

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

FEATURES

- High Density Cell Design for Low $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- High Saturation Current Capability

APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

MARKING



*Solid dot=Green molding compound device, if none, the normal device.

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-523	3K	7 inch

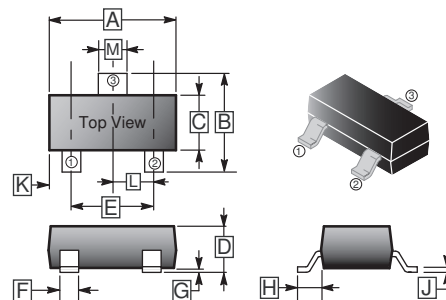
ORDER INFORMATION

Part Number	Type
2N7002T	Lead (Pb)-free
2N7002T-C	Lead (Pb)-free and Halogen-free

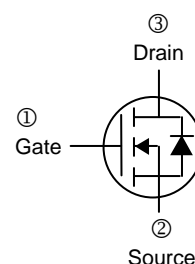
MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	115	mA
Power Dissipation	P_D	150	mW
Thermal Resistance from Junction-Ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	150	$^\circ\text{C}$
Operating Storage Temperature Range	T_{STG}	-55~150	$^\circ\text{C}$

SOT-523



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.5	1.7	G	-	0.1
B	1.45	1.75	H	0.55 REF.	
C	0.7	0.9	J	0.1	0.2
D	0.7	0.9	K	-	
E	0.9	1.1	L	0.5 TYP.	
F	0.15	0.35	M	0.25	0.35

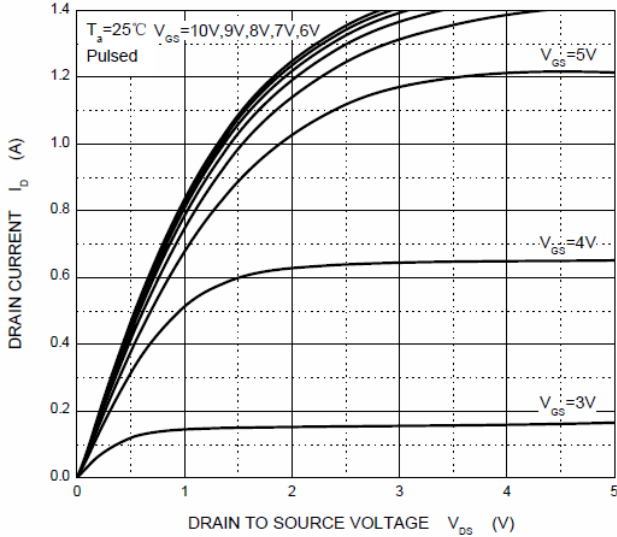


ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

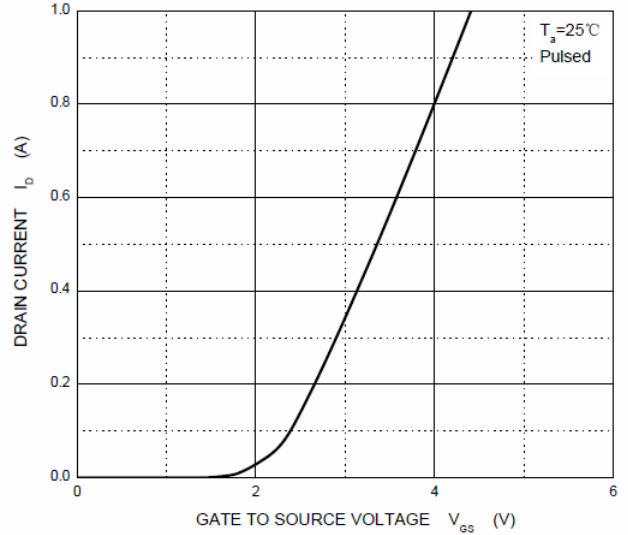
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate-Threshold Voltage	$V_{th(GS)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Gate-Body Leakage	I_{GSS}	-	-	± 80	nA	$V_{DS}=0, V_{GS}=\pm 20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	80	nA	$V_{DS}=60\text{V}, V_{GS}=0$
On-State Drain Current	$I_{D(ON)}$	500	-	-	mA	$V_{GS}=10\text{V}, V_{DS}=7\text{V}$
Drain-Source On Resistance	$R_{DS(ON)}$	-	-	5	Ω	$V_{GS}=10\text{V}, I_D=500\text{mA}$
		-	-	7		$V_{GS}=5\text{V}, I_D=50\text{mA}$
Forward Trans Conductance	g_{fs}	80	-	-	mS	$V_{DS}=10\text{V}, I_D=200\text{mA}$
Drain-Source On-Voltage	$V_{DS(ON)}$	-	-	3.75	V	$V_{GS}=10\text{V}, I_D=500\text{mA}$
		-	-	0.375		$V_{GS}=5\text{V}, I_D=50\text{mA}$
Diode Forward Voltage	V_{SD}	0.55	-	1.2	V	$I_S=115\text{mA}, V_{GS}=0$
Input Capacitance	C_{iss}	-	50	-	pF	$V_{DS}=25\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	25	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Switching Time						
Turn-on Time	$T_{d(on)}$	-	20	-	nS	$V_{DD}=25\text{V}, R_L=50\Omega$ $I_D=500\text{mA}, V_{GEN}=10\text{V}$ $R_G=25\Omega$
Turn-off Time	$T_{d(off)}$	-	40	-		

TYPICAL CHARACTERISTICS

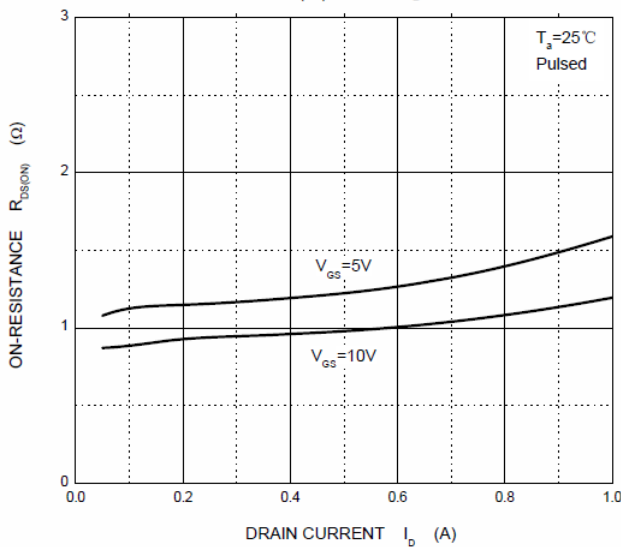
Output Characteristics



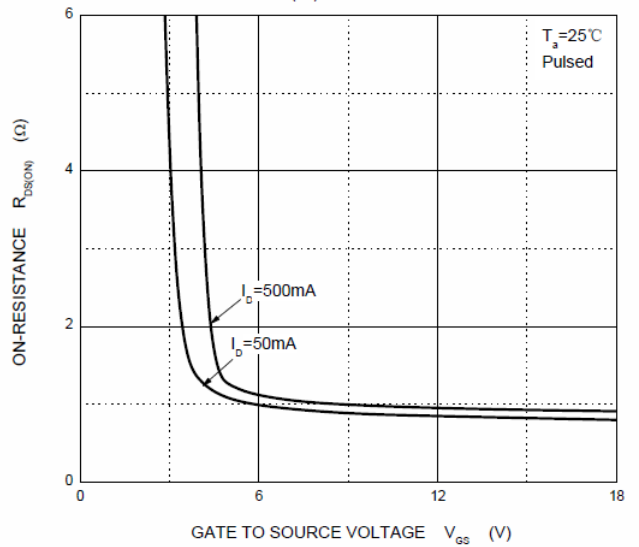
Transfer Characteristics



$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

