Elektronische Bauelemente

SCG05K20-C

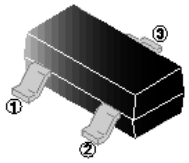
0.5A, 20V, $R_{DS(ON)}$ 300mΩ
N-Channel Plastic-Encapsulate MOSFETS

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

FEATURES

- Trench Power LV MOSFET Technology
- High Power and Current Handing Capability

SOT-523



APPLICATION

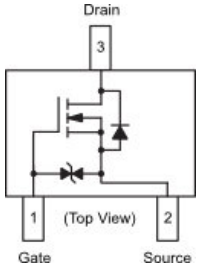
- PWM Application
- Load Switch

MARKING

34A

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-523	3K	7 inch



ORDER INFORMATION

Part Number	Type
SCG05K20-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current @Steady State	T_A=25℃	I_D	0.5	A
	T_A=70℃		0.4	
Pulsed Drain Current [1]		I_{DM}	3.3	A
Total Power Dissipation		P_D	0.18	W
Thermal Resistance from Junction-Ambient @Steady State		$R_{\theta JA}$	694	℃/W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	20	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage	$V_{GS(th)}$	0.35	0.75	1.1	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Body Leakage Current	I_{GSS}	-	0.5	±2	μA	V_{GS}= ±8V, V_{DS}=0
		-	2	±10		V_{GS}= ±10V, V_{DS}=0
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0
Drain-Source On-Resistance	$R_{DS(ON)}$	-	220	300	mΩ	V_{GS}=4.5V, I_D=0.5A
		-	290	400		V_{GS}=2.5V, I_D=0.4A
		-	420	700		V_{GS}=1.8V, I_D=0.2A
Gate resistance	R_G	-	50	-	Ω	f=1MHz, Open drain
Total Gate Charge	Q_g	-	1	-	nC	V_{GS}=4.5V, V_{DS}=10V, I_D=0.5A
Gate-Source Charge	Q_{gs}	-	0.28	-		
Gate-Drain Charge	Q_{gd}	-	0.22	-		
Turn-on Delay Time	$t_{(on)}$	-	2	-	nS	V_{GS}=4.5V, V_{DD}=10V, I_D=0.5A, R_G=10Ω
Rise Time	t_r	-	18.8	-		
Turn-off Delay Time	$t_{(off)}$	-	10	-		
Fall Time	t_f	-	23	-		
Input Capacitance	C_{iss}	-	56	-	pF	V_{DS}=10V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	20	-		
Reverse Transfer Capacitance	C_{rss}	-	2.5	-		
Source-Drain Diode						
Diode Forward Voltage [2]	V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=0.5A
Maximum Body-Diode Continuous Current	I_S	-	-	0.5	A	
Reverse Recovery Time	T_{rr}	-	14.4	-	nS	I_F=0.5A di/dt=20A/μs
Recovered Charge	Q_r	-	0.4	-	nC	

Notes:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width≤300us, Duty Cycle≤0.5%.

TYPICAL CHARACTERISTICS

Figure 1. Output Characteristics

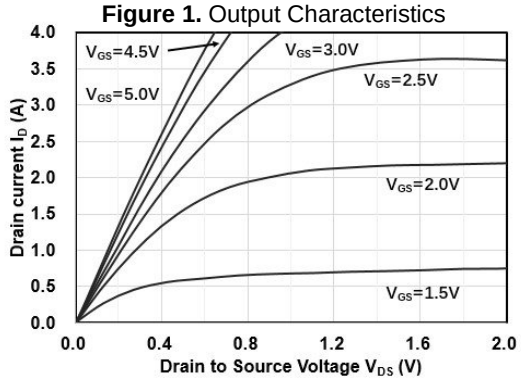


Figure 2. Transfer Characteristics

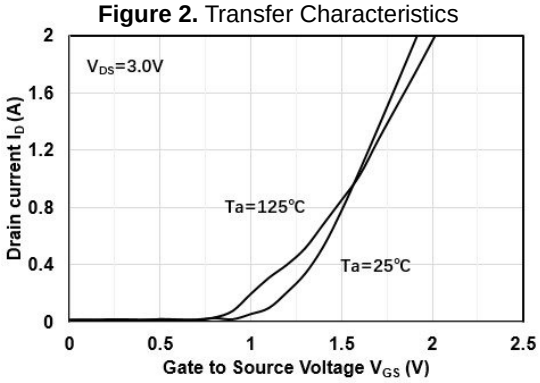


Figure 3. Capacitance Characteristics

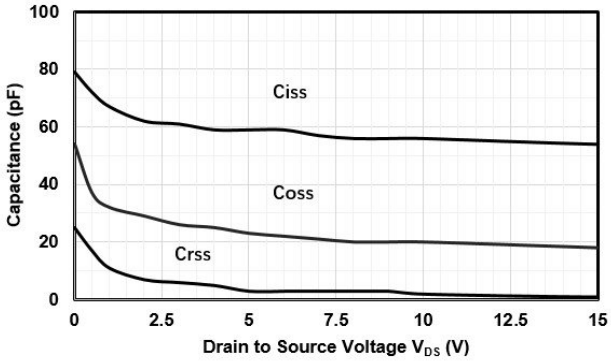


Figure 4. Gate Charge

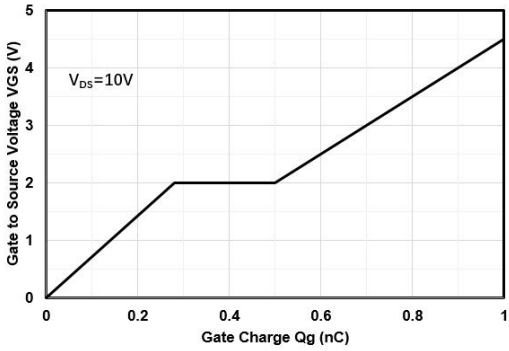


Figure 5. Drain-Source on Resistance

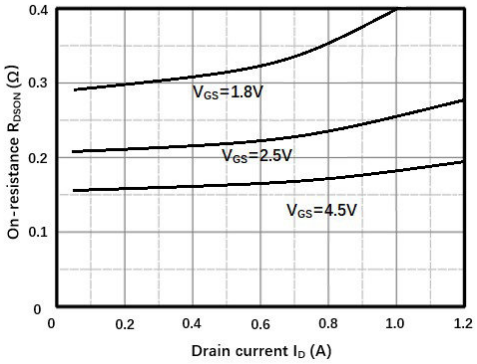


Figure 6. Drain-Source on Resistance

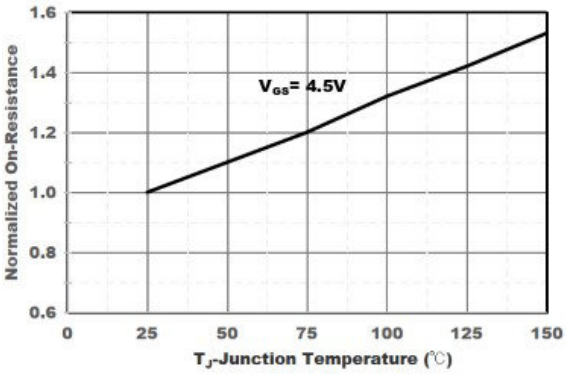


Figure 7. Safe Operation Area

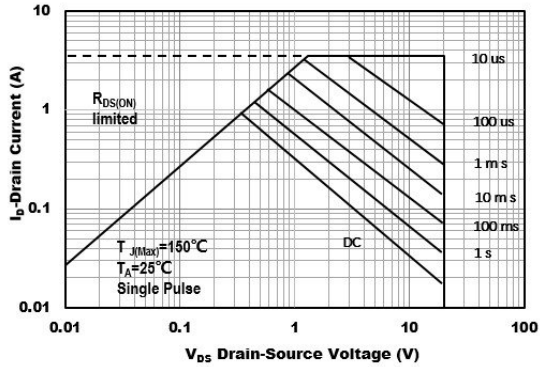
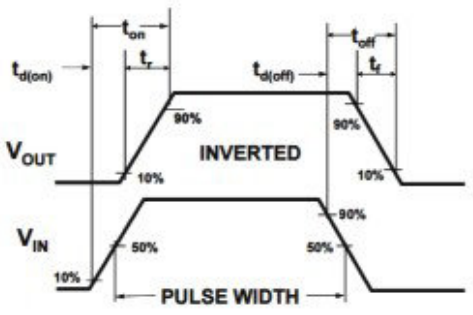
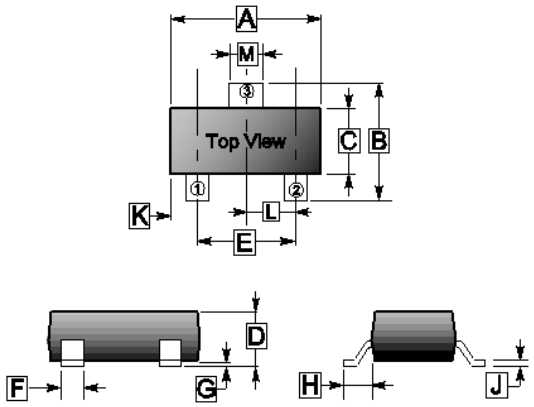


Figure 8. Switching wave



PACKAGE OUTLINE DIMENSIONS

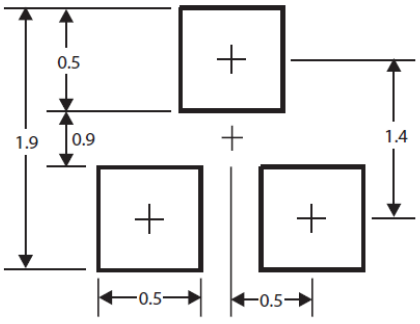
SOT-523



REF.	Millimeter	
	Min.	Max.
A	1.50	1.70
B	1.45	1.75
C	0.70	0.90
D	0.60	0.90
E	0.90	1.10
F	0.15	0.35
G	-	0.10
H	0.55 REF.	
J	0.08	0.20
K	-	
L	0.50 TYP.	
M	0.25	0.45

MOUNTING PAD LAYOUT

SOT-523



*Dimensions in millimeters