

GSM2308AP

60V 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.

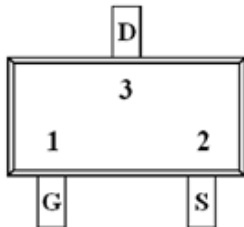
Features

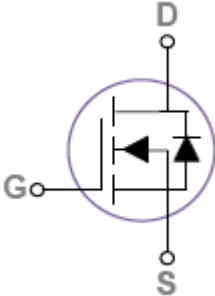
- 60V, 6.1A, $R_{DS(ON)}=85m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- SOT-23 package design

Applications

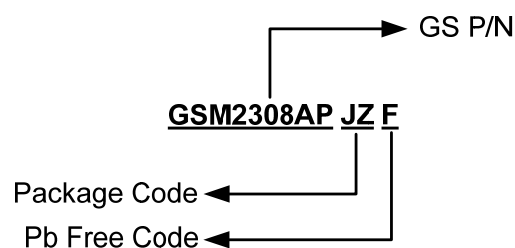
- Motor Drive
- Power Tools
- LED Lighting

Packages & Pin Assignments

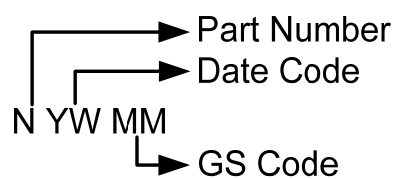
GSM2308APJZF (SOT-23)	
 Top Views	
Pin	Description
1	Gate
2	Source
3	Drain



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM2308APJZF	SOT-23	NYWMM	3000pcs

Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter		Typical	Unit
V _{DS}	Drain-Source Voltage		60	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _A =25°C	6.1	A
		T _A =100°C	3.9	
I _{DM}	Pulsed Drain Current		24.4	A
EAS	Single Pulse Avalanche Energy		25	mJ
IAS	Single Pulse Avalanche Current		7	A
P _D	Power Dissipation (T _A =25°C)		1.56	W
	Power Dissipation (Derate above 25°C)		0.012	W/°C
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		80	°C/W

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	60			V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25℃, I _D =1mA		0.05		V/℃
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	1.2	1.8	2.5	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient			-5		mV/℃
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} =48V,V _{GS} =0V, T _J =125℃			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			6.1	A
I _{SM}	Pulsed Source Current				24.4	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V,I _D =6A		70	85	mΩ
		V _{GS} =4.5V,I _D =3A		82	100	
g _{FS}	Forward Transconductance	V _{DS} =10V,I _D =3A		7		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =1A			1	V
t _{rr}	Reverse Recovery Time	V _{GS} =30V,I _S =1A, di/dt=100A/us		23.2		ns
Q _{rr}	Reverse Recovery Charge			14.3		nC
Dynamic						
Q _g	Total Gate Charge	V _{DS} =48V,V _{GS} =10V, I _D =6A		9.3	14	nC
Q _{gs}	Gate-Source Charge			2.1	4	
Q _{gd}	Gate-Drain Charge			1.8	4	
C _{iss}	Input Capacitance	V _{DS} =15V,V _{GS} =0V, f=1MHz		500	725	pF
C _{oss}	Output Capacitance			45	65	
C _{rss}	Reverse Transfer Capacitance			16	30	
t _{d(on)}	Turn-On Time	V _{DD} =30V,I _D =1A, V _{GS} =10V,R _G =3.3Ω		2.9	6	ns
t _r				9.5	18	
t _{d(off)}	Turn-Off Time			18.4	35	
t _f				5.3	10	
R _g	Gate Resistance	V _{DS} =0V,V _{GS} =0V, f=1MHz		2	4	Ω

Typical Performance Characteristics

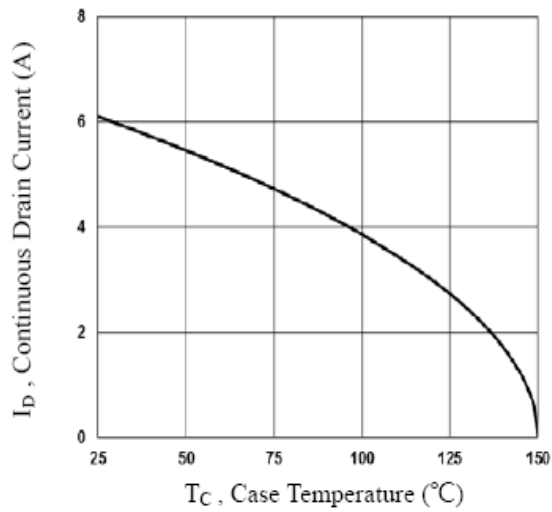


Fig.1 Continuous Drain Current vs. T_C

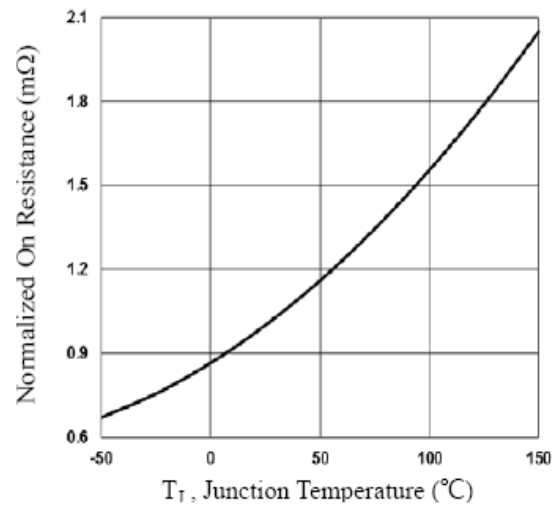


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

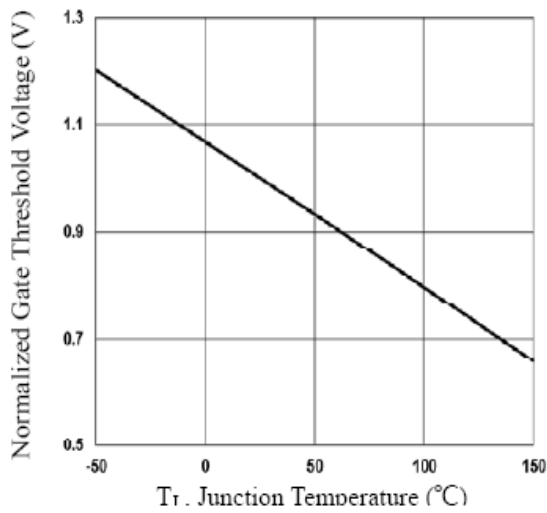


Fig.3 Normalized V_{th} vs. T_J

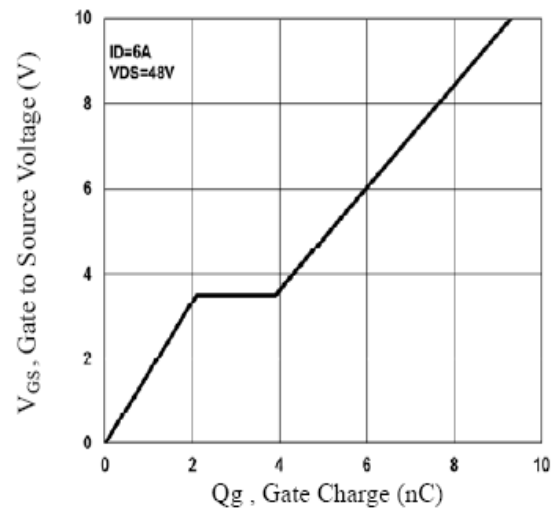


Fig.4 Gate Charge Waveform

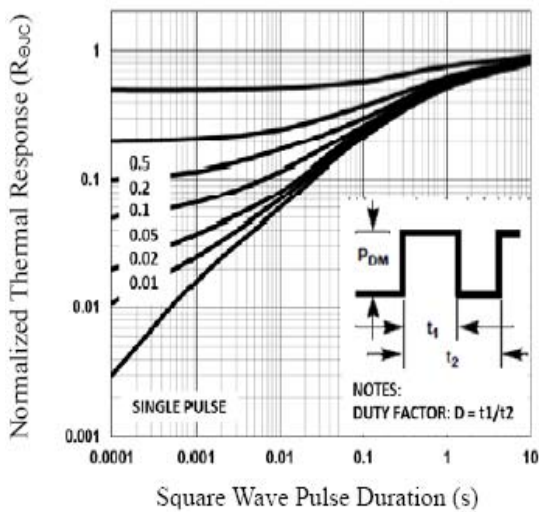


Fig.5 Normalized Transient Response

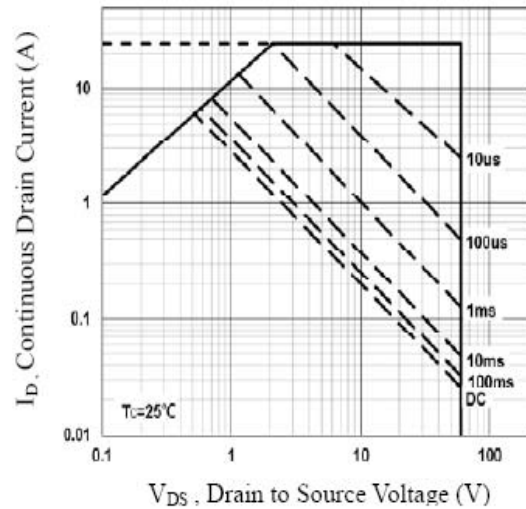


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

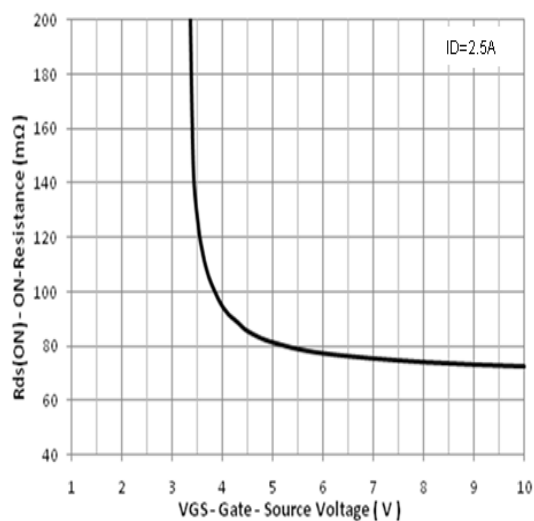
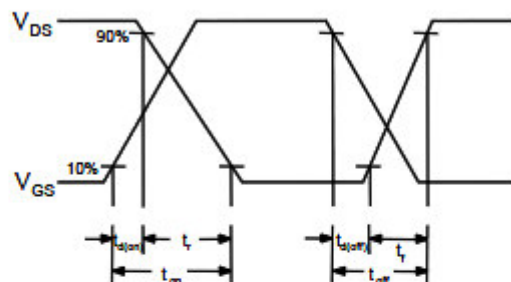
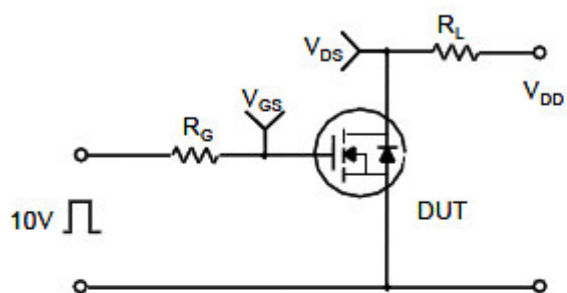
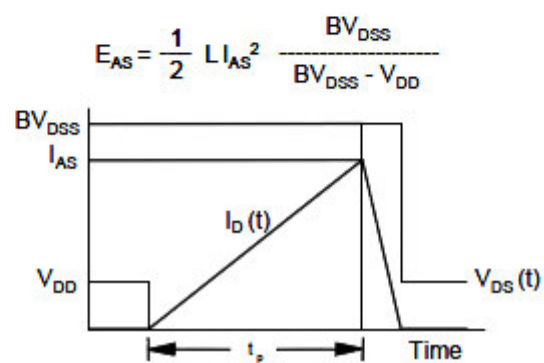
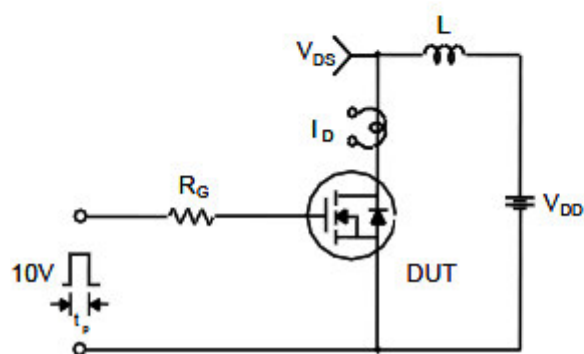


Fig.7 Gate-Source On Resistance

Resistive Switching Test Circuit & Waveforms

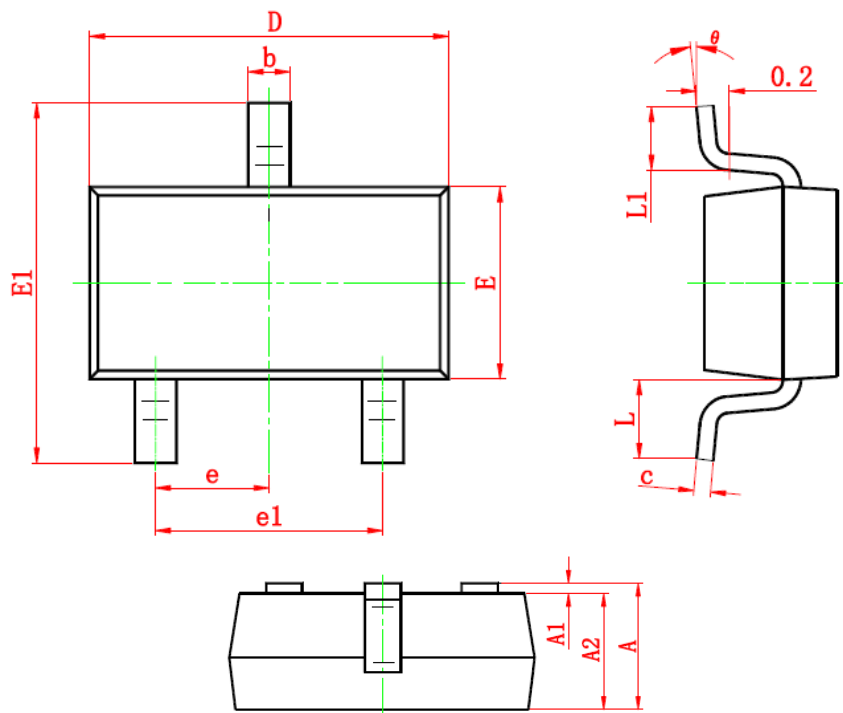


Unclamped Inductive Switching Test Circuit & Waveforms



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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