GSM7002

60V N-Channel Enhancement Mode MOSFET

Product Description

The GS7002 is the N-Channel enhancement mode field effect transistors are produced using high cell density DMOS technology. These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance.

They can be used in most applications requiring up to 300mA DC and can deliver pulsed currents up to 1.0A.

These products are particularly suited for low voltage, low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

Features

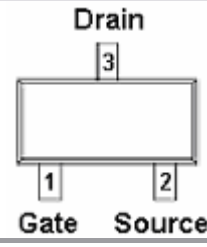
- 60V/0.50A , RDS(ON)= 6.0Ω@VGS=10V
- 60V/0.30A , RDS(ON)= 7.0Ω@VGS=5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

Applications

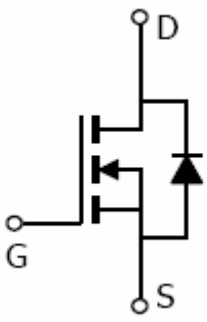
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability. Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

Packages & Pin Assignments

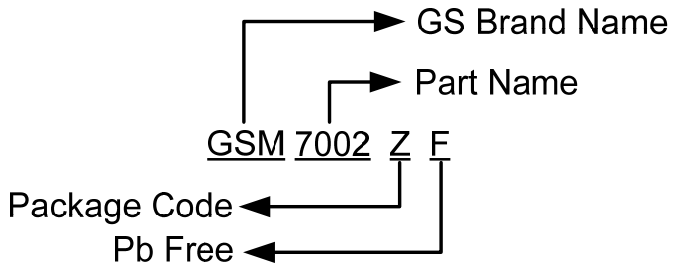
GSM7002ZF (SOT-23)



1	G	Gate
2	S	Source
3	D	Drain



Ordering Information



Marking Information

Part Number	Package	Part Marking
GSM7002ZF	SOT-23	702

Absolute Maximum Ratings

T_A=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate –Source Voltage - Continuous		±20	V
V_{GSS}	Gate –Source Voltage - Non Repetitive (t_p < 50μs)		±40	V
I_D	Continuous Drain Current(T_J=150℃)	T_A=25 ºC	0.3	A
I_{DM}	Pulsed Drain Current (*)		1.0	A
P_D	Power Dissipation	T_A=25 ºC	0.35	W
T_J	Operating Junction Temperature		-55/150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		375	ºC/W

(*) Pulse width limited by safe operating area

Electrical Characteristics

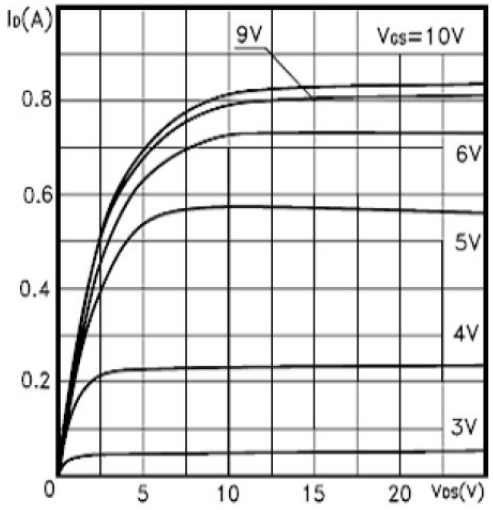
T_A=25ºC Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0	1.7	2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,V_{GS}=0V			1	uA
		V_{DS}=60V,V_{GS}=0V T_J=125℃			10	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=0.50A		2.5	6.0	Ω
		V_{GS}= 5V,I_D=0.30A		3.3	7.0	
I_{SD}	Source-drain Current				0.35	A
$I_{SDM\ (2)}$	Source-drain Current (pulsed)				1.4	A
G_{fs}(1)	Forward Transconductance	V_{DS} = 10 V, I_D = 0.5 A		0.6		S
$V_{SD(1)}$	Diode Forward Voltage	V_{GS} = 0 V, I_S = 0.12A		0.85	1.5	V
Dynamic						
Qg	Total Gate Charge	V_{DD} = 30 V, I_D = 1 A, V_{GS} = 5 V		1.4	2.0	nC
Qgs	Gate-Source Charge			0.8		
Qgd	Gate-Drain Charge			0.5		
Ciss	Input Capacitance	V_{DS} = 25 V, f = 1 MHz,V_{GS} = 0V		43		pF
Coss	Output Capacitance			20		
Crss	Reverse Transfer Capacitance			6		
td(on)	Turn-On Time	V_{DD} = 30 V,I_D = 0.5 A R_G = 4.7Ω,V_{GS} = 4.5V		5		ns
tr				15		
td(off)	Turn-Off Time			7		
tf				8		

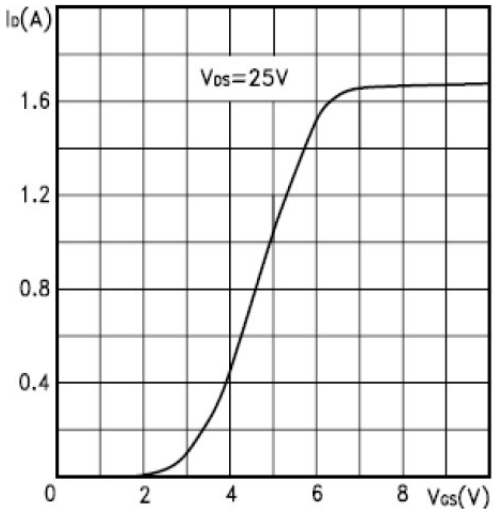
(1) Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %.

(2) Pulse width limited by safe operating area.

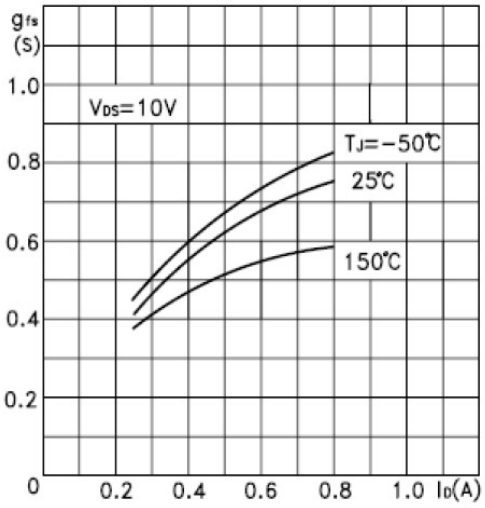
Typical Performance Characteristics



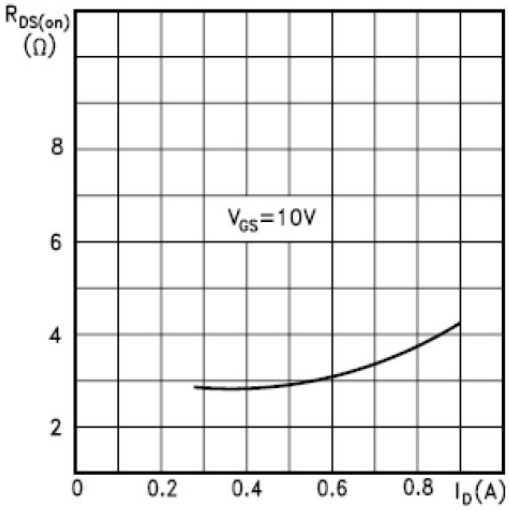
Output Characteristics



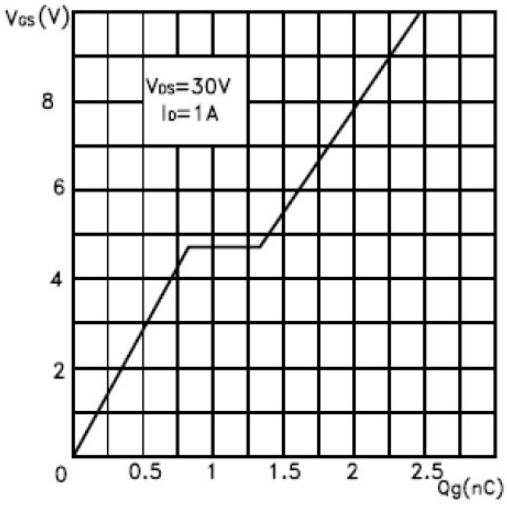
Transfer Characteristics



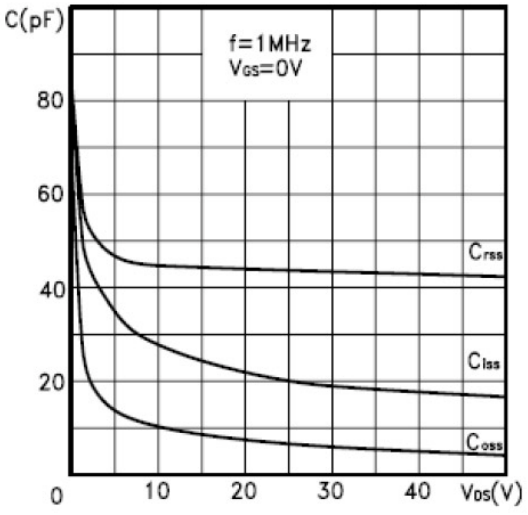
Transconductance



Static Drain-source On Resistance

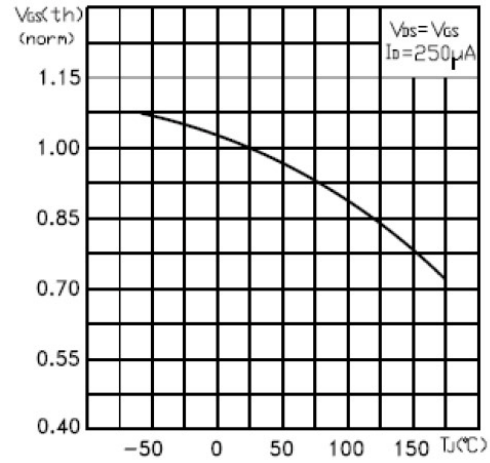


Gate Charge vs. Gate-source Voltage

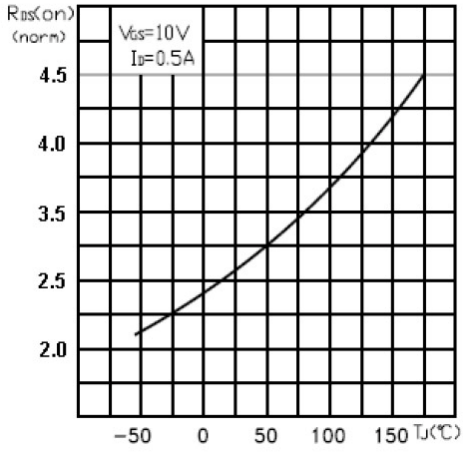


Capacitance Variations

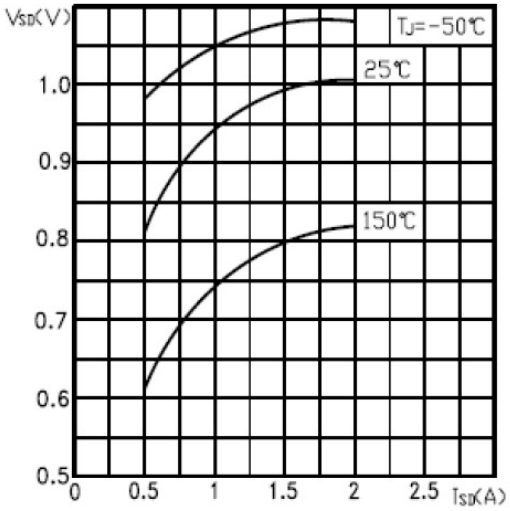
Typical Performance Characteristics(Continue)



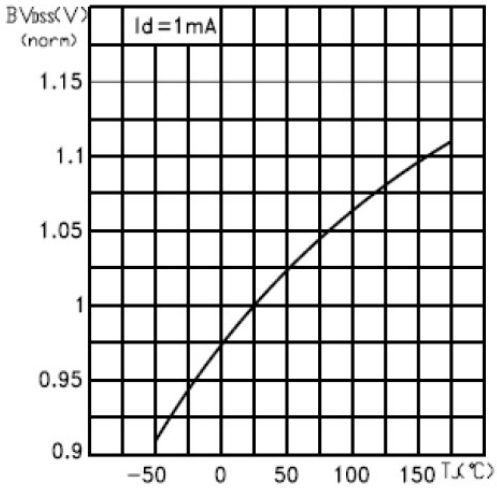
Normalized Gate Threshold Voltage vs. Temperature



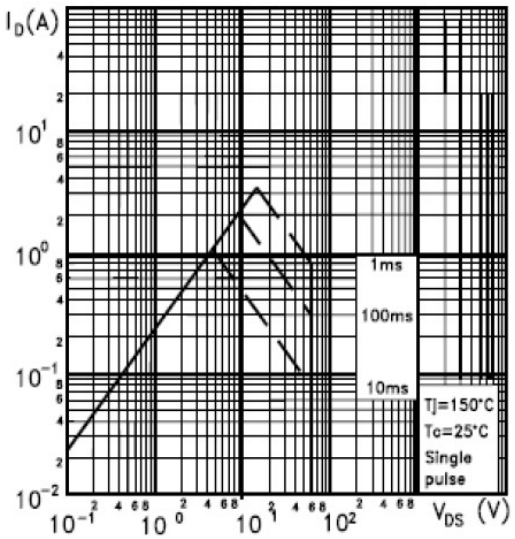
Normalized On Resistance vs. Temperature



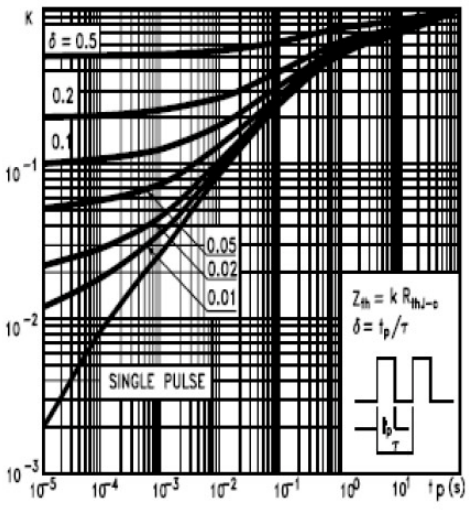
Source-Drain Forward



Normalized BVDSS vs. Temperature

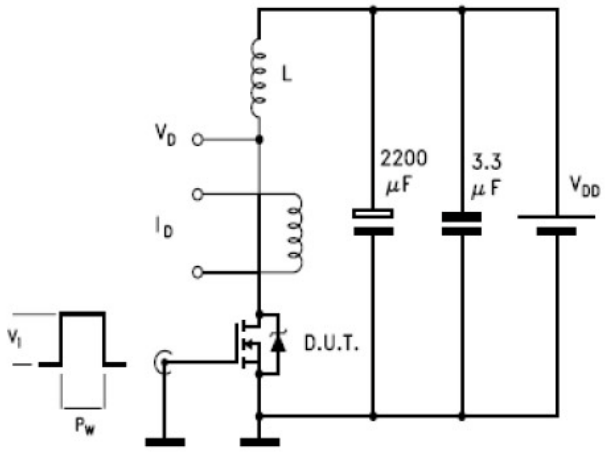


Safe Operating Area

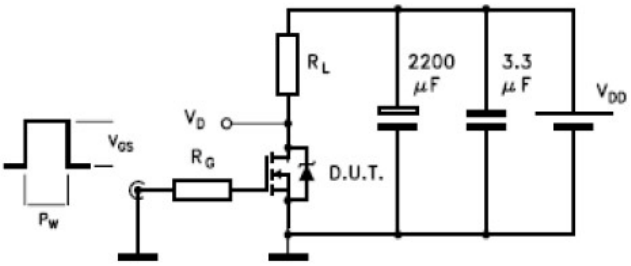


Thermal Impedance

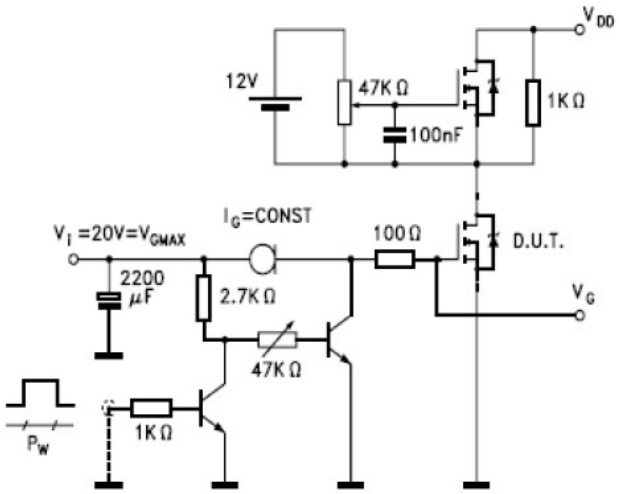
Typical Testing Circuit



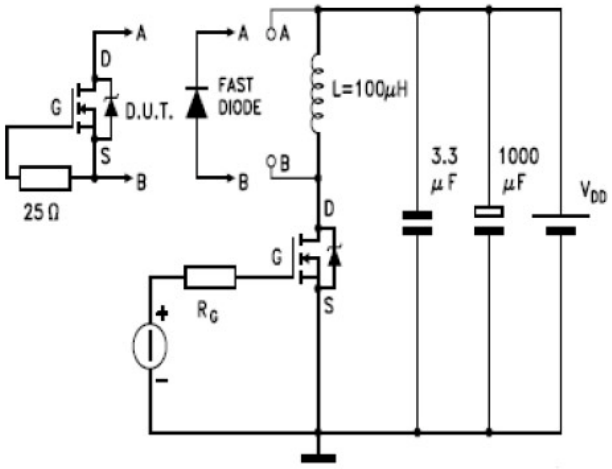
Unclamped Inductive Load Test



Switching Times Test Circuit



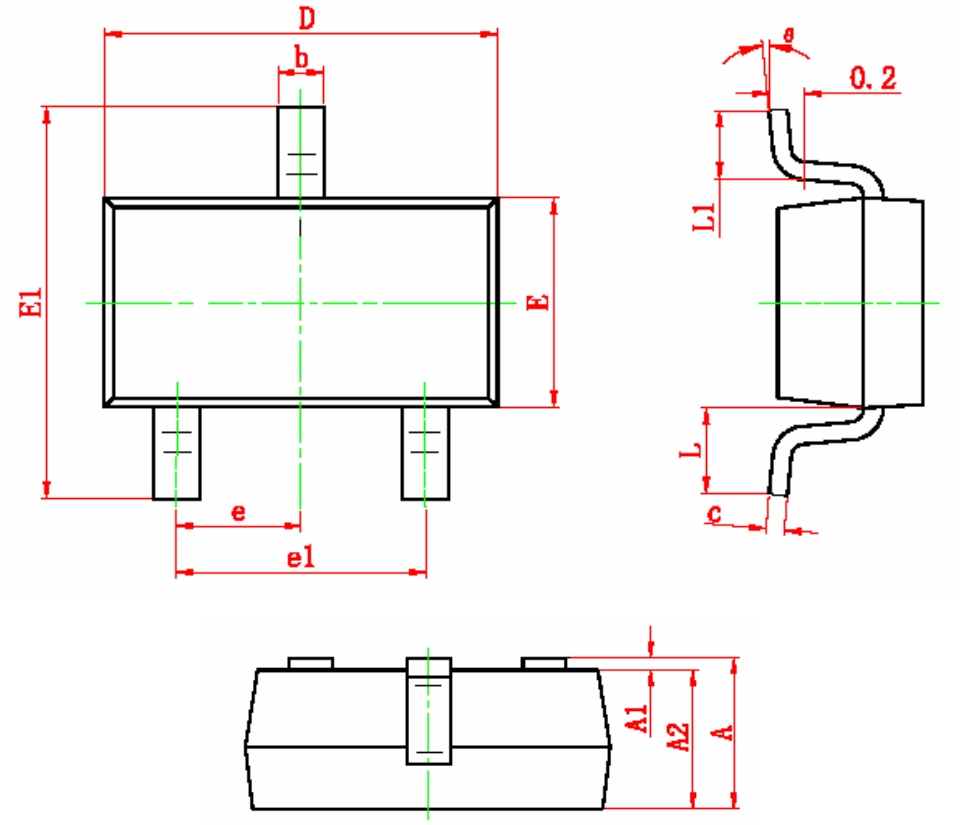
Gate Charge Test Circuit



Test Circuit For Inductive Load Switching and Diode Recovery Times

Package Dimension

SOT-23 PLASTIC PACKAGE



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°	8°

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