

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

## FEATURES

- Low On-Resistance
- Fast Switching Speed
- Drive Circuits Can be Simple
- Parallel Use Is Easy
- Low Voltage Drive Makes This Device Ideal for Portable Equipment

## APPLICATION

- Interfacing
- Switching

## MARKING

KD

## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-723	8K	7 inch

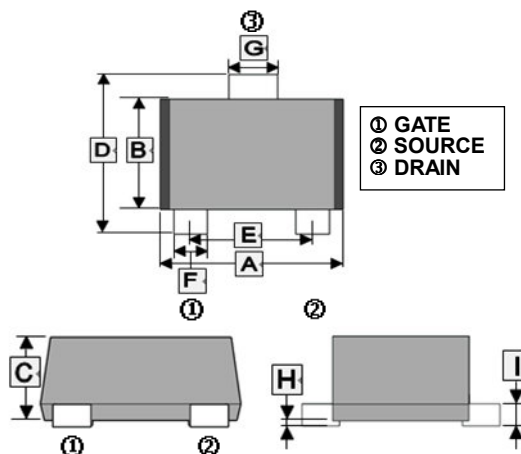
## ORDER INFORMATION

Part Number	Type
SSN20P52E-C	Lead (Pb)-free and Halogen-free

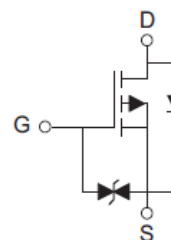
## MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current <sup>1</sup>	$I_D$	-0.66	A
Pulsed Drain Current ( $t_p=10\mu\text{s}$ )	$I_{DM}$	-1.2	A
Total Power Dissipation <sup>1</sup>	$P_D$	150	mW
Lead Temperature for Soldering Purposes (1/8" from case for 10S)	$T_L$	260	$^\circ\text{C}$
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-ambient <sup>1</sup>	$R_{\theta JA}$	833	$^\circ\text{C/W}$

### SOT-723



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.150	1.250	F	0.170	0.270
B	0.750	0.850	G	0.270	0.370
C	-	0.500	H	0	0.050
D	1.150	1.250	I	-	0.150
E	0.800TYP.				



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

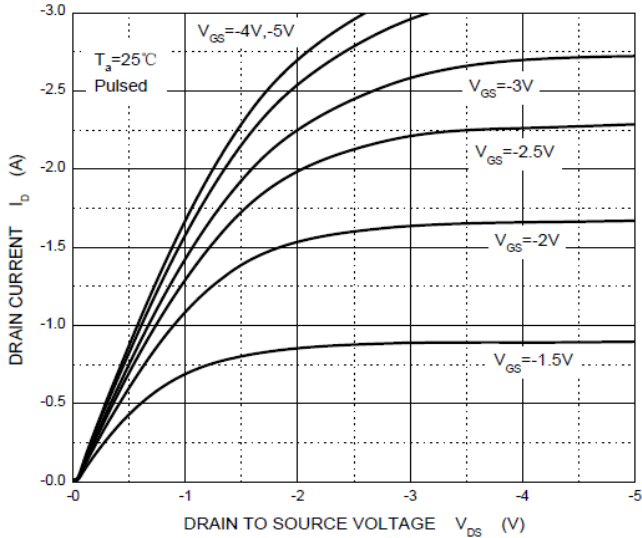
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-20	-	-	V	$V_{GS}=0, I_D=-250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu\text{A}$	$V_{DS}=-20\text{V}, V_{GS}=0$
Gate-Body Leakage Current	$I_{GSS}$	-	-	$\pm 20$	$\mu\text{A}$	$V_{DS}=0, V_{GS}=\pm 10\text{V}$
Gate Threshold Voltage <sup>1</sup>	$V_{GS(th)}$	-0.35	-	-1.1	V	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$
Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	-	520	m $\Omega$	$V_{GS}=-4.5\text{V}, I_D=-1\text{A}$
		-	-	700		$V_{GS}=-2.5\text{V}, I_D=-0.8\text{A}$
		-	950	-		$V_{GS}=-1.8\text{V}, I_D=-0.5\text{A}$
Forward Transconductance <sup>1</sup>	$g_{FS}$	-	1.2	-	S	$V_{DS}=-10\text{V}, I_D=-0.54\text{A}$
Diode forward voltage	$V_{SD}$	-	-	-1.2	V	$I_S=-0.5\text{A}, V_{DS}=0$
Turn-On Delay Time <sup>2</sup>	$T_{d(on)}$	-	9	-	nS	$V_{DS}=-10\text{V}$ $I_D=-200\text{mA}$ $V_{GS}=-4.5\text{V}$ $R_{GEN}=10\Omega$
Rise Time <sup>2</sup>	$T_r$	-	5.8	-		
Turn-Off Delay Time <sup>2</sup>	$T_{d(off)}$	-	32.7	-		
Fall Time <sup>2</sup>	$T_f$	-	20.3	-		
Input Capacitance	$C_{iss}$	-	113	-	pF	$V_{DS}=-16\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	15	-		
Reverse Transfer Capacitance	$C_{rss}$	-	9	-		

Notes:

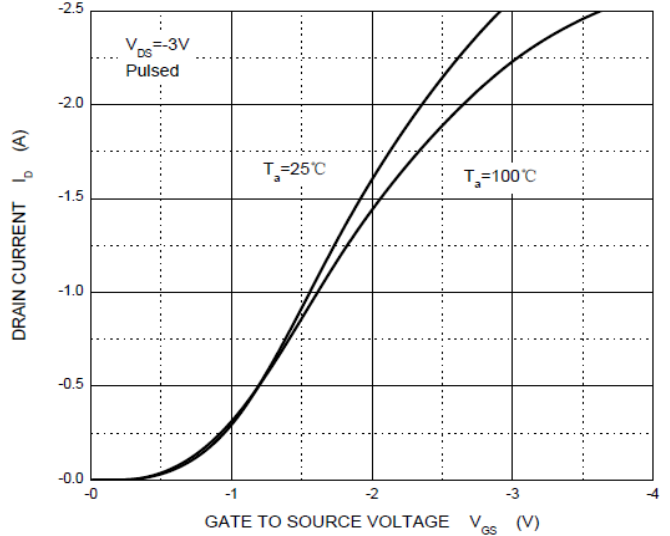
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test: Pulse Width=300 $\mu\text{s}$ , Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.

**TYPICAL CHARACTERISTICS**

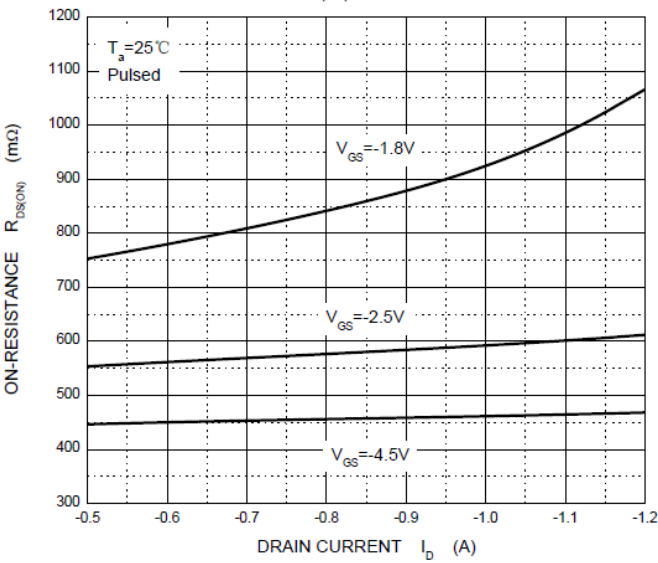
**Output Characteristics**



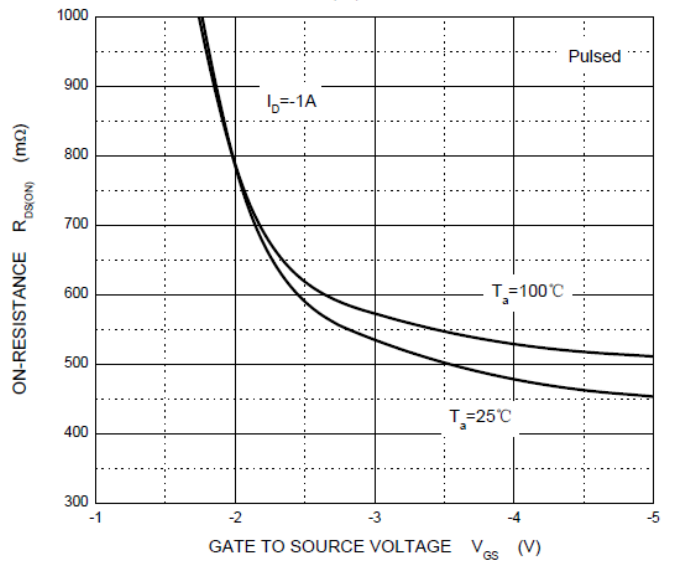
**Transfer Characteristics**



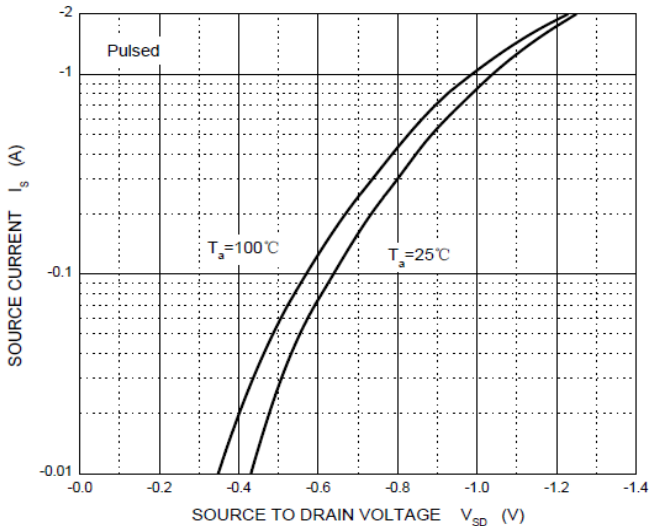
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



**Threshold Voltage**

