

GSM3620KA

30V N-Channel MOSFETs

Product Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

These devices are well suited for high efficiency fast switching applications.

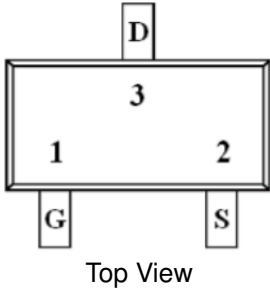
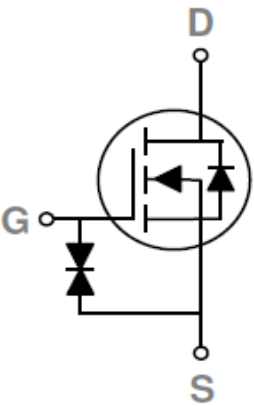
Features

- 30V, 780mA, $R_{DS(ON)}=450m\Omega@V_{GS}=4.5V$
- Improved dv/dt capability
- Fast switching
- Suit for 2.5V Gate Drive Applications
- Green Device Available

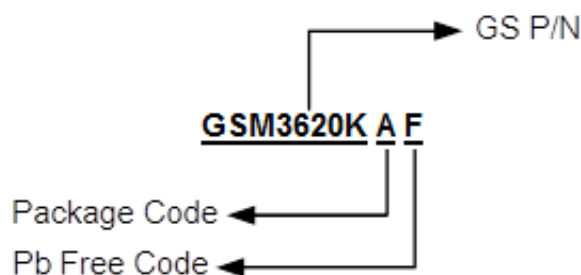
Applications

- Notebook
- Load Switch
- Battery Protection
- Hand-held Instruments

Packages & Pin Assignments

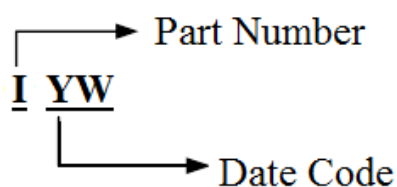
GSM3620KAF (SOT-723)	
 <p>Top View</p>	
	
Pin	Description
1	Gate
2	Source
3	Drain

Ordering Information



Part Number	Package	Part Marking	Quantity
GSM3620KAF	SOT-723	IYW	8000pcs

Marking Information



Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current	$T_A=25^{\circ}\text{C}$	780
		$T_A=70^{\circ}\text{C}$	620
I_{DM}	Pulsed Drain Current ¹	3.12	A
P_D	Power Dissipation ($T_A=25^{\circ}\text{C}$)	446	mW
	Power Dissipation (Derate above 25°C)	3.57	mW/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	280	$^{\circ}\text{C}/\text{W}$

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.

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	30	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	-0.03	---	V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5	0.7	1.2	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-1.74	---	mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V	---	---	±20	uA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V T _J =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C	---	---	10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	0.78	A
I _{SM}	Pulsed Source Current		---	---	1.56	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.3A	---	370	450	mΩ
		V _{GS} =2.5V, I _D =0.2A,	---	510	650	
g _{FS}	Forward Transconductance	V _{DS} =4V, I _D =0.3A	---	0.8	---	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.3A	---	---	1	V
Dynamic						
Q _g	Total Gate Charge ^{2,3}	V _{DS} =15V, V _{GS} =4.5V, I _D =0.3A	---	2.6	5.2	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	0.9	1.8	
Q _{gd}	Gate-Drain Charge ^{2,3}		---	0.6	1.2	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	72.9	146	pF
C _{oss}	Output Capacitance		---	18.3	36.6	
C _{rss}	Reverse Transfer Capacitance		---	7.4	14.8	
t _{d(on)}	Turn-On Time ^{2,3}	V _{DD} =15V, I _D =0.3A, V _{GS} =4.5V, R _G =10Ω	---	5.5	11	ns
t _r	Rise Time ^{2,3}		---	4	8	
t _{d(off)}	Turn-Off Time ^{2,3}		---	14.5	29	
t _f	Fall Time ^{2,3}		---	6.5	13	

Note :

- The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- Essentially independent of operating temperature.

Typical Performance Characteristics

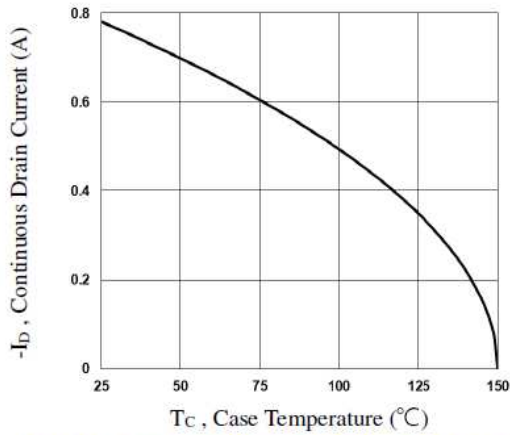


Fig.1 Continuous Drain Current vs. T_C

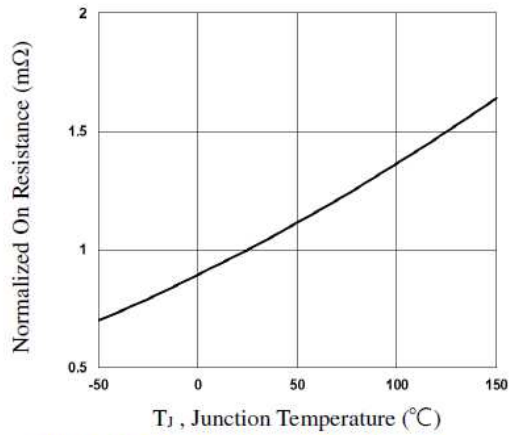


Fig.2 Normalized R_{DS(on)} vs. T_J

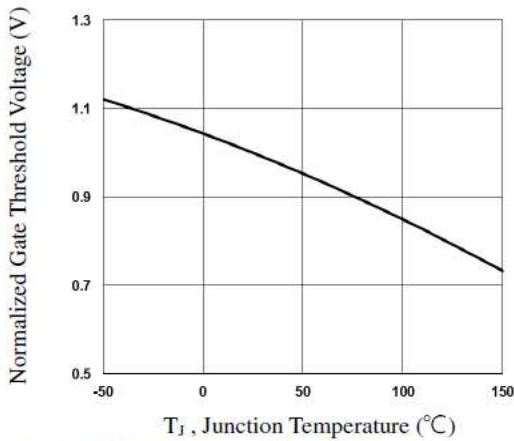


Fig.3 Normalized V_{th} vs. T_J

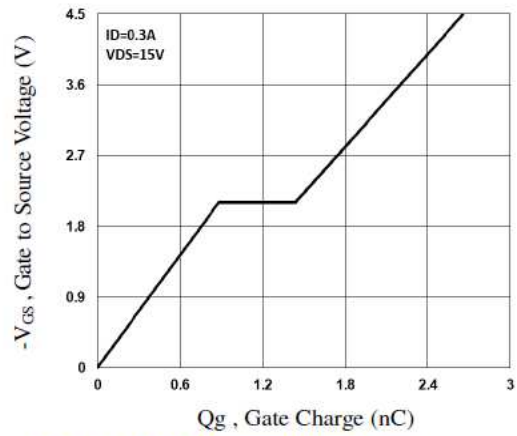


Fig.4 Gate Charge Waveform

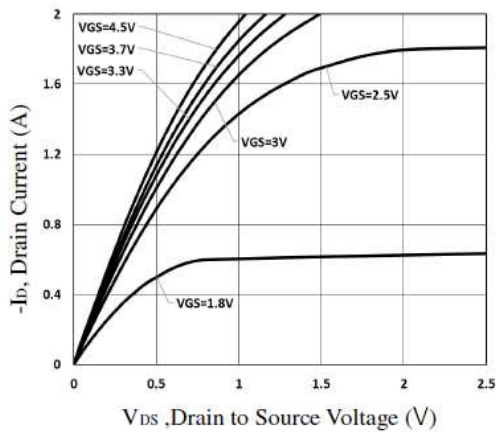


Fig.5 Typical Output Characteristics

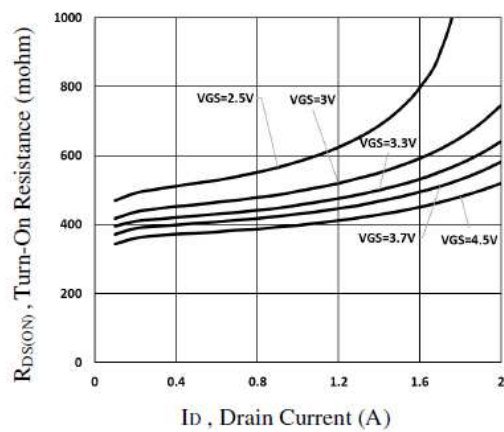


Fig.6 Turn-On Resistance vs. I_D

Typical Performance Characteristics (Continue)

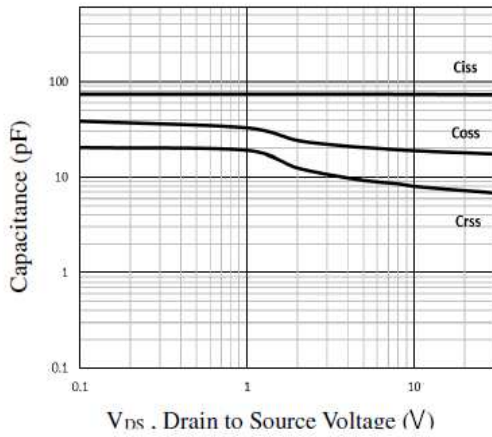


Fig.7 Capacitance Characteristics

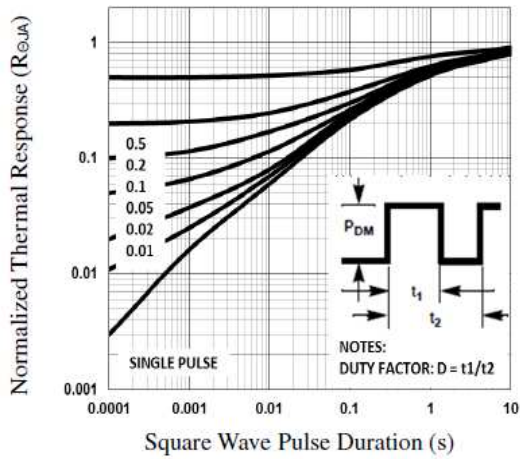


Fig.8 Normalized Transient Response

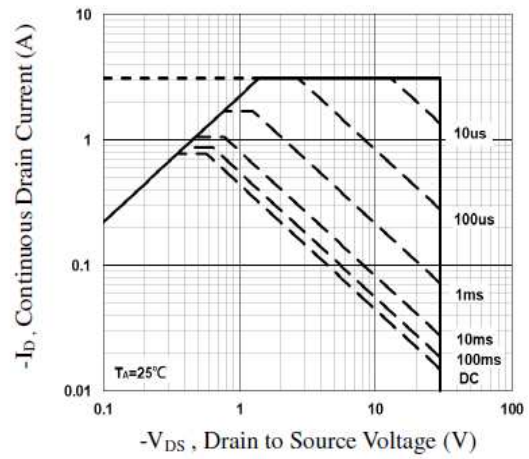


Fig.9 Maximum Safe Operation Area

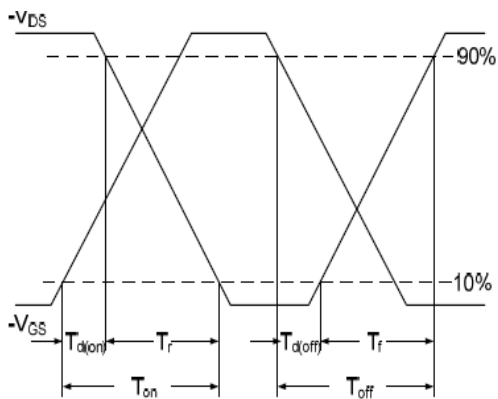


Fig.10 Switching Time Waveform

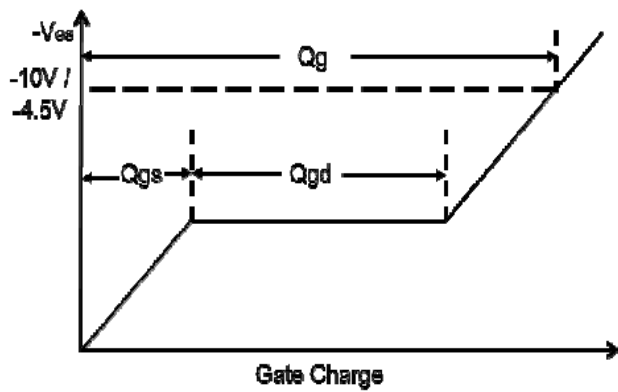
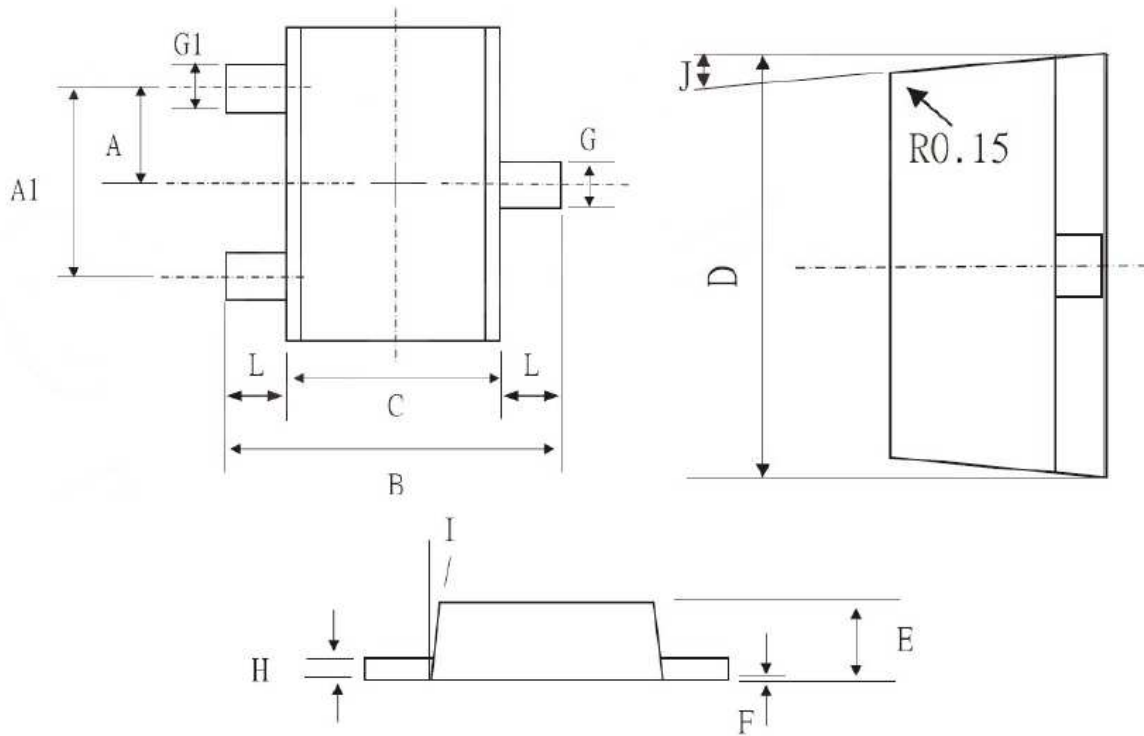


Fig.11 Gate Charge Waveform

Package Dimension

SOT-723









Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.4BSC		0.016BSC	
A1	0.8BSC		0.031BSC	
B	1.250	1.150	0.049	0.045
C	0.850	0.750	0.033	0.030
D	1.250	1.150	0.049	0.045
E	0.390	0.370	0.015	0.015
F	0.050	0.000	0.002	0.000
G	0.270	0.220	0.011	0.009
G1	0.220	0.170	0.009	0.007
H	0.110	0.009	0.004	0.000
I	13°	9°	13°	9°
L	0.250	0.150	0.010	0.006
J	11°	7°	11°	7°

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