Elektronische Bauelemente

SMS4021-C

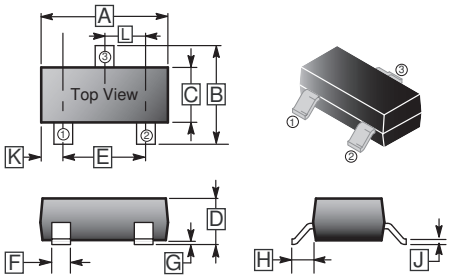
4.5A, 30V, $R_{DS(ON)}$ 29 mΩ
N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

SMS4021-C uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for the use as a load switch or in PWM applications. The source leads are separated to allow a Kelvin connection to the source, which may be used to bypass the source inductance.

SOT-23



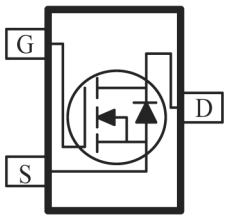
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.80	3.04	G	0.09	0.18
B	2.10	2.55	H	0.45	0.60
C	1.20	1.40	J	0.08	0.177
D	0.89	1.15	K	0.6 REF.	
E	1.78	2.04	L	0.89	1.02
F	0.30	0.50			

FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING

4021



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS4021-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [2]	T_A=25°C	I_D	4.5	A
Pulsed Drain Current [1]		I_{DM}	10	A
Power Dissipation [2]	T_A=25°C	P_D	1.4	W
Thermal Resistance from Junction to Ambient [2]		$R_{\theta JA}$	89	°C / W
Operating Junction and Storage Temperature		T_J, T_{STG}	150, -55~150	°C

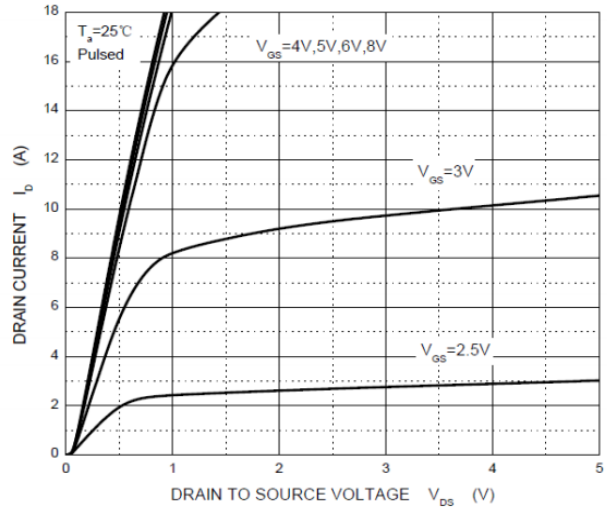
ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=30V, V_{GS}=0
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{DS}=0
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	20	29	mΩ	V_{DS}=10V, I_D=4.5A
		-	37	48		V_{GS}=4.5V, I_D=4.5A
Total Gate Charge	Q_g	-	4.7	-	nC	V_{GS}=4.5V,I_D=4.5A,V_{DS}=15V
Total Gate Charge	Q_g	-	7.96	-		I_D=4.5A V_{DS}=15V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	1.69	-		
Gate-Drain Change	Q_{gd}	-	1.52	-		
Turn-on Delay Time	$T_{d(on)}$	-	4.8	-	nS	V_{DS}=15V V_{GS}=10V I_D=1A R_{GEN}=6Ω
Rise Time	T_r	-	22	-		
Turn-off Delay Time	$T_{d(off)}$	-	10.8	-		
Fall Time	T_f	-	22.6	-		
Input Capacitance	C_{iss}	-	388	-	pF	V_{GS} =0 V_{DS}=15V f =1.0MHz
Output Capacitance	C_{oss}	-	67	-		
Reverse Transfer Capacitance	C_{rss}	-	56	-		
Source-Drain Diode						
Diode Forward Voltage [3]	V_{SD}	-	-	1.2	V	I_S=0.8A, V_{GS}=0

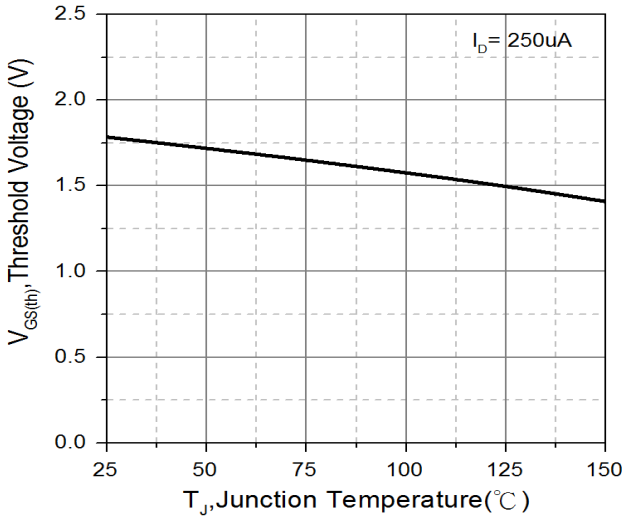
Notes:
1. Pulse width limited by maximum junction temperature, pulse width≦300μs, duty cycle≦2%
2. The data tested by surface mounted on a 1 inch^2 FR4 board with 2OZ copper.
3. Pulse Width≤300μs, Duty Cycle ≤ 2%.

CHARACTERISTIC CURVES

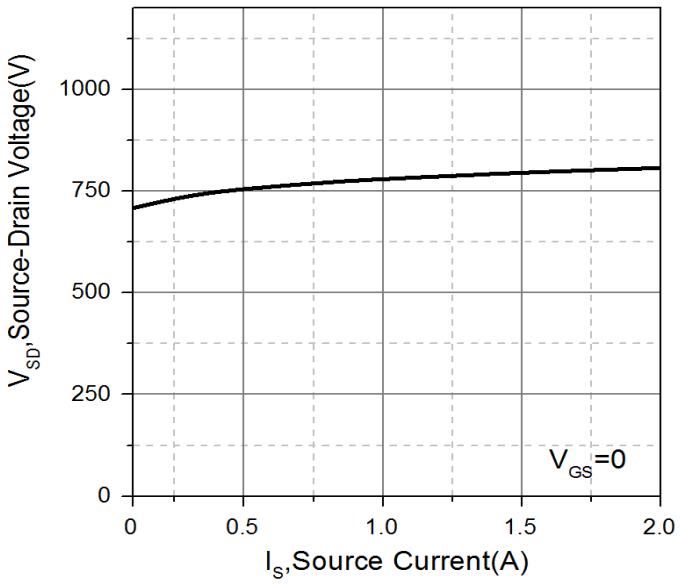
Output Characteristics



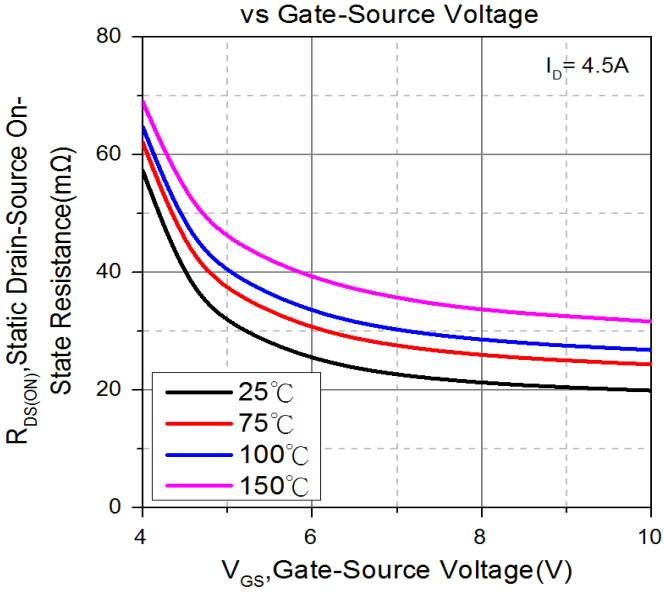
Threshold Voltage vs Junction Tempearture



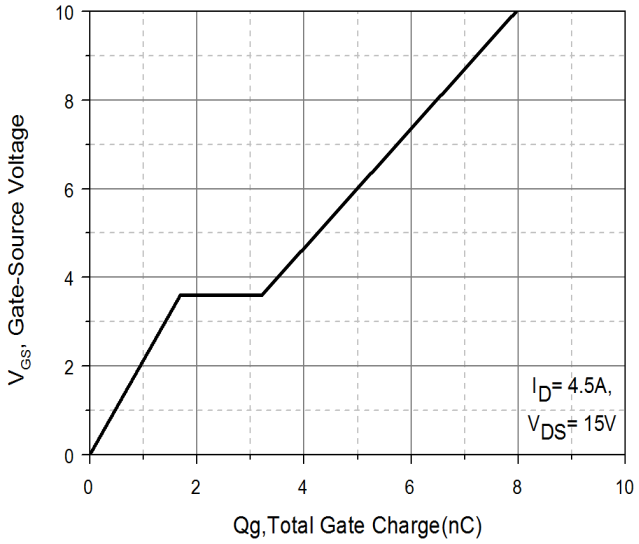
Source-Drain Voltage vs Source Current



Static Drain-Source On-State Resistance vs Gate-Source Voltage



Gate Charge Characteristics



Capacitance vs Drain-to-Source Voltage