Elektronische Bauelemente

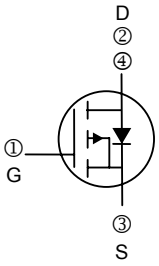
SGM2305A

-3.2 A, -30 V, $R_{DS(ON)}$ 80 mΩ
P-Channel Enhancement Mode Power MOSFET

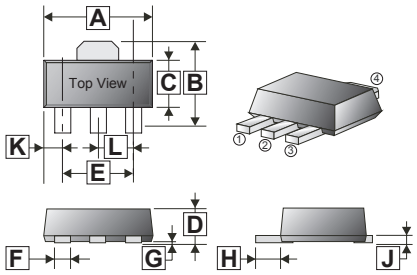
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

FEATURES

- The SGM2305A provide the designer with best combination of fast switching, low on-resistance and cost-effectiveness.
- The SGM2305A is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.
- Simple Drive Requirement
- Surface Mount Device



SOT-89

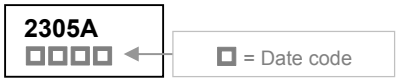


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	-	-
B	4.05	4.25	H	0.89	1.20
C	2.40	2.60	J	0.35	0.41
D	1.40	1.60	K	0.70	0.80
E	3.00 REF.		L	1.50 REF.	
F	0.40	0.52			

PACKAGE INFORMATION

Weight: 0.0508 g (approximately)

MARKING



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[3]	I_D @ T_A = 25°C	-3.2	A
Continuous Drain Current[3]	I_D @ T_A = 70°C	-2.6	A
Pulsed Drain Current[1,2]	I_{DM}	-10	A
Total Power Dissipation	P_D @ T_A = 25°C	1.5	W
Linear Derating Factor		0.012	W / °C
Operating Junction & Storage temperature	T_J, T_{STG}	-55~150	°C

THERMAL DATA

Parameter		Symbol	Value	Unit
Thermal Resistance Junction-Ambient[3]	Max.	$R_{\theta JA}$	83.3	°C / W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS} = 0, I_D = -250 uA
Breakdown Voltage Temperature Coefficient	ΔBV_{DSS} / ΔT_J	-	-0.1	-	V / °C	Reference to 25°C, I_D = -1 mA
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-1.2	V	V_{DS}=V_{GS}, I_D= -250 uA
Forward Trans-conductance	g_{fs}	-	9	-	S	V_{DS} = -5V, I_D = -3A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS} = ±12V
Drain-Source Leakage Current (T_J=25℃)	I_{DSS}	-	-	-1	uA	V_{DS} = -30 V, V_{GS} = 0
Drain-Source Leakage Current (T_J=70℃)		-	-	-25		V_{DS} = -24 V, V_{GS} = 0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	65	mΩ	V_{GS}=-10V, I_D=-3.2A
		-	-	80		V_{GS}=-4.5V, I_D=-3.0A
		-	-	150		V_{GS}=-2.5V, I_D=-2.0A
		-	-	250		V_{GS}=-1.8V, I_D=-1.0A
Total Gate Charge[2]	Q_g	-	10	18	nC	I_D = -3.2 A V_{DS} = -24 V V_{GS} = -4.5 V
Gate-Source Charge	Q_{gs}	-	1.8	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	3.6	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	7	-	nS	V_{DS} = -15 V I_D = -3.2 A V_{GS} = -10 V R_G = 3.3 Ω R_D = 4.6 Ω
Rise Time	T_r	-	15	-		
Turn-off Delay Time	$T_{d(off)}$	-	21	-		
Fall Time	T_f	-	15	-		
Input Capacitance	C_{iss}	-	735	1325	pF	V_{GS} = 0 V V_{DS} = -25 V f = 1.0 MHz
Output Capacitance	C_{oss}	-	100	-		
Reverse Transfer Capacitance	C_{rss}	-	80	-		

SOURCE-DRAIN DIODE

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	-1.2	V	I_S=-1.2A, V_{GS}=0V
Reverse Recovery Time[2]	T_{rr}	-	24	-	ns	I_S=-3.2A, V_{GS}=0V
Reverse Recovery Charge	Q_{rr}	-	19	-	nC	dI/dt = 100 A / uS

Notes:
1. Pulse width limited by safe operating area.
2. Pulse width≦300us, duty cycle≦2%.
3. Surface mounted on FR4 board, t ≦10sec.

CHARACTERISTIC CURVES

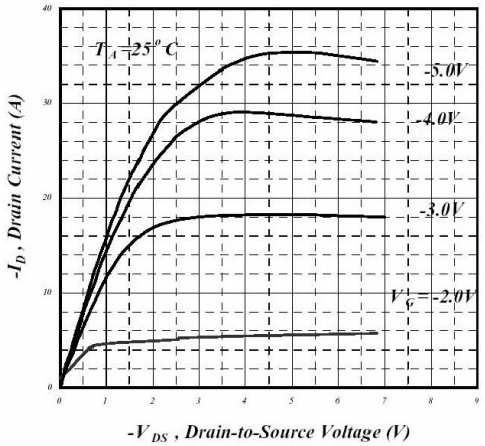


Fig 1. Typical Output Characteristics

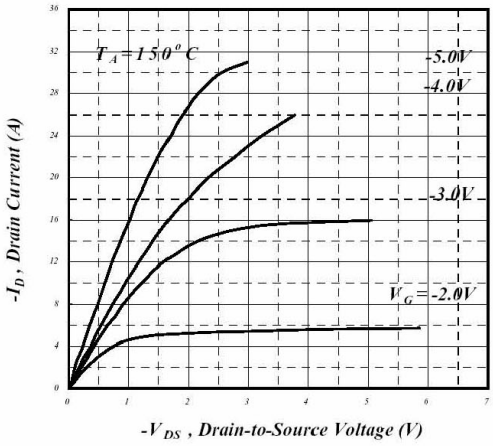


Fig 2. Typical Output Characteristics

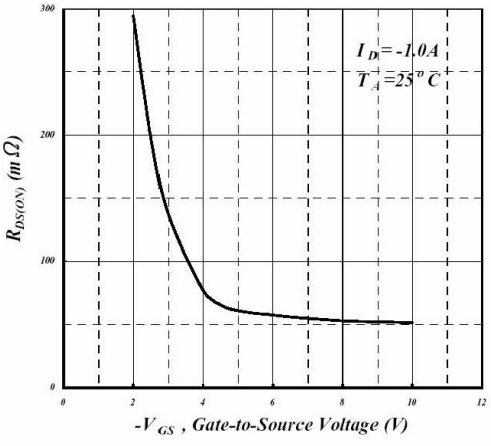


Fig 3. On-Resistance v.s. Gate Voltage

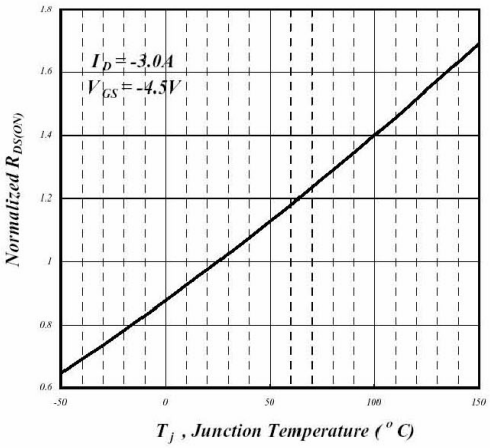


Fig 4. Normalized On-Resistance v.s. Junction Temperature

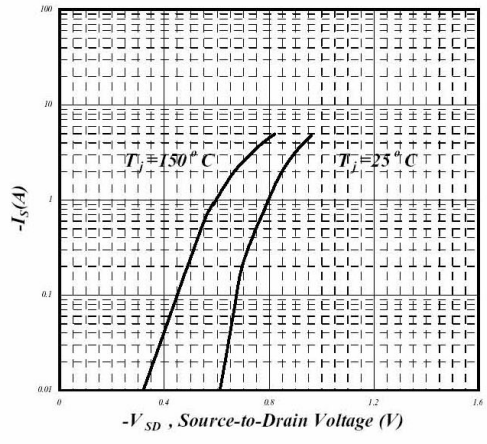


Fig 5. Forward Characteristics of Reverse Diode

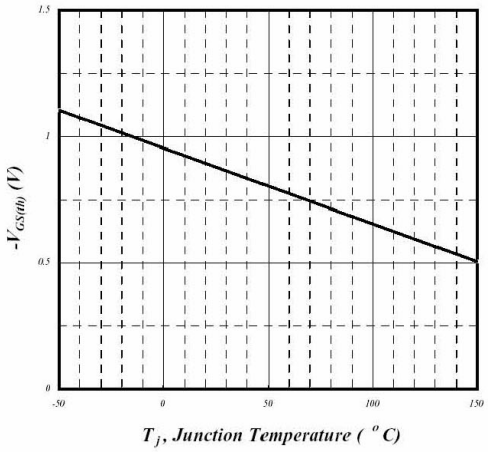


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES (cont'd)

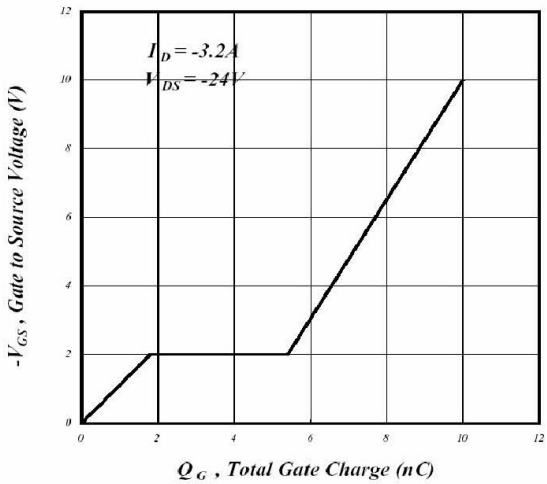


Fig 7. Gate Charge Characteristics

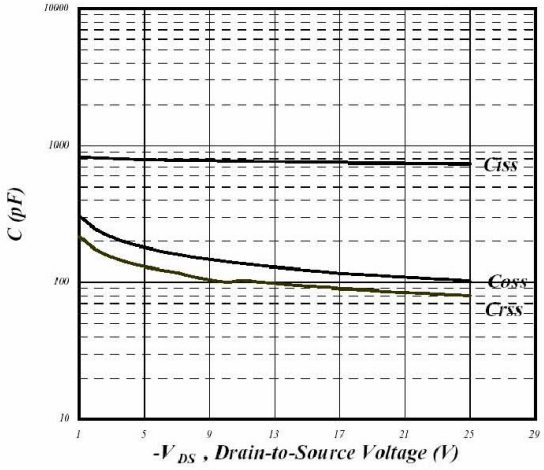


Fig 8. Typical Capacitance Characteristics

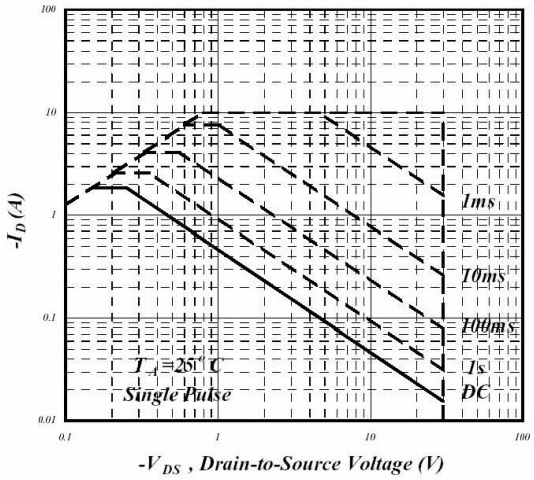


Fig 9. Maximum Safe Operating Area

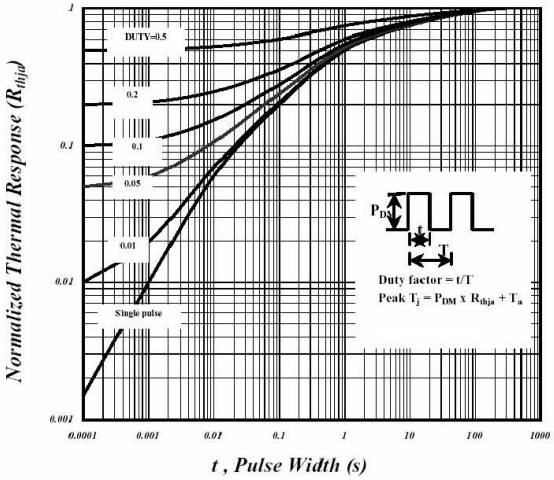


Fig 10. Effective Transient Thermal Impedance

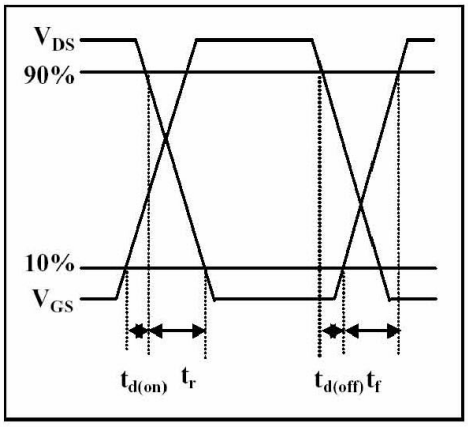


Fig 11. Switching Time Waveform

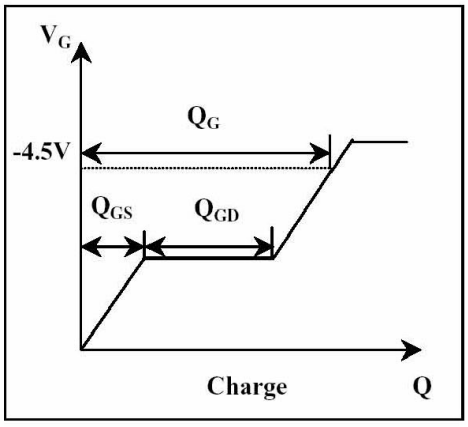


Fig 12. Gate Charge Waveform