



## SSC7002KGS8

### N-Channel Small Switching MOSFET with ESD Protection

#### ➤ Features

V <sub>DS</sub>	V <sub>GS</sub>	R <sub>DS(ON)</sub> Typ.	I <sub>D</sub>	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.

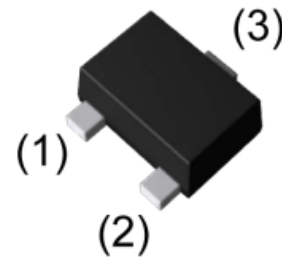
#### ➤ Applications

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

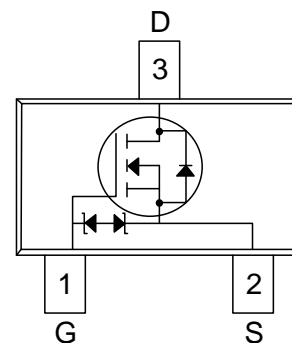
#### ➤ Ordering Information

Device	Package	Shipping
SSC7002KGS8	SOT-523	3000/Reel

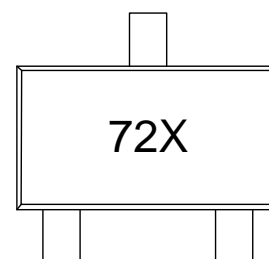
#### ➤ Pin configuration



**SOT-523**



**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	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>a</sup>	0.3	A
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	0.9	A
$P_D$	Power Dissipation <sup>c</sup>	0.6	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 <sup>a</sup>	200	$^\circ\text{C}/\text{W}$

Note:

- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> 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  $T_{J(MAX)}=150^\circ\text{C}$ , using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

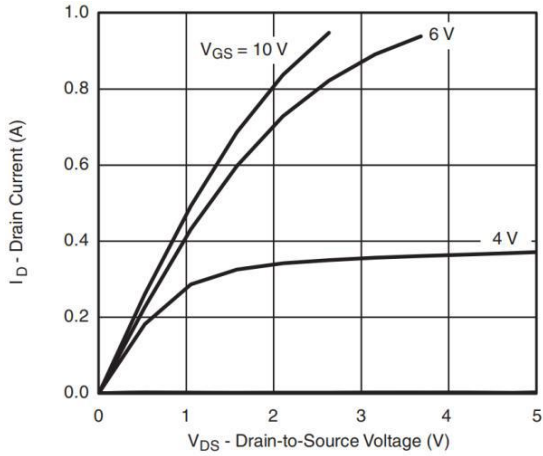


➤ **Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

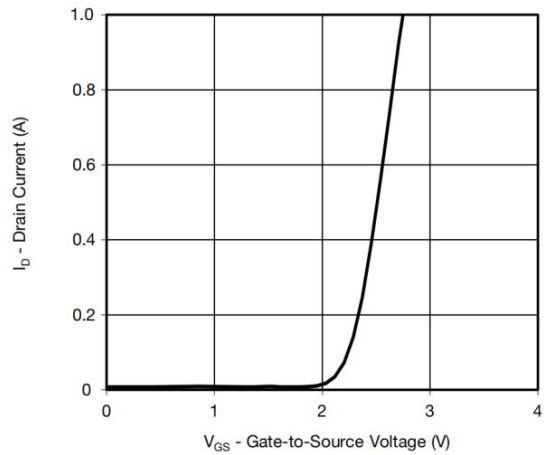
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250uA	1	1.5	2.1	V
Drain-Source On-Resistance	R 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



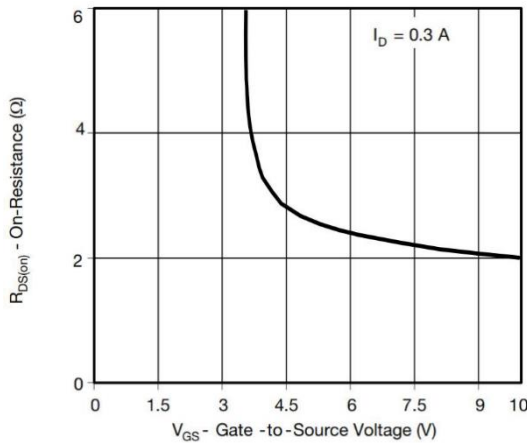
➤ **Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**



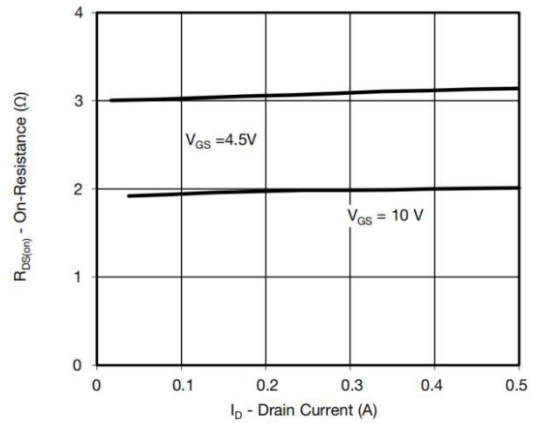
**Output Characteristics**



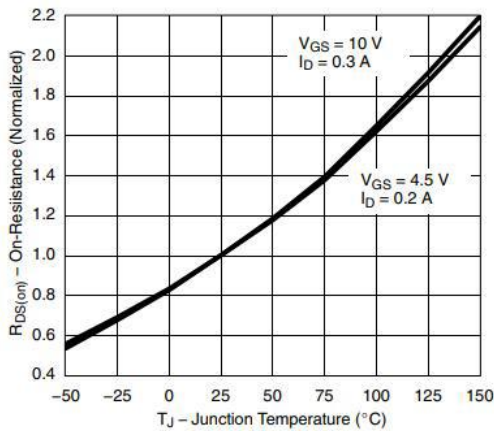
**Transfer Characteristics**



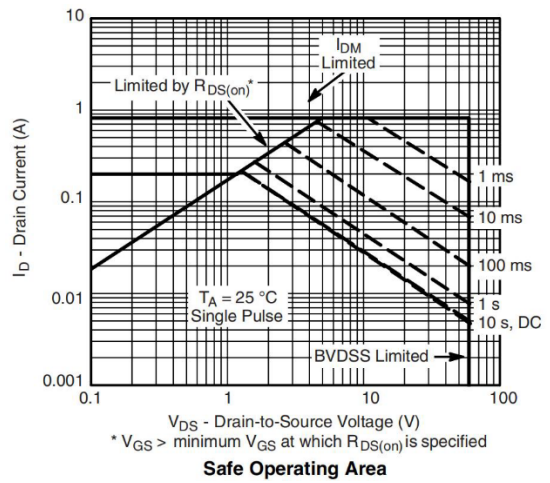
**On-Resistance vs. Gate-to-Source Voltage**



**On-Resistance vs. Drain Current**



**On-Resistance vs. Junction Temperature**

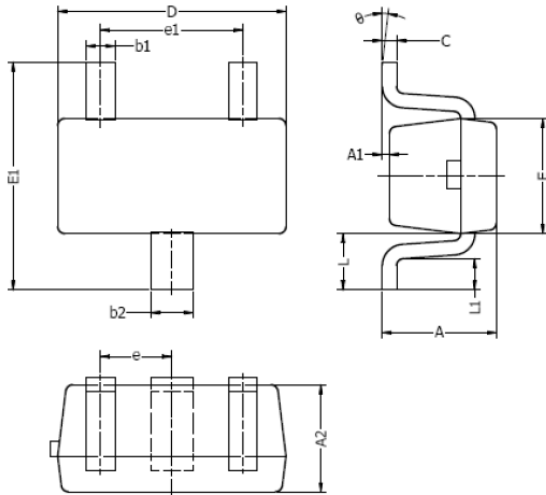


**Safe Operating Area**

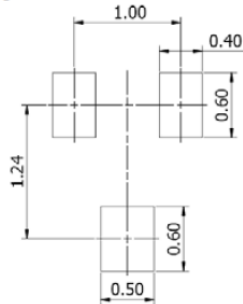


## ➤ Package Information

### SOT-523



Typical Soldering Pattern:



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
ϕ	0°	8°	0°	8°

**NOTES:**

1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.



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