Elektronische Bauelemente

S2N7002-C

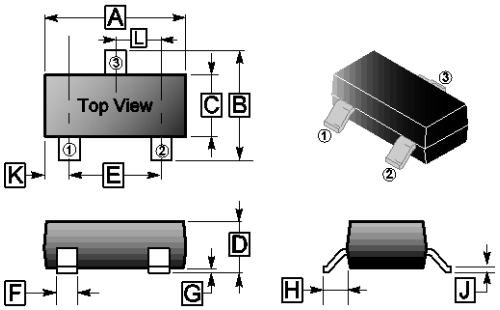
115mA, 60V, $R_{DS(ON)}$ 7.5Ω
N-Ch Small Signal MOSFET

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

FEATURES

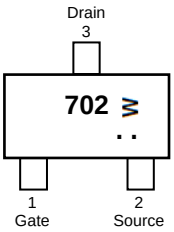
- Pb-Free Package is Available

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	0.05	0.26
D	0	1.40	K	0.60 REF.	
E	1.70	2.30	L	0.95 TYP.	
F	0.28	0.55			

MARKING



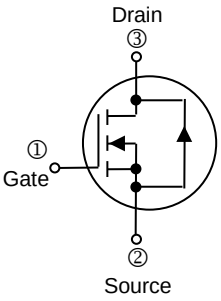
702 =Device Code
W =Date Code

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7' inch

ORDER INFORMATION

Part Number	Type
S2N7002-C	Lead (Pb)-free and Halogen-free



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage @R_{GS}=1mΩ		V_{DGR}	60	V
Continuous Drain Current [1]	T_C=25°C	I_D	±115	mA
	T_C=100°C		±75	mA
Pulsed Drain Current [2]		I_{DM}	±800	mA
Continuous Gate-Source Voltage		V_{GS}	±20	V
Non-Repetitive Gate-Source Voltage @tp≦50μs		V_{GSM}	±40	V
Thermal Characteristics				
Total Device Dissipation FR-5 Board [3]	T_A=25°C	P_D	225	mW
	Derate above 25°C		1.8	mW/°C
Thermal Resistance, Junction-Ambient		$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature		T_J, T_{STG}	-55~150	°C

Notes:

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width≦ 300μs, Duty Cycle≦ 2%.
3. FR-5= 1.0 x 0.75 x 0.062 in.
4. Alumina=0.4 x 0.3 x 0.025 in 99.5% alumina.

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Condition
Off Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	60	-	-	V	V_{GS}=0, I_D=10μA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{GS}=0, V_{DS}=60V
	T_J=125°C		-	-	500		
Gate-Body Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
On Characteristics [1]							
Gate Threshold Voltage		$V_{GS(th)}$	1	1.6	2.5	V	V_{DS} = V_{GS}, I_D =250μA
Forward Transconductance		g_{fs}	80	-	-	S	V_{DS}≧2$V_{DS(ON)}$, I_D=200mA
On-State Drain Current		$I_{D(ON)}$	500	-	-	mA	V_{DS}≧2$V_{DS(ON)}$, V_{GS}=10V
Drain-Source On-State Voltage		$V_{DS(ON)}$	-	-	3.75	V	V_{GS}=10V, I_D=500mA
			-	-	0.375		V_{GS}=5V, I_D=50mA
Drain-Source On Resistance	T_A=25°C	$R_{DS(ON)}$	-	1.4	7.5	Ω	V_{GS}=10V, I_D=500mA
			-	1.8	7.5		V_{GS}=5V, I_D=50mA
	T_A=125°C		-	-	13.5		V_{GS}=10V, I_D=500mA
			-	-	13.5		V_{GS}=5V, I_D=50mA
Dynamic Characteristics							
Input Capacitance		C_{iss}	-	17	50	pF	V_{DS}=25V V_{GS}=0 f=1MHz
Output Capacitance		C_{oss}	-	10	25		
Reverse Transfer Capacitance		C_{rss}	-	2.5	5.0		
Switching Characteristics [1]							
Turn-On Delay Time		$T_{d(on)}$	-	7	20	nS	V_{DD}=25V, I_D=500mA, R_G=25Ω, R_L=50Ω, V_{GEN}=10V
Turn-Off Delay Time		$T_{d(off)}$	-	11	40		
Body-Drain Diode Ratings							
Diode Forward On-Voltage		V_{SD}	-	-	-1.5	V	I_S=11.5mA, V_{GS}=0V
Source Current Continuous (Body Diode)		I_S	-	-	-115	mA	
Source Current Pulsed		I_{SM}	-	-	-800	mA	

Note:
1. Pulse Test: Pulse Width≦ 300μs, Duty Cycle≦ 2%.

RATINGS AND CHARACTERISTIC CURVES

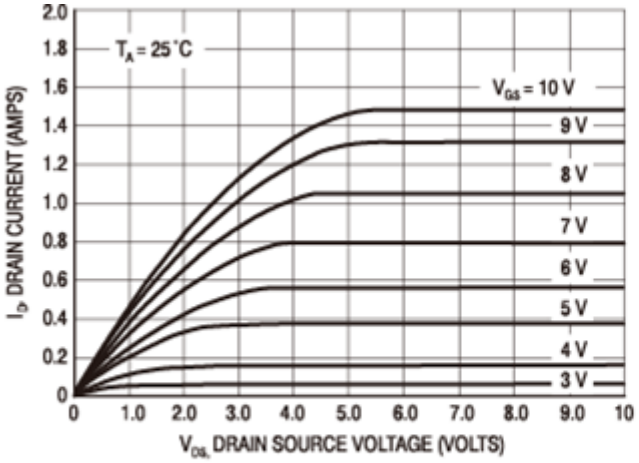


Figure 1. Ohmic Region

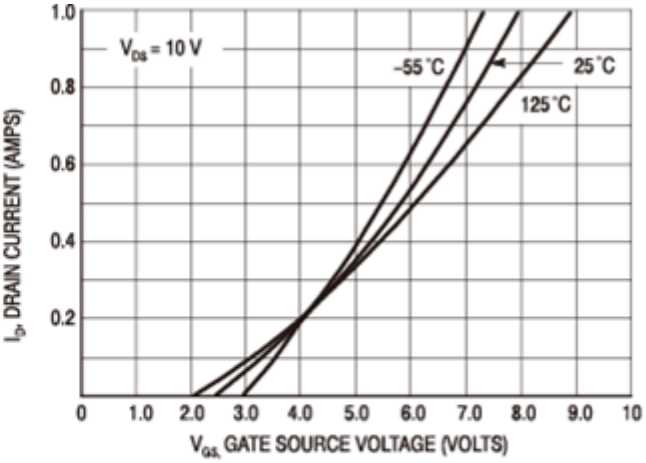


Figure 2. Transfer Characteristics

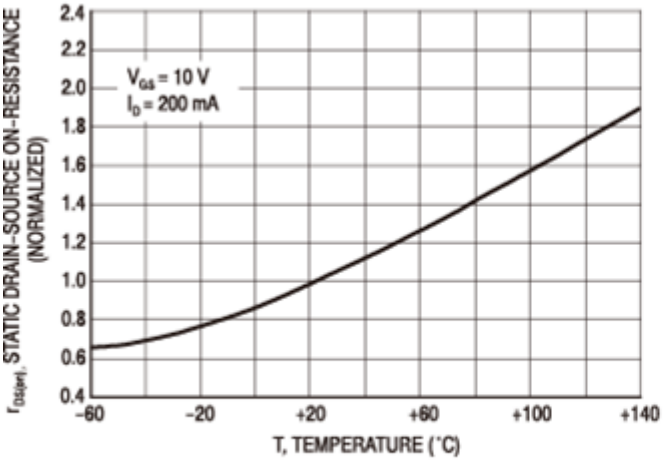


Figure 3. Temperature versus Static Drain–Source On–Resistance

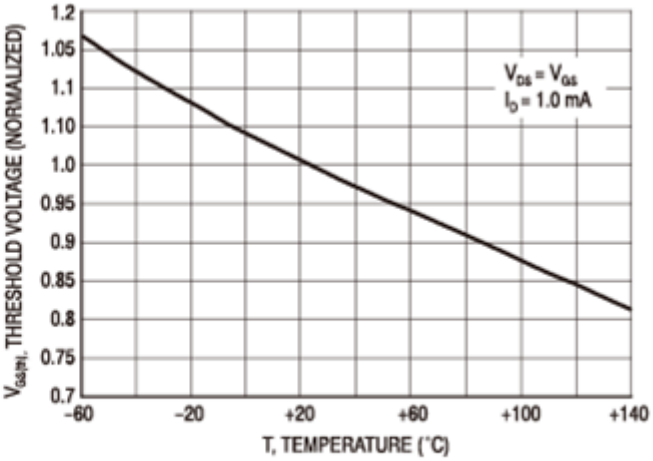
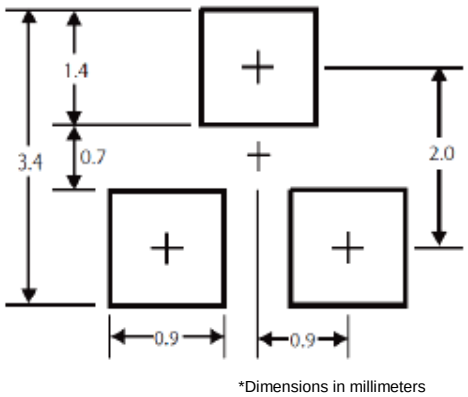


Figure 4. Temperature versus Gate Threshold Voltage



*Dimensions in millimeters

Figure 5. Mounting Pad Layout