

GSM3414S

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM3414S, 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.

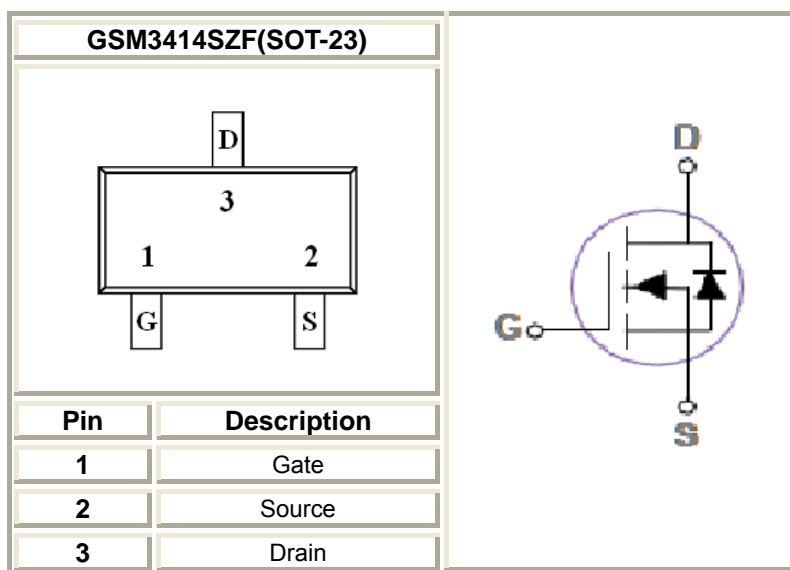
Features

- 20V/5.8A, $R_{DS(ON)}=25m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

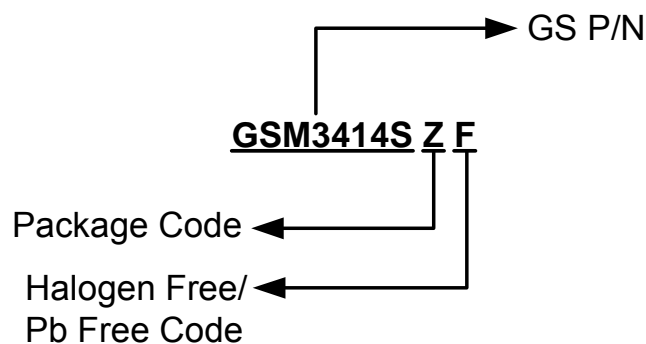
Applications

- Portable Equipment
- Battery Powered System
- Net Working System

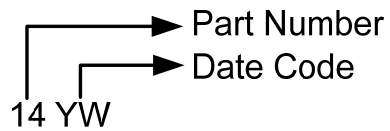
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM3414SZF	SOT-23	14YW	3000pcs

Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit	
V_{DS}	Drain-Source Voltage	20	V	
V_{GS}	Gate –Source Voltage	± 10	V	
I_D	Continuous Drain Current($T_J=150^{\circ}\text{C}$)	$T_A=25^{\circ}\text{C}$	5.8	A
		$T_A=100^{\circ}\text{C}$	3.7	
I_{DM}	Pulsed ¹ Drain Current	23.2	A	
P_D	Power Dissipation	$T_A=25^{\circ}\text{C}$	1.56	W
		$T_A=25^{\circ}\text{C}$	0.012	W/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature	-55/150	$^{\circ}\text{C}$	
T_{STG}	Storage Temperature Range	-55/150	$^{\circ}\text{C}$	

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	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.4	0.6	0.8	V
	VGS(th) Temperature Coefficient			2		mV/°C
$\frac{\Delta BVDSS}{\Delta T_J}$	BVDSS Temperature Coefficient	Reference to 25°C , ID=1mA		0.02		V/°C
R _{θJA}	Thermal Resistance-Junction to Ambient				80	°C/W
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±10V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V T _J =25°C			1	uA
		V _{DS} =16V, V _{GS} =0V, T _J =85°C			10	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =4A		20	25	mΩ
		V _{GS} =2.5V, I _D =3A		27	35	
		V _{GS} =1.8V, I _D =2A		39	55	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =3A		6.5		S
Dynamic						
I _S	Continuous Source Current	V _D =V _G =D _V , Force Current			5.8	A
I _{SM}	Pulsed Source Current				23.2	
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =0V, T _J =25°C			1	V
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz		535	775	pF
C _{oss}	Output Capacitance		60	85		
C _{rss}	Reverse Transfer Capacitance		34	50		
Q _g	Total Gate Charge ^{2, 3}	V _{DS} =10V, V _{GS} =4.5V, I _D =4A		7.7	11	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		0.9	1		
Q _{gd}	Gate-Drain Charge ^{2, 3}		2.4	5		
t _{d(on)}	Turn-On Time ^{2, 3}	V _{DD} =10V, R _G =25Ω, I _D =1A, V _{GS} =4.5V		4.1	8	ns
T _r			11.6	22		
t _{d(off)}	23.9		45			
T _f	7.6		14			

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

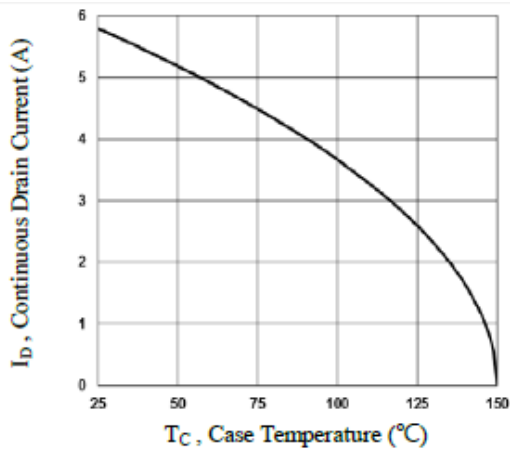


Fig.1 Continuous Drain Current vs. T_C

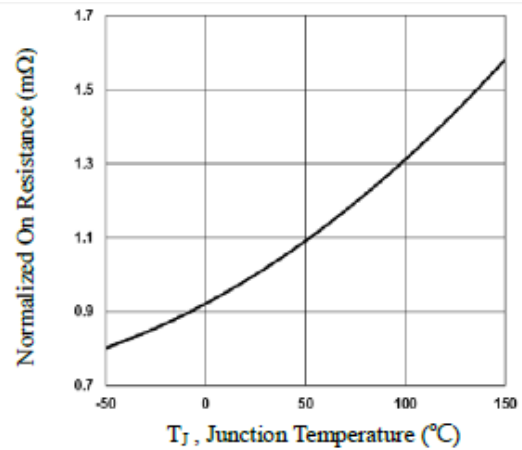


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

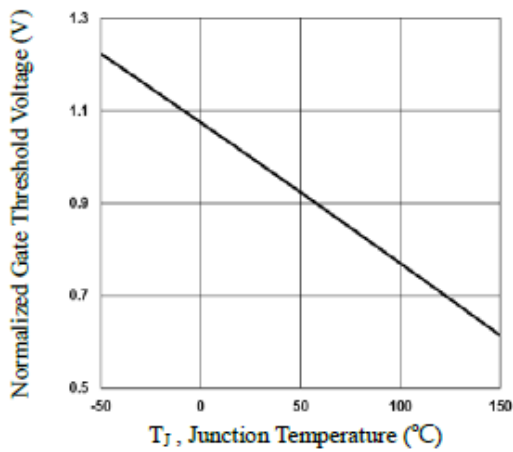


Fig.3 Normalized V_{th} vs. T_J

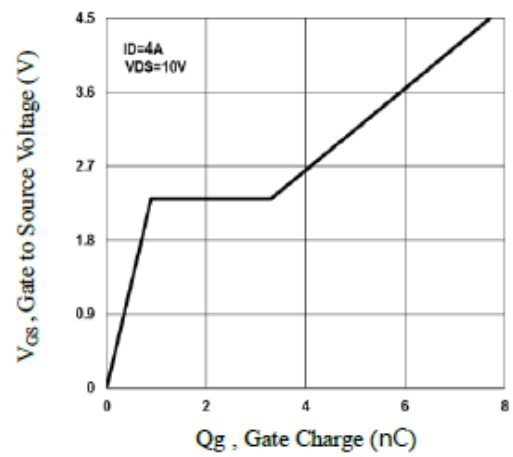


Fig.4 Gate Charge Waveform

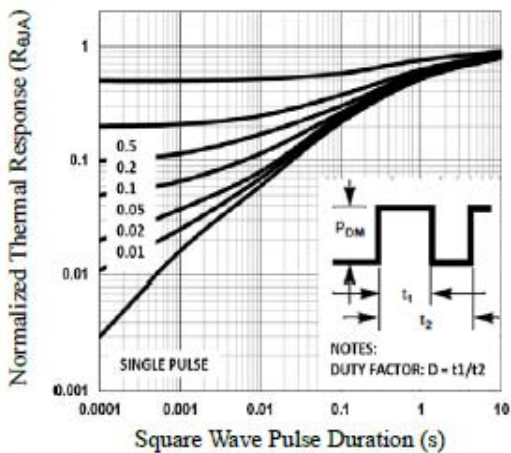


Fig.5 Normalized Transient Impedance

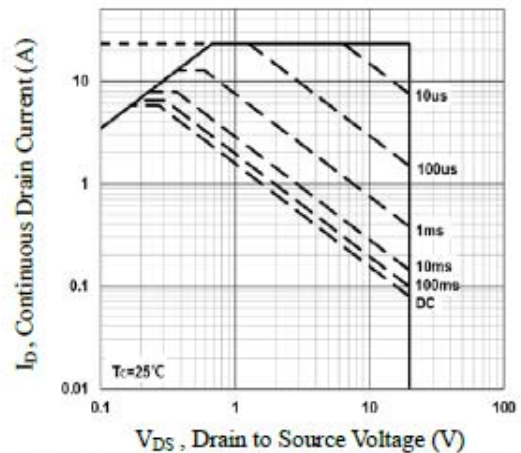


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (continue)

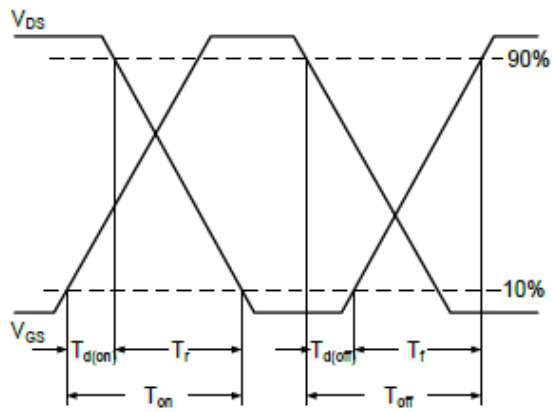


Fig.7 Switching Time Waveform

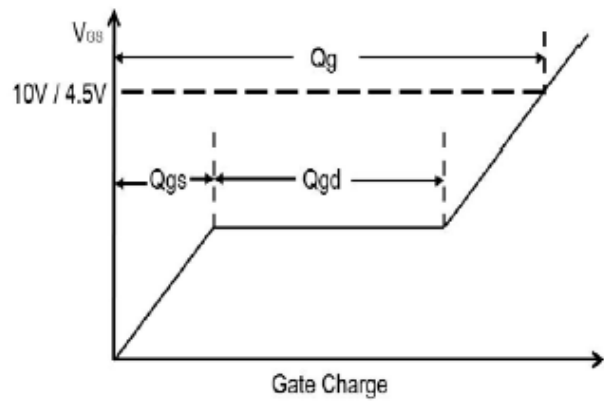
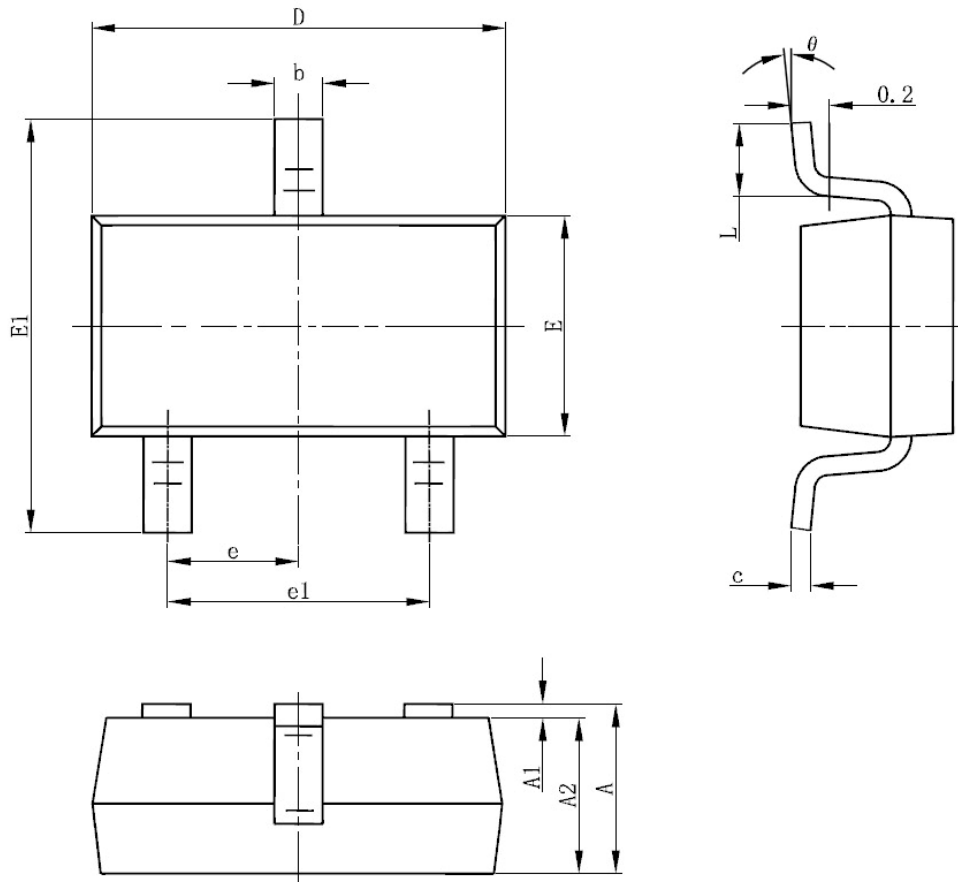


Fig.8 Gate Charge Waveform

SOT23 PACKAGE INFORMATION










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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