



SSC7002KGS7

N-Channel Small Switching MOSFET with ESD Protection

Features

V _{DS}	V _{GS}	R _{DS(ON)} Typ.	I _D	ESD
60V	±20V	2Ω@10V	0.3A	1kV
		3Ω@4V5		

Description

This device is an N-Channel enhancement mode MOSFET, with low on-resistance, fast switching speed and low threshold voltage, it is ideal for portable equipment.

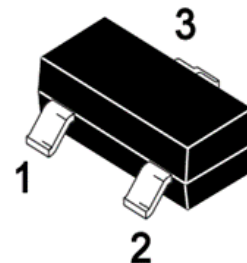
Applications

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers
- Display, Memories, Transistors, etc.
- Battery Operated System
- Solid-State Relays

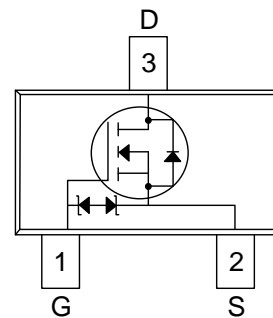
Ordering Information

Device	Package	Shipping
SSC7002KGS7	SOT-323	3000/Reel

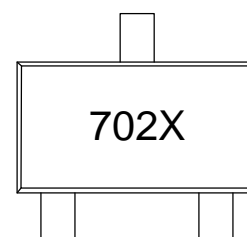
Pin configuration



SOT-323



Pin Configuration (Top View)



Marking



➤ **Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)**

Symbol	Parameter	Ratings	Unit
V_{DSS}	Drain-to-Source Voltage	60	V
V_{GSS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current ^a	0.3	A
I_{DM}	Pulsed Drain Current ^b	1	A
P_D	Power Dissipation ^c	0.46	W
T_J	Operation junction temperature	-55~150	$^\circ\text{C}$
T_{STG}	Storage temperature range	-55~150	$^\circ\text{C}$

➤ **Thermal Resistance Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)**

Symbol	Parameter	Maximum	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance ^a	500	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	270	

Note:

- The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz.copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user is specific board design. The power dissipation is based on the $t \leq 10\text{s}$ thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation P_D is based on $T_{J(\text{MAX})}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

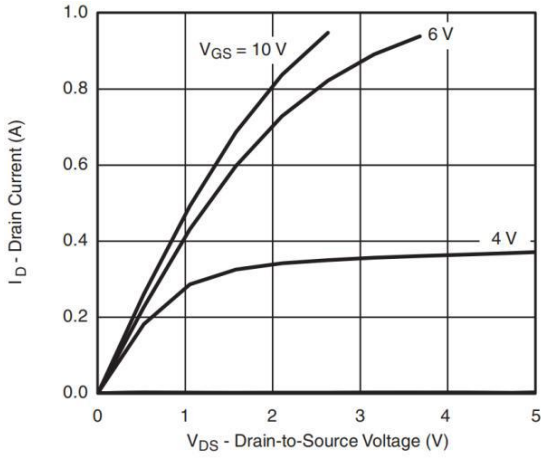


➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

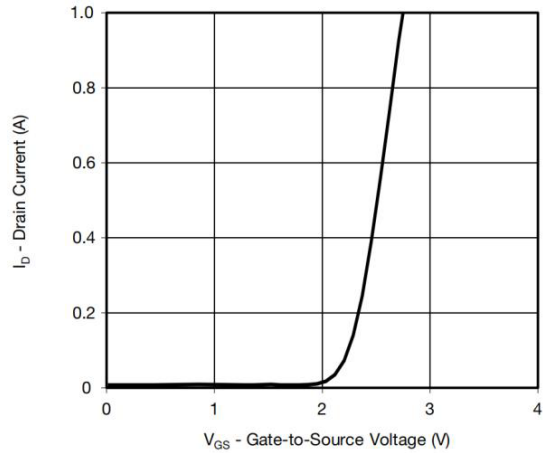
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	1	1.5	2.1	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 0.2A		2	6	Ω
		V _{GS} = 4.5V, I _D = 0.1A		3	8	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V			1	μA
Gate-Source Leak Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Transconductance	G _{FS}	V _{DS} = 10V, I _D = 0.2A		0.08		s
Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 0.2A		0.7	1.3	V
Input Capacitance	C _{ISS}	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz		30		pF
Output Capacitance	C _{OSS}			12		
Reverse Transfer Capacitance	C _{RSS}			4.8		
Turn-on Delay Time	T _{D(ON)}	V _{GS} = 10V, R _L = 60Ω V _{DS} = 20V, R _G = 20Ω		4.6		ns
Rise Time	T _r			4.1		
Turn-off Delay Time	T _{D(OFF)}			24		
Fall Time	T _f			18		
Total Gate Charge	Q _G	V _{GS} = 10V, V _{DS} = 15V, I _D = 0.2A		0.4		nC
Gate to Source Charge	Q _{GS}			0.1		
Gate to Drain Charge	Q _{GD}			0.11		



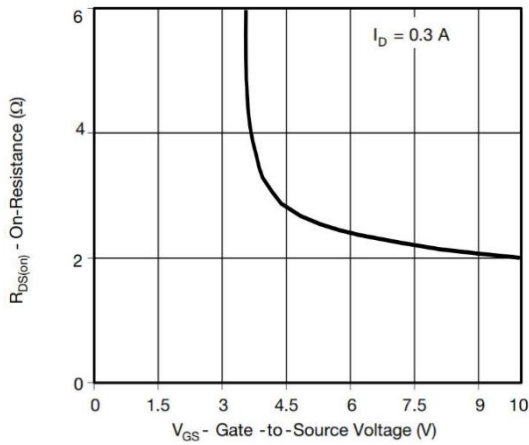
➤ **Typical Performance Characteristics (T_A=25°C unless otherwise noted)**



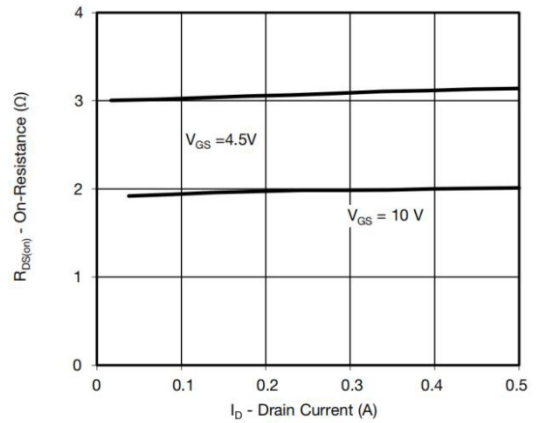
Output Characteristics



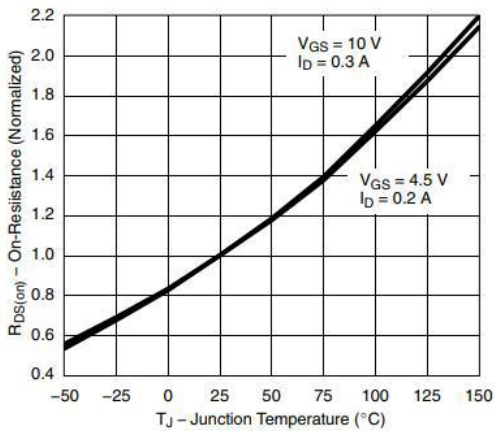
Transfer Characteristics



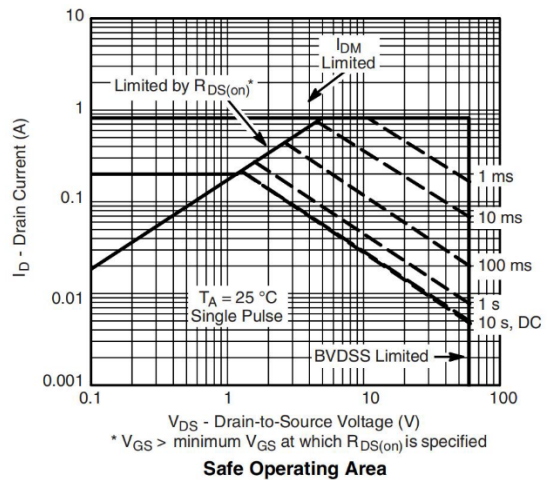
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Drain Current

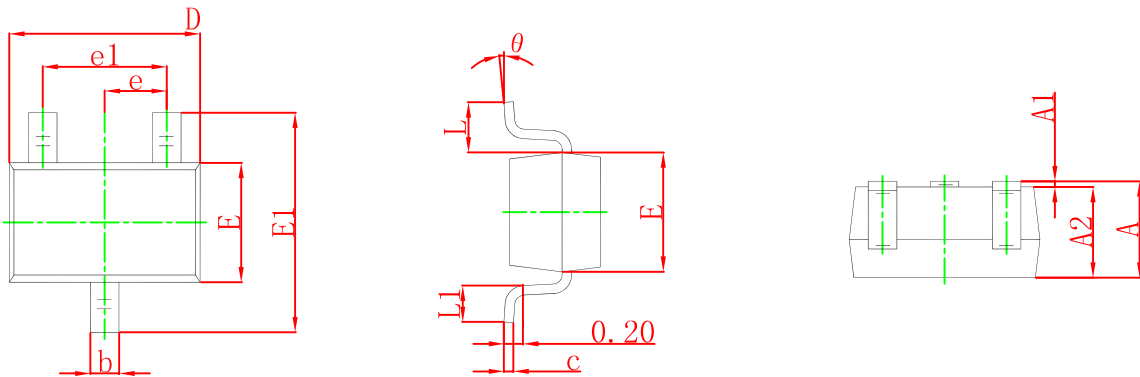


On-Resistance vs. Junction Temperature



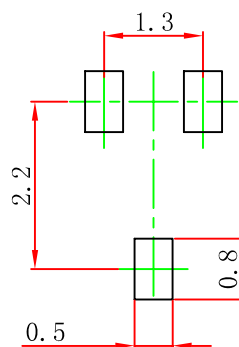
Safe Operating Area

➤ Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

➤ Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.



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