

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

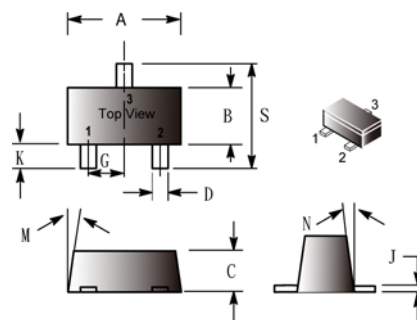
SOT-523

FEATURES

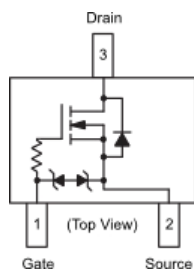
- Low Gate Charge for Fast Switching.
- ESD Protected Gate.

APPLICATIONS

- Power Management Load Switch
- Portable Applications such as Cell Phones, Media Players, Digital Cameras, PDA's, Video Games, Hand Held Computers, etc.



PACKAGE INFORMATION



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.50	1.70	K	0.30	0.50
B	0.75	0.95	M	---	10°
C	0.60	0.80	N	---	10°
D	0.23	0.33	S	1.50	1.70
G	0.50BSC				
J	0.10	0.20			

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

PARAMETER	SYMBOL	RATING	UNIT
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±10	V
Continuous Drain Current	I _D	154	mA
Pulsed Drain Current	I _{DM}	618	mA
Continuous Source Current (Body Diode)	I _{SD}	154	mA
Total Power Dissipation	P _D ¹	300	mW
Operating Junction Temperature Range	T _J	150	°C
Operating Storage Temperature Range	T _{STG}	-55~150	°C

Note 1. Surface—mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).

DEVICE MARKING

S2N7002KT = T6

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

CHARACTERISTICS	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Off Characteristics (Note2)						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	-	-	V	$V_{GS} = 0V, I_D = 100\mu A$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1.0	μA	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 25	μA	$V_{GS} = \pm 10V, V_{DS} = 0V$
On Characteristics (Note2)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	1.0	1.5	V	$V_{DS} = V_{GS}, I_D = 100\mu A$
Static Drain-Source On Resistance	$R_{DS(ON)}$	-	1.4	7.0	Ω	$V_{GS} = 4.5V, I_D = 154mA$
		-	2.3	7.5		$V_{GS} = 2.5V, I_D = 154mA$
Forward transfer admittance	g_{fs}	-	80	-	mS	$V_{DS} = 3V, I_D = 154mA$
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	11.5	-	pF	$V_{DS} = 5V, V_{GS} = 0V, f = 1MHz$
Output Capacitance	C_{oss}	-	10	-		
Reverse Transfer Capacitance	C_{rss}	-	3.5	-		
Switching Characteristics						
Turn-On Delay Time	$T_{d(ON)}^*$	-	13	-	nS	$V_{DS} = 5.0V, V_{GS} = 4.5V, I_D = 75mA,$ $R_G = 10\Omega$
Rise Time	T_r	-	15	-		
Turn-Off Delay Time	$T_{d(OFF)}^*$	-	98	-		
Fall Time	T_f	-	60	-		
Source-Drain Diode Characteristics						
Input Capacitance	V_{SD}	-	0.77	0.9	V	$V_{GS} = 0V, I_S = 0.154mA$

*Pulse Test : pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

CHARACTERISTIC CURVE

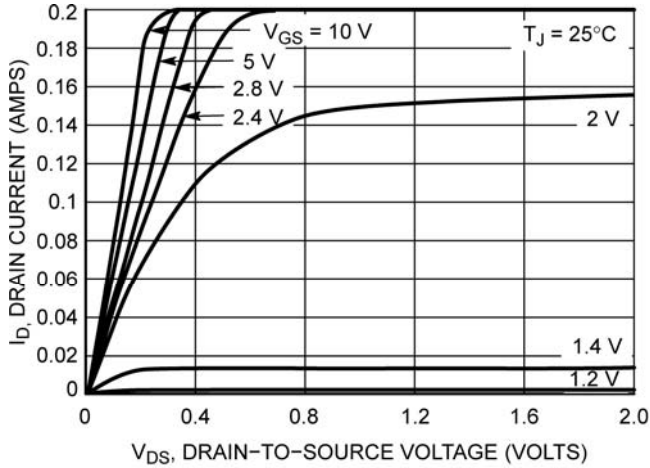


Figure 1. On-Region Characteristics

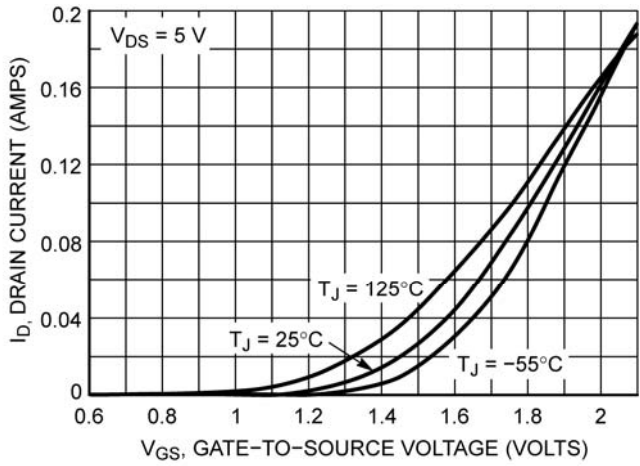


Figure 2. Transfer Characteristics

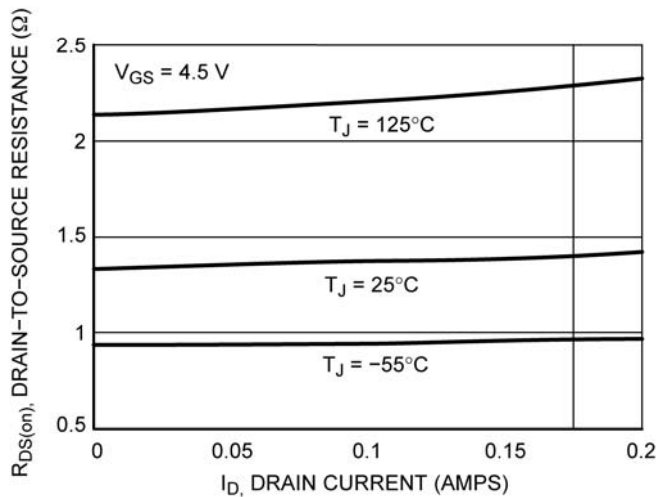


Figure 3. On-Resistance vs. Drain Current and Temperature

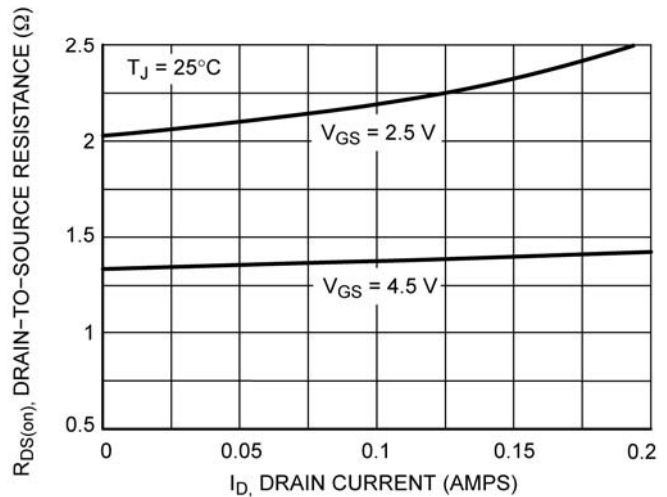


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

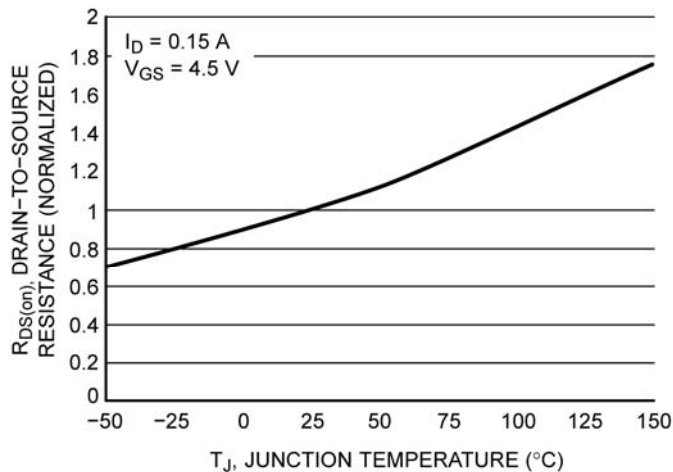


Figure 5. On-Resistance Variation with Temperature

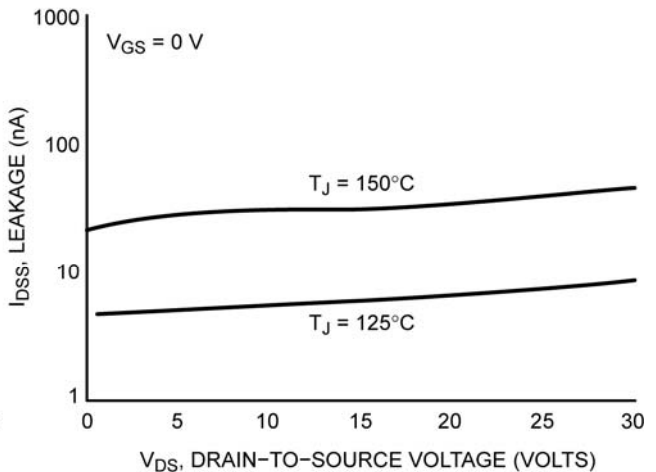


Figure 6. Drain-to-Source Leakage Current vs. Voltage

CHARACTERISTIC CURVE

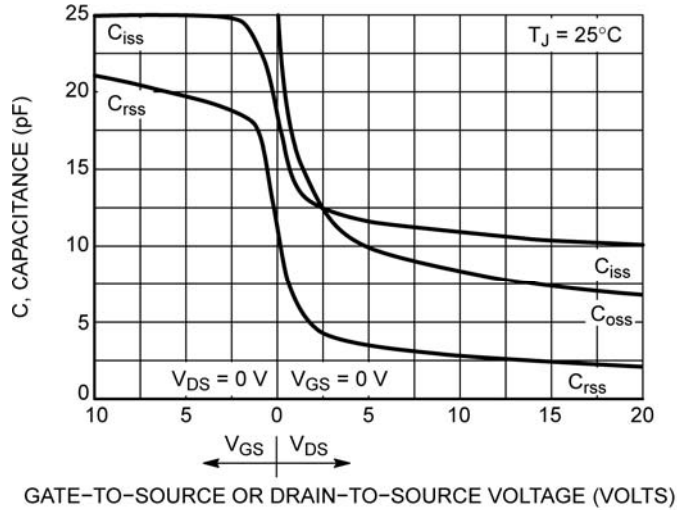


Figure 7. Capacitance Variation

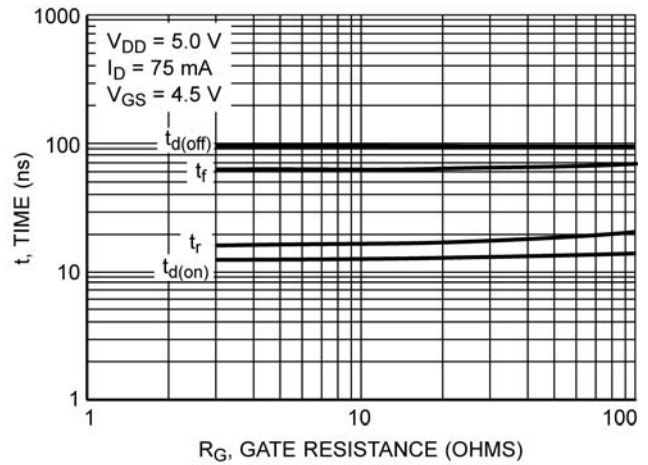


Figure 8. Resistive Switching Time Variation vs. Gate Resistance

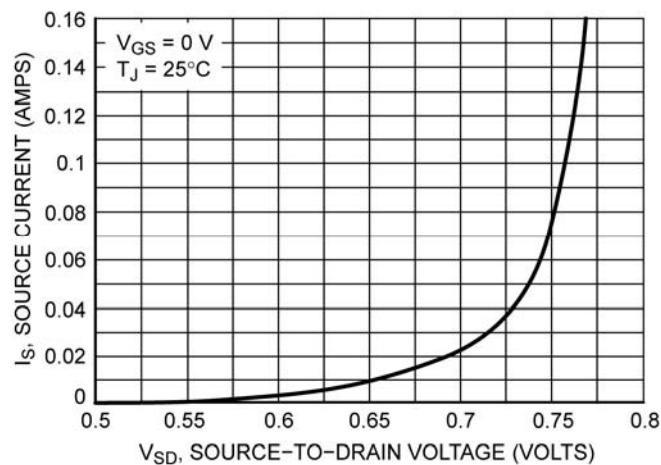


Figure 9. Diode Forward Voltage vs. Current