Elektronische Bauelemente

SMS3022-C

5.7A, 30V, $R_{DS(ON)}$ 22mΩ
N-Channel Enhancement Mode Power MOSFET

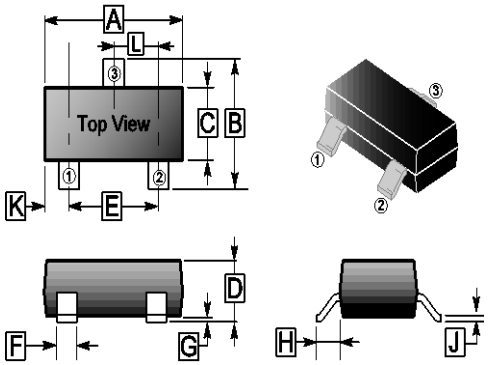
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS3022-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications.

The SMS3022-C meet the RoHS and Green Product requirement with full function reliability approved.

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	0	0.18
B	2.10	3.00	H	0.55 REF.	
C	1.10	1.80	J	0.08	0.26
D	0.89	1.40	K	0.60 REF.	
E	1.70	2.30	L	0.95 TYP.	
F	0.28	0.55			

FEATURES

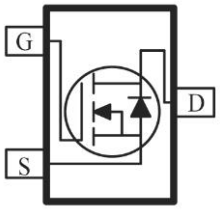
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

3022

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMS3022-C	Lead (Pb)-free and Halogen-free

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

Parameter		Symbol	Rating		Unit
			t≤5sec	Steady	
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		V
Continuous Drain Current [1] @V_{GS}=10V	T_A=25°C	I_D	6.5	5.7	A
	T_A=70°C		5.2	4.6	
Pulsed Drain Current [3]		I_{DM}	25		A
Total Power Dissipation	T_A=25°C	P_D	1.31	1	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150		°C
Thermal Resistance Ratings					
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	95	125	°C/W
Thermal Resistance Junction-Ambient [2]			313		

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance	g_{fs}	-	7	-	S	V_{DS}=5V, I_D=5A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0V, T_J=25°C
		-	-	5		V_{DS}=24V, V_{GS}=0V, T_J=55°C
Static Drain-Source On-Resistance [4]	$R_{DS(ON)}$	-	18	22	mΩ	V_{GS}=10V, I_D=3.6A
		-	22	27		V_{GS}=4.5V, I_D=3.2A
Total Gate Charge	Q_g	-	6.2	-	nC	V_{GS}=4.5V V_{DS}=15V I_D=5A
Gate-Source Charge	Q_{gs}	-	2.7	-		
Gate-Drain Change	Q_{gd}	-	2.2	-		
Turn-on Delay Time	$T_{d(on)}$	-	2.2	-	nS	V_{DS}=15V, V_{GS}=10V R_G=3.3Ω, I_D=5A
Rise Time	T_r	-	7.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	T_f	-	4.8	-		
Input Capacitance	C_{iss}	-	602	-	pF	V_{GS}=0V V_{DS}=15V f=1MHz
Output Capacitance	C_{oss}	-	76	-		
Reverse Transfer Capacitance	C_{rss}	-	57	-		
Source-Drain Diode						
Continuous Source Current [1]	I_S	-	-	5.7	A	
Pulsed Source Current [3]	I_{SM}	-	-	25	A	
Diode Forward Voltage [4]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V, T_J=25°C
Reverse Recovery Time	t_{rr}	-	17.2	-	nS	I_F=5A, dI/dt=100A/μs, T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	0.98	-	nC	

Notes:
1. Surface Mounted on 1” x 1” FR4 Board with 2OZ copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, Pulse Width≤300μs, Duty Cycle≤2%.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

CHARACTERISTIC CURVES

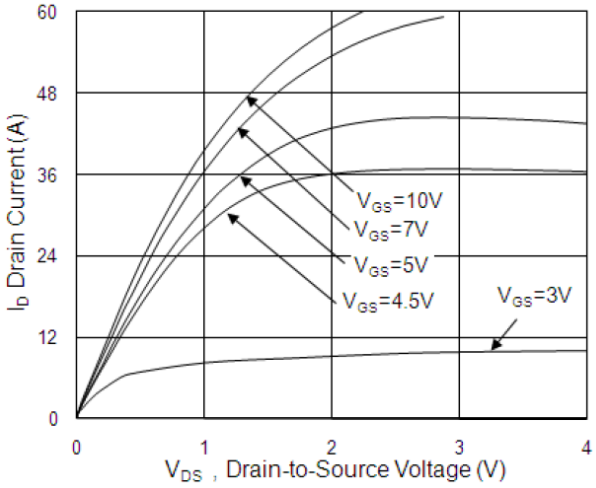


Fig.1 Typical Output Characteristics

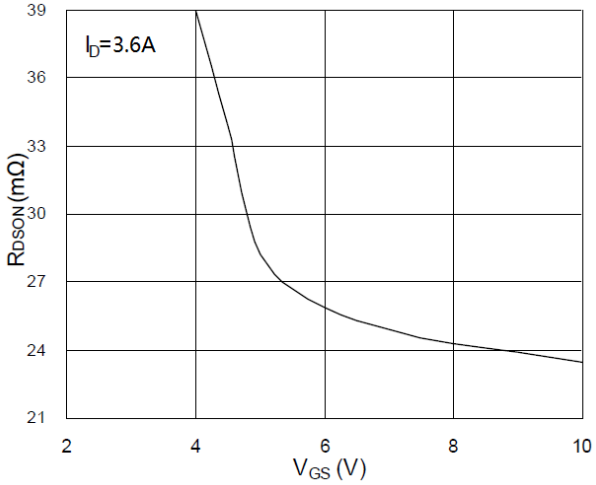


Fig.2 On-Resistance vs. Gate-Source

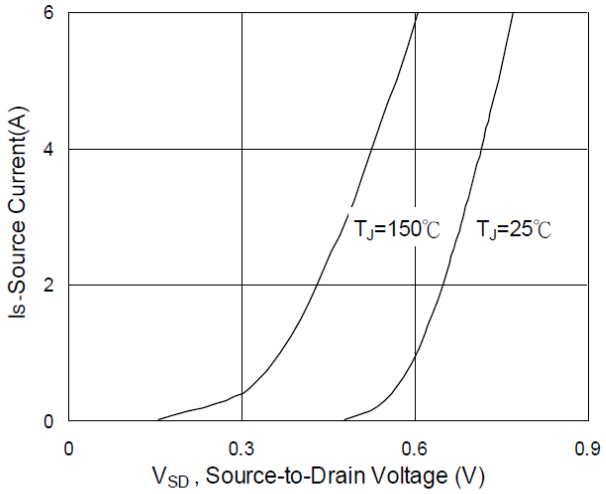


Fig.3 Forward Characteristics Of Reverse

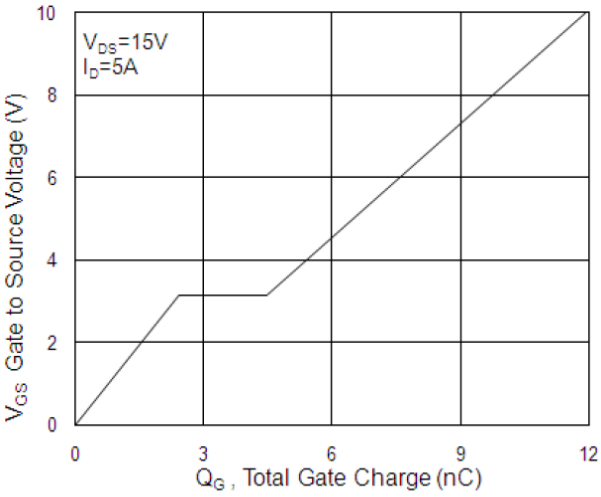


Fig.4 Gate-Charge Characteristics

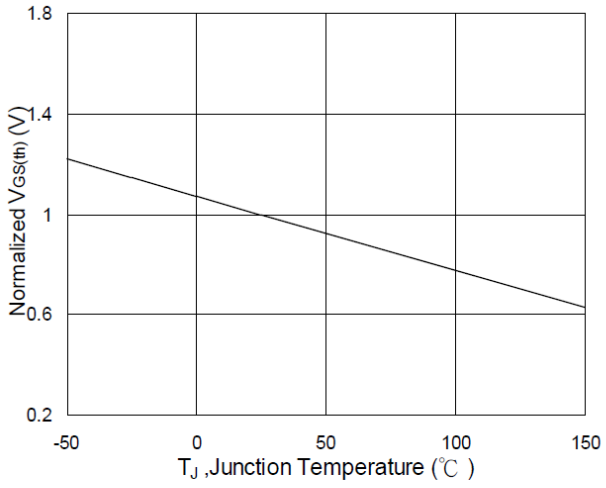


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

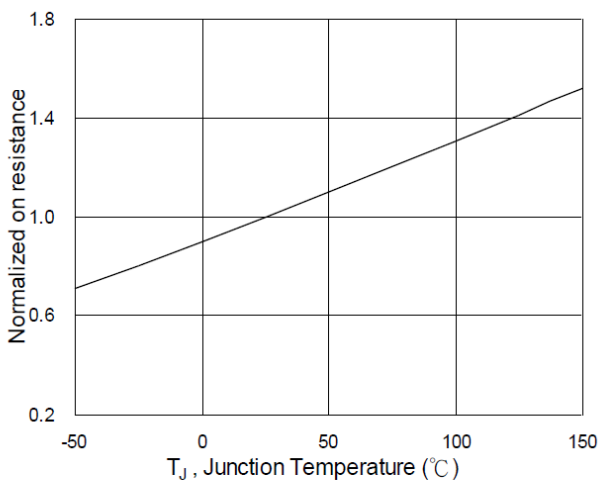


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

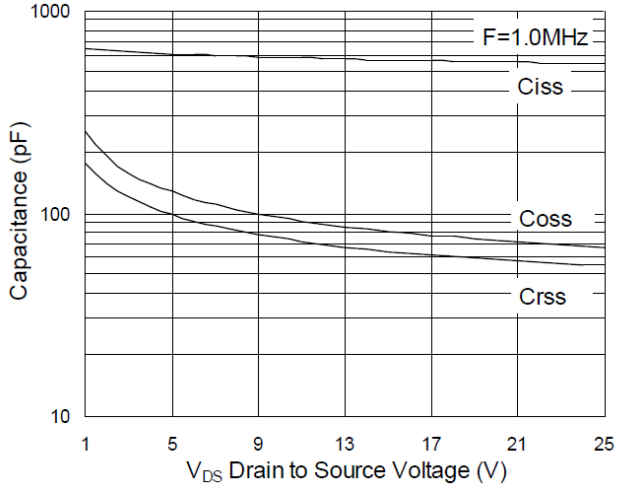


Fig.7 Capacitance

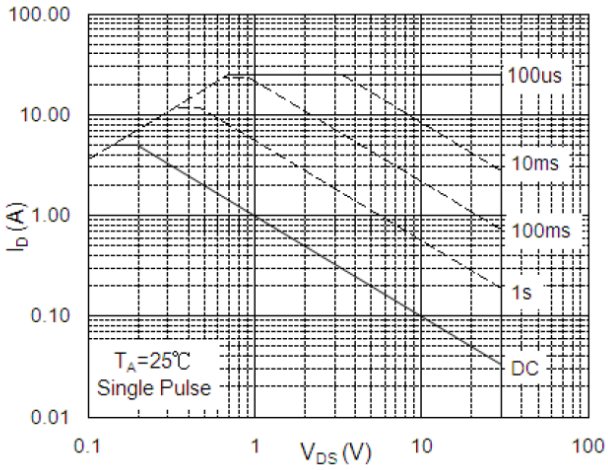


Fig.8 Safe Operating Area

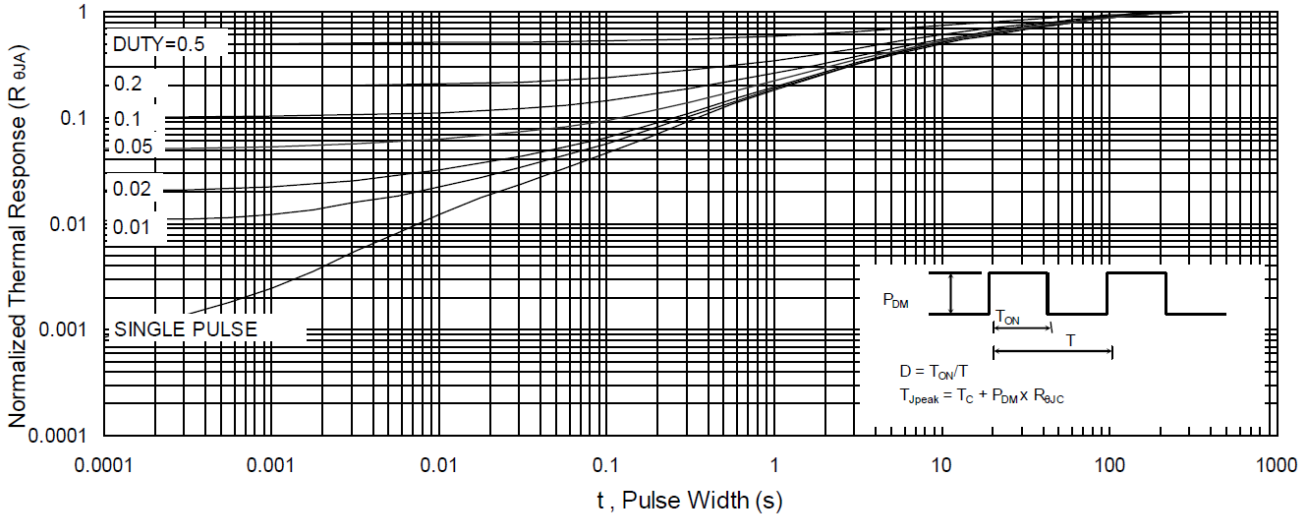


Fig.9 Normalized Maximum Transient Thermal Impedance

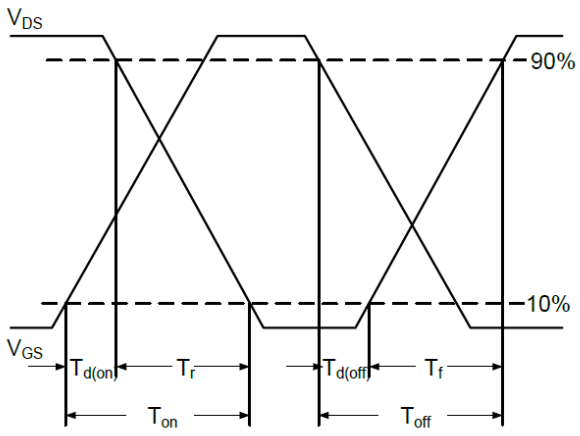


Fig.10 Switching Time Waveform

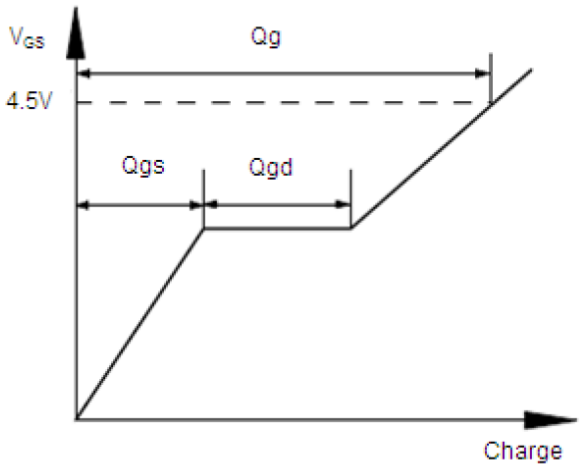


Fig.11 Gate Charge Waveform