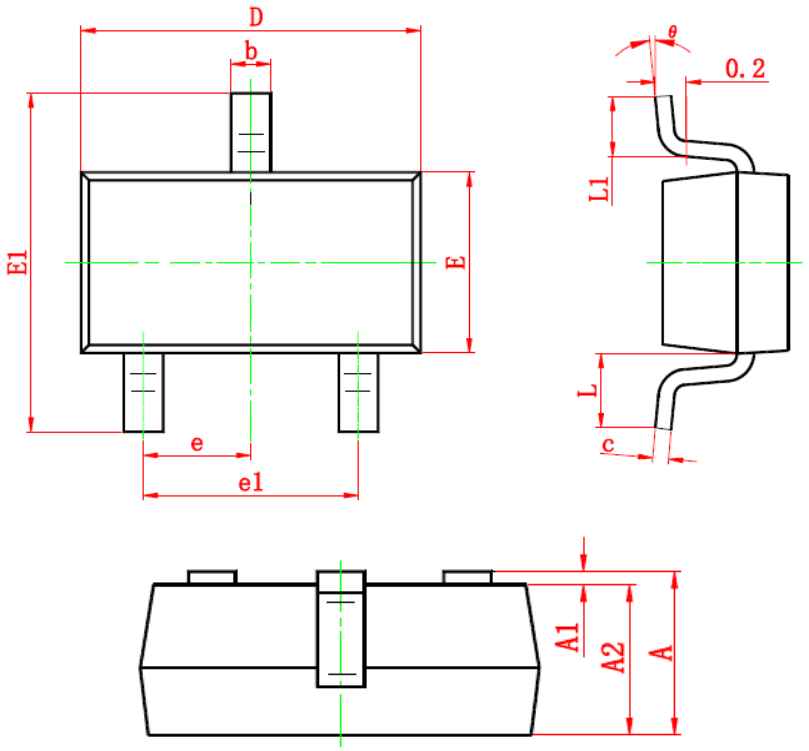


Unclamped Inductive Switching Test Circuit & Waveforms



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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