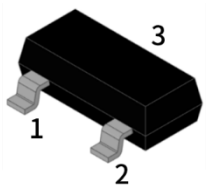
2N7002KLST1

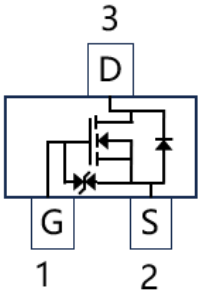
N–Channel MOSFET

1. FEATURES

- The material of product compliance with RoHS requirements and Halogen Free.
- High density cell design for low RDS(ON).
- Voltage controlled small signal switch.
- High saturation current capability.
- ESD protected.



SOT23 (TO-236)



2. Mechanical Data

- SOT-23 Small Outline Plastic Package.
- Tin plated leads, solderable per J-STD-002 and JESD22-B102.
- Marking: 702K

3. ORDERING INFORMATION

Device	Min Pack	Inner Box	Outer Carton	Reel
2N7002KLST1	3000	45000	180000	7 inch

4. MAXIMUM RATINGS (TJ = 25°C)

Parameter	Symbol	Limit	Unit
Drain–Source Voltage	VDS	60	V
Gate–Source Voltage	VGS	±20	V
Continuous Drain Current TC25°C	ID1	0.5	A
Continuous Drain Current TC100°C	ID2	0.4	A
Pulsed Drain Current Pulse Limited	IDM	2	A
Total Device Dissipation TA = 25°C	PD	0.6	W
Junction and Storage temperature	TJ, Tstg	−55~+150	°C

5. THERMAL CHARACTERISTICS

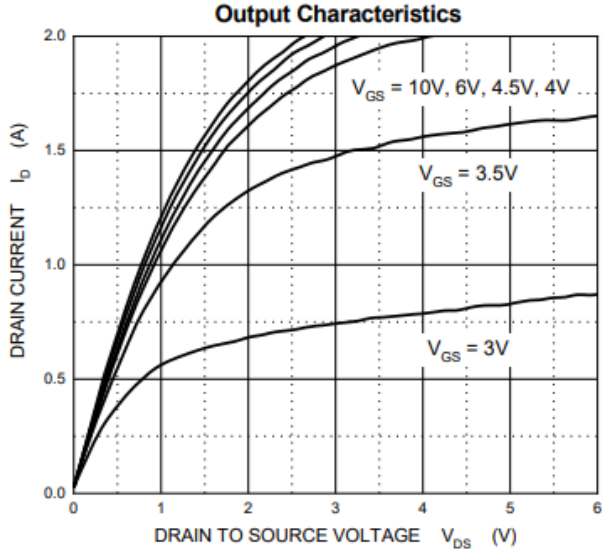
Parameter		Symbol	Value		Unit
			Typ	MAx	
Thermal Resistance from Junction to Ambient	t≤10s	RθJA	160	200	W
	Steady State		190	240	°C

6. MOSFET ELECTRICAL CHARACTERISTICS (TJ= 25ºC unless otherwise specified)

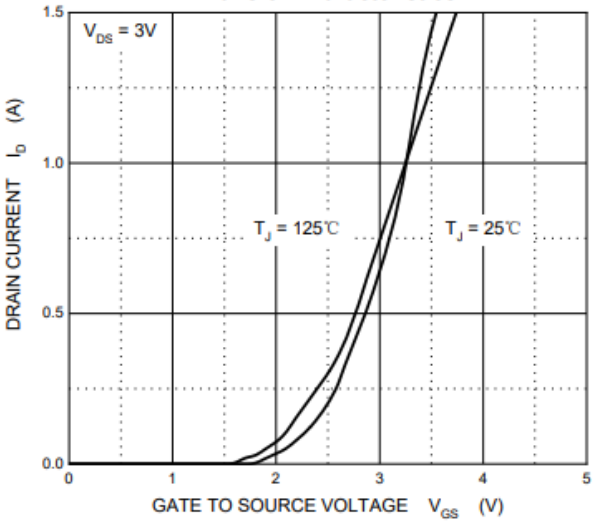
Parameter	Symbol	Condition	Min	TYP	Max	Unit
Drain–Source Breakdown Voltage	VBRDSS	VGS = 0, ID = 250μA	60			V
Zero Gate Voltage Drain Current TJ 25°C	IDSS1	VGS = 0, VDS = 60 V			1	μA
Zero Gate Voltage Drain Current TJ 125°C	IDSS2	VGS = 0, VDS = 60 V			100	μA
Gate–Body Leakage Current	IGSS	VGS =± 20 V			±10	μA
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = 250μA	1	1.5	2	V
Static Drain–Source On–State Resistance	RDS(on)	VGS = 10 V, ID = 500 mA ,TJ =25°C		0.73	1.2	Ω
Static Drain–Source On–State Resistance	RDS(on)	VGS = 10 V, ID = 500 mA TJ=125°C		1.28	2.2	Ω
Static Drain–Source On–State Resistance	RDS(on)	VGS = 4.5 V, ID = 200 mA		0.8	1.5	Ω
Forward Transconductance	gfs	VDS=3V, ID = 500 mA		1		S
Input Capacitance	Ciss	VDS = 30 V, VGS = 0, f = 1MHz		37		PF
Output Capacitance	Coss			11		PF
Reverse Transfer Capacitance	Crss			5.2	5	PF
Total Gate Charge	Qg	VGS=4.5V, VDS=30V, ID=500mA		0.61		nC
		VGS=10V, VDS=30V, ID=500mA		1.04		
Gate Charge at Threshold	QG（th）			0.1		
Gate-source Charge	Qgs			0.18		
Gate-drain Charge	Qgd			0.31		
Turn-On Delay Time	Td(on)	VDD = 30 V , RL=250Ω,RG = 50 Ω, VGS = 10 V		6		ns
Turn-On Rise Time	Tr			5.1		
Turn-Off Delay Time	Td(off)			54		
Turn-off Fall Time	Tf			37		
Diode Forward On–Voltage	VSD	IS = 300 mA, VGS = 0 V			1.2	V
Source Current Continuous (Body Diode)	IS				0.5	A
Source Current Pulsed	ISM				2	A

7. ELECTRICAL CHARACTERISTICS CURVES

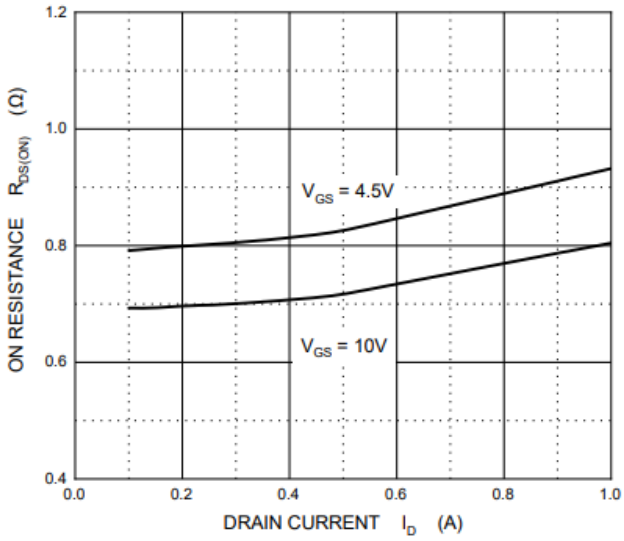
Output Characteristics



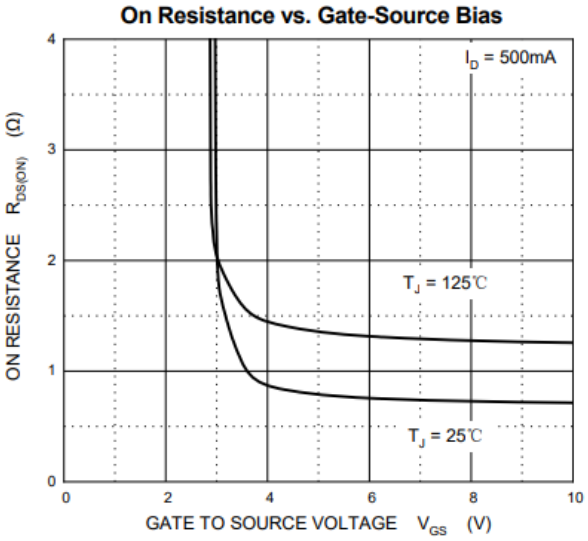
Transfer Characteristics



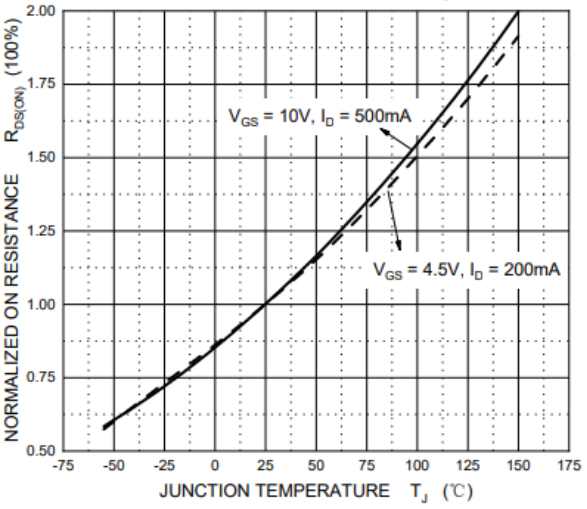
On Resistance vs. Drain Current



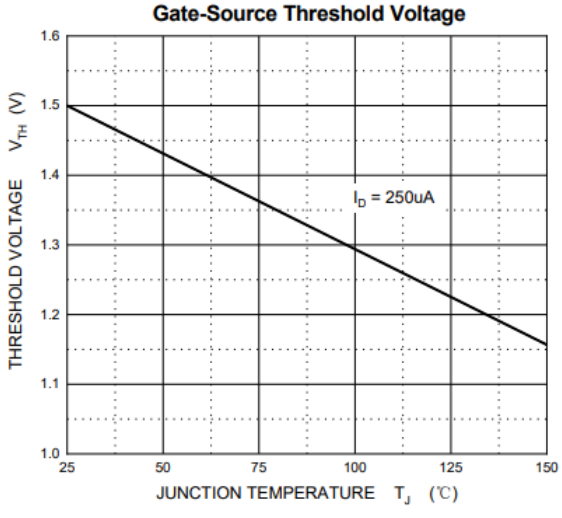
On Resistance vs. Gate-Source Bias



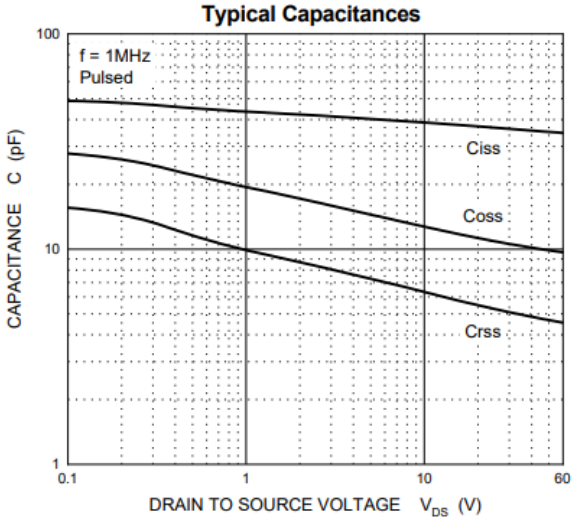
On Resistance vs. Junction Temperature



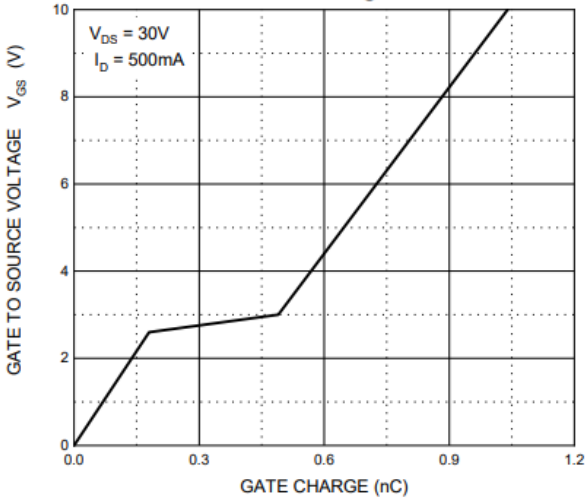
Gate-Source Threshold Voltage



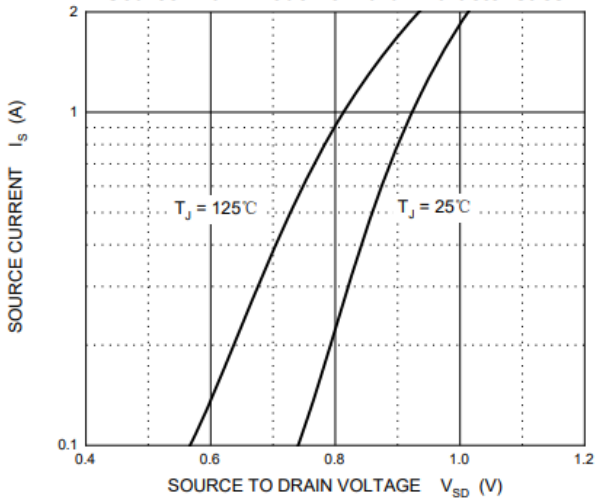
Typical Capacitances



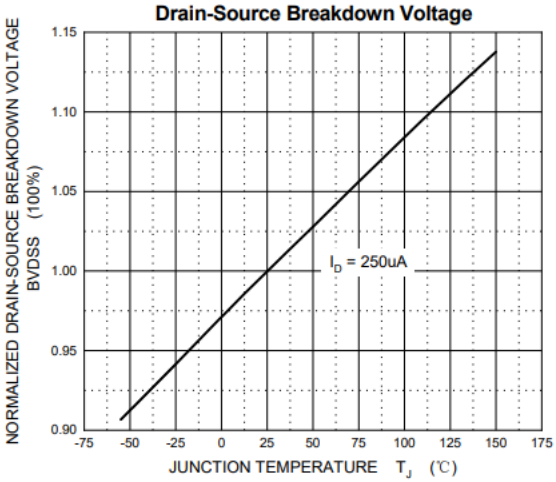
Gate Charge



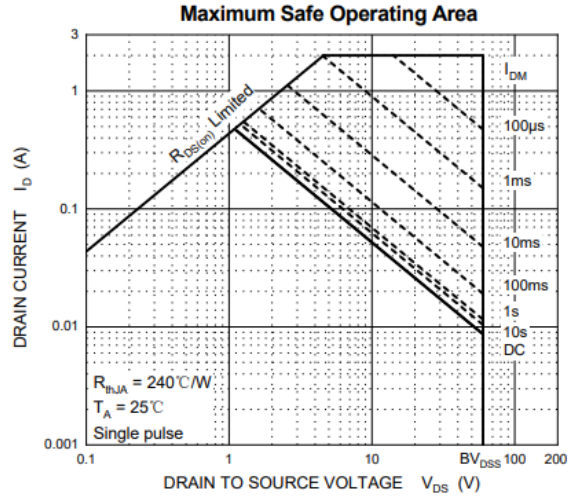
Source-Drain Diode Forward Characteristics



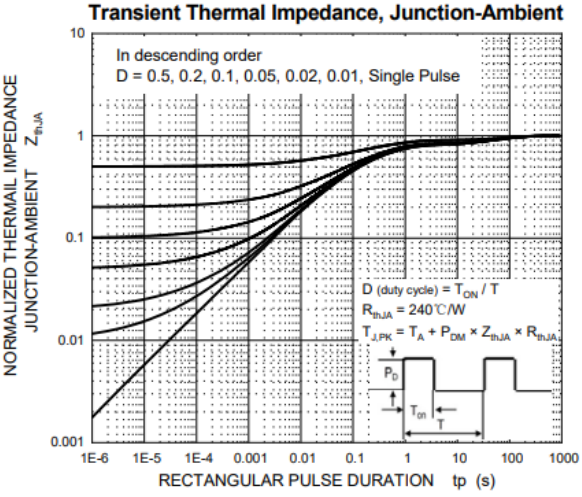
Drain-Source Breakdown Voltage



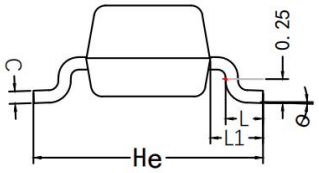
Maximum Safe Operating Area

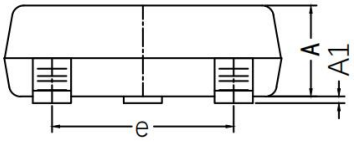


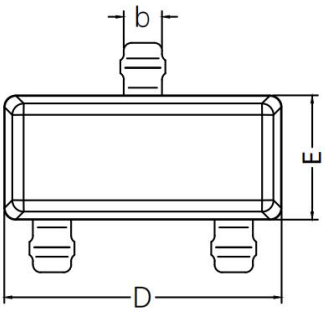
Transient Thermal Impedance, Junction-Ambient



8. OUTLINE AND DIMENSIONS

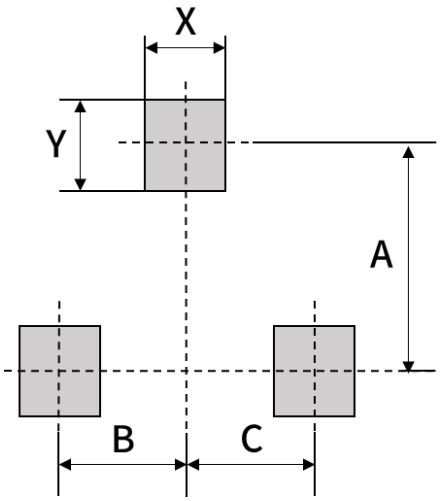






DIM	MIN	NOR	MAX
A	0.85	0.95	1.05
A1	0.01	0.06	0.10
b	0.36	0.44	0.52
c	0.09	0.13	0.18
D	2.80	2.90	3.10
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.40	0.50
L1	0.35	0.50	0.65
He	2.10	2.35	2.50
θ	0°	-	10°
All Dimensions in mm			

9. SUGGESTED PAD LAYOUT



SOT23		
DIM	mm	inch
A	2.00	0.079
B	0.95	0.037
C	0.95	0.037
X	0.80	0.031
Y	0.90	0.035

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