Elektronische Bauelemente

SGM2310A

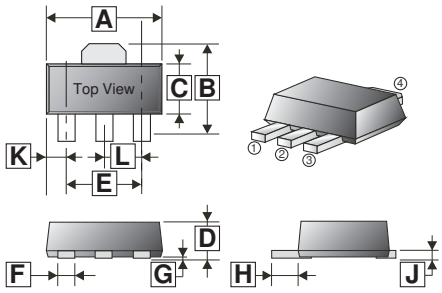
5 A, 60 V, $R_{DS(ON)}$ 115 mΩ
N-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

SOT-89

DESCRIPTION

The SGM2310A utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device. The SGM2310A is universally used for all commercial-industrial applications.

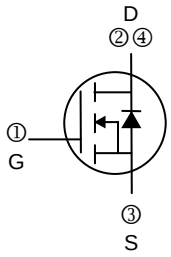


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	-	-
B	4.05	4.25	H	0.89	1.20
C	2.40	2.60	J	0.35	0.41
D	1.40	1.60	K	0.70	0.80
E	3.00 REF.		L	1.50 REF.	
F	0.40	0.52			

FEATURES

- Simple drive requirement
- Super high density cell design for extremely low $R_{DS(ON)}$

MARKING



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3]	I_D @ T_A = 25℃	5.0	A
Continuous Drain Current[3]	I_D @ T_A = 70℃	4.0	A
Pulsed Drain Current[1,2]	I_{DM}	10	A
Power Dissipation	P_D @ T_A = 25℃	1.5	W
Linear Derating Factor		0.01	W / ℃
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	℃

THERMAL DATA

PARAMETER	SYMBOL	VALUE	UNIT
Thermal Resistance Junction-Ambient[3](Max).	$R_{\theta JA}$	83.3	℃ / W

ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	V_{GS} = 0, I_D = 250μA
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance	g_{fs}	-	12	-	S	V_{DS} = 15V, I_D = 4A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V
Drain-Source Leakage Current (T_J=25℃)	I_{DSS}	-	-	1	μA	V_{DS} = 60 V, V_{GS} = 0
Drain-Source Leakage Current (T_J=70℃)		-	-	10		V_{DS} = 60 V, V_{GS} = 0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	115	mΩ	V_{GS}=10V, I_D=5.0A
		-	-	125		V_{GS}=4.5V, I_D=4.5A
Total Gate Charge[2]	Q_g	-	4.0	-	nC	I_D = 4 A
Gate-Source Charge	Q_{gs}	-	1.2	-		V_{DS} = 30 V
Gate-Drain (“Miller”) Charge	Q_{gd}	-	1.0	-		V_{GS} =4.5 V
Turn-on Delay Time[2]	$T_{d(on)}$	-	6	-	nS	V_{DD} = 30 V
Rise Time	T_r	-	12	-		I_D =2.5 A
Turn-off Delay Time	$T_{d(off)}$	-	18	-		V_{GS} =10 V
Fall Time	T_f	-	10	-		R_G = 6Ω, R_L = 12Ω
Input Capacitance	C_{iss}	-	320	-	pF	V_{GS} = 0 V
Output Capacitance	C_{oss}	-	42	-		V_{DS} = 30 V
Reverse Transfer Capacitance	C_{rss}	-	20	-		f = 1.0 MHz
SOURCE-DRAIN DIODE						
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S=2.5A, V_{GS}=0V

Notes:
1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on FR4 board, t ≦10sec.

CHARACTERISTIC CURVES

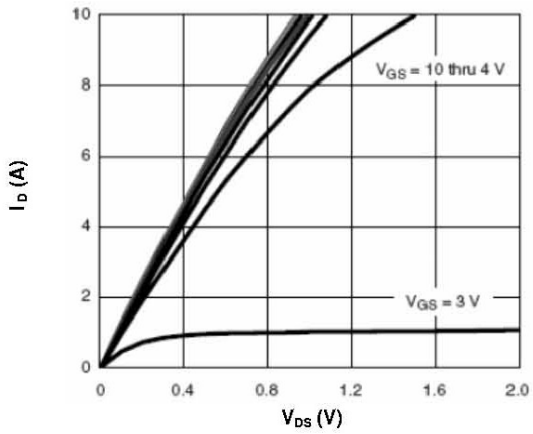


Fig 1. Typical Output Characteristics

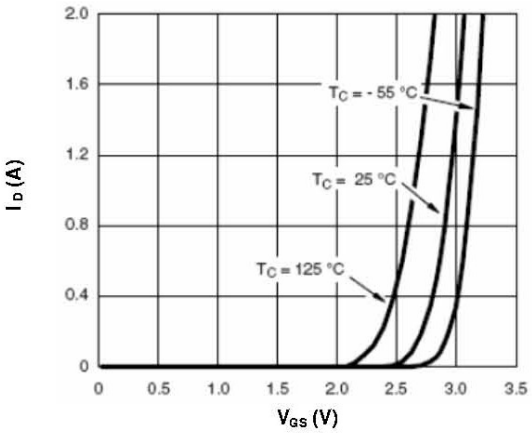


Fig 2. Transfer Characteristics

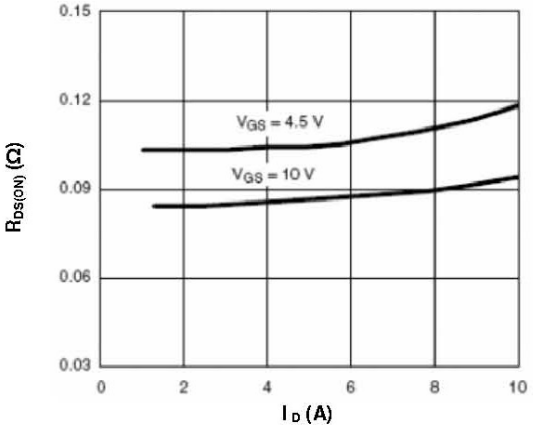


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

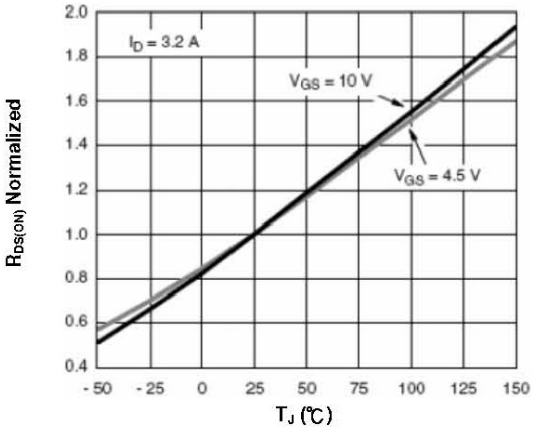


Fig 4. On-Resistance vs. Junction Temperature

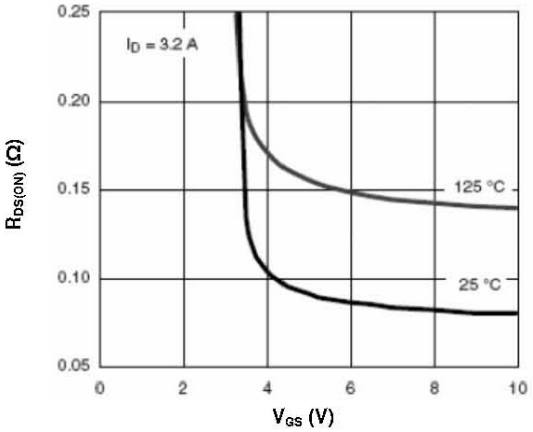


Fig 5. On-Resistance vs. Gate-Source Voltage

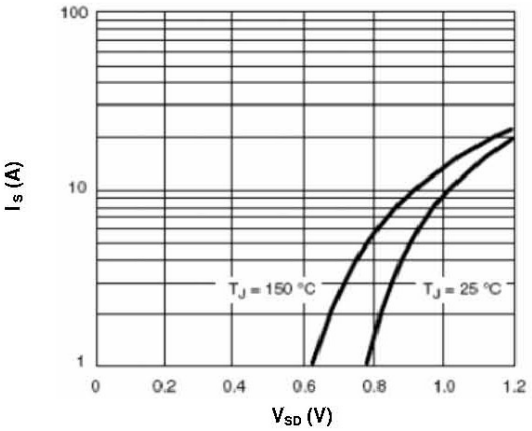


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVES

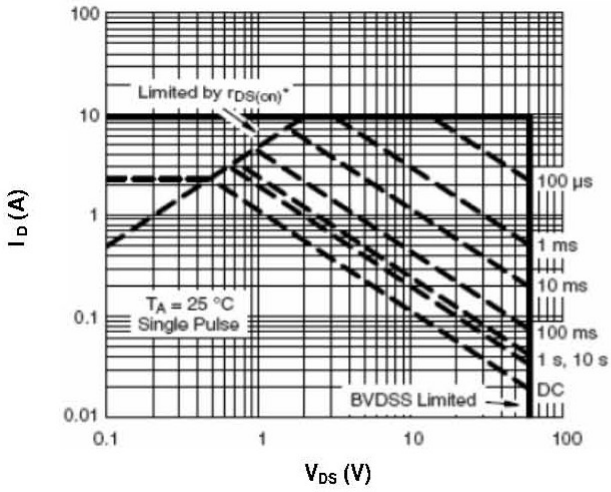


Fig 7. Maximum Safe Operating Area

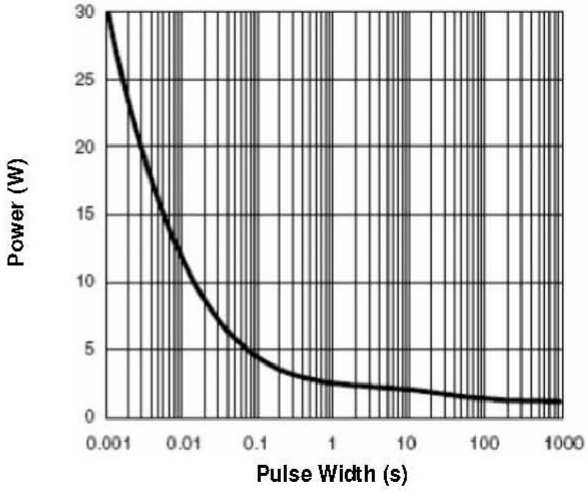


Fig 8. Single Pulse Maximum Power Dissipation

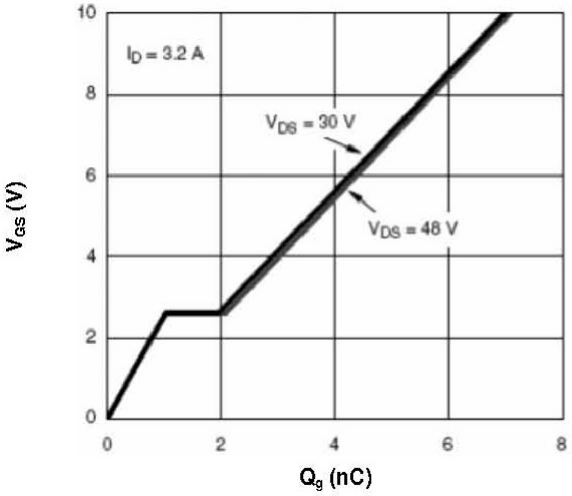


Fig 9. Gate Charge Characteristics

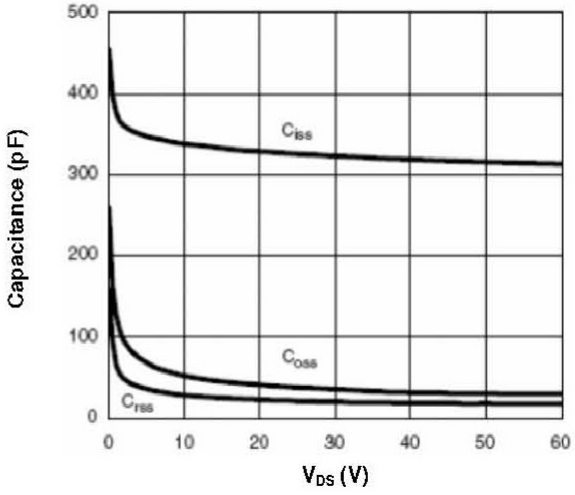


Fig 10. Typical Capacitance Characteristics

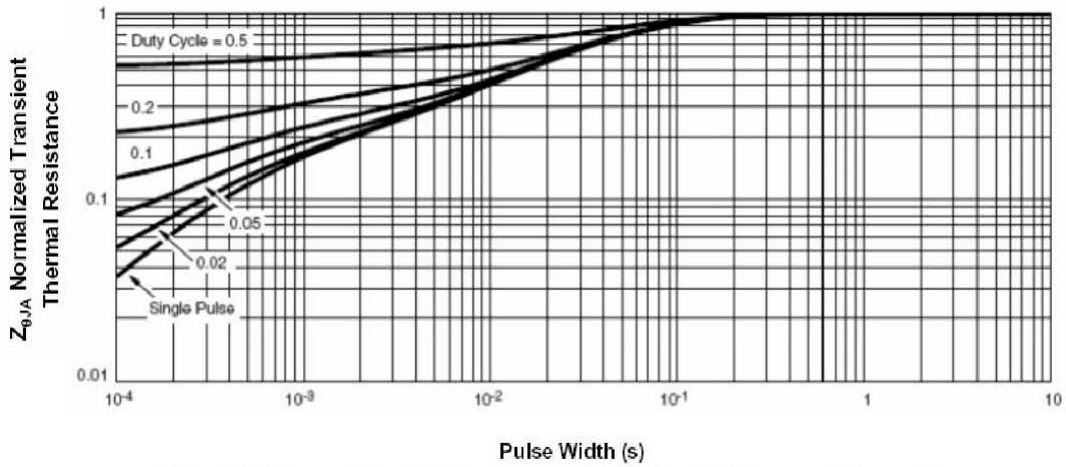


Fig 11. Normalized Maximum Transient Thermal Impedance