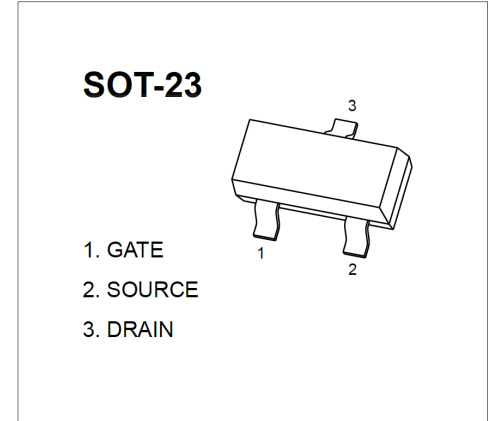




SOT-23 Plastic-Encapsulate MOSFETS

2N7002A N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$ TYP	I_D
60V	500mΩ@10V	0.45A
	600mΩ@5V	



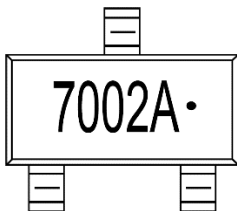
FEATURE

- High density cell design for low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

APPLICATIONS

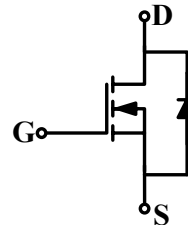
- Load Switch for Portable Devices
- DC/DC Converter

MARKING



7002A=Device code
Solid dot = Green molding compound device.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D(1)}$	0.45	A
Pulsed Drain Current	$I_{DM(2)}$	1.8	A
Power Dissipation	$P_D(3)$	357	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA(4)}$	350	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS

$T_J=25^{\circ}\text{C}$ unless otherwise specified

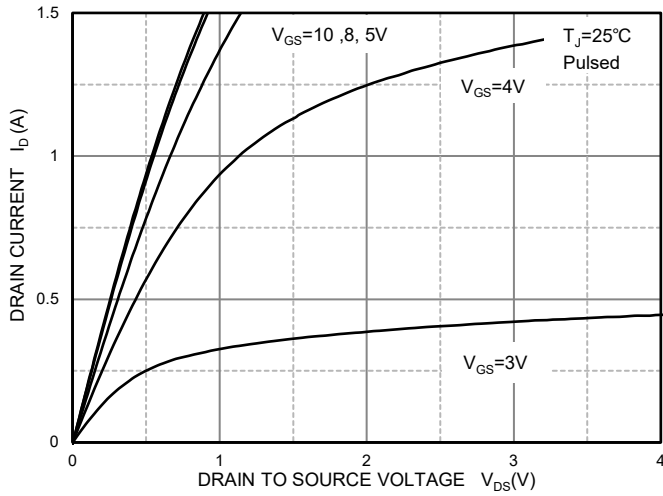
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.5	V
Drain-source on-state resistance ^③	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 500mA$		500	750	m Ω
		$V_{GS} = 5V, I_D = 50mA$		600	900	m Ω
Diode forward voltage ^④	V_{SD}	$I_S = 115mA, V_{GS} = 0V$			1.2	V
Dynamic Characteristics^⑤						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1MHz$		35		pF
Output capacitance	C_{oss}			5		
Reverse transfer capacitance	C_{rss}			2.7		
Gate resistance	R_g	$f = 1MHz$		15		Ω
Switching Characteristics^⑥						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 25V, V_{GS} = 10V,$ $R_L = 50\Omega, R_G = 25\Omega,$ $I_D = 500mA$		1.3		ns
Turn-on rise time	t_r			2.7		
Turn-off delay time	$t_{d(off)}$			6.4		
Turn-off fall time	t_f			3.6		

Notes:

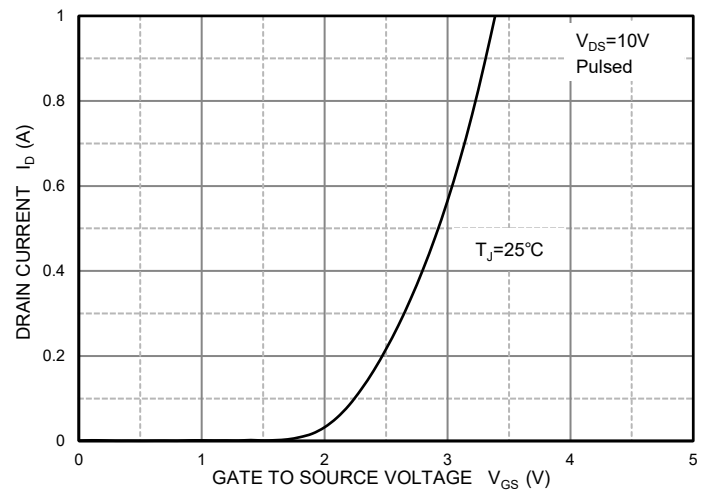
- Limited only by maximum temperature allowed.
- $P_W \leq 10\mu s$. Limited only by maximum temperature allowed.
- Pulse Test : Pulse Width $\leq 400\mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production.
- The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. single-sided Copper, in a still air environment with $T_a = 25^{\circ}\text{C}$.

Typical Characteristics

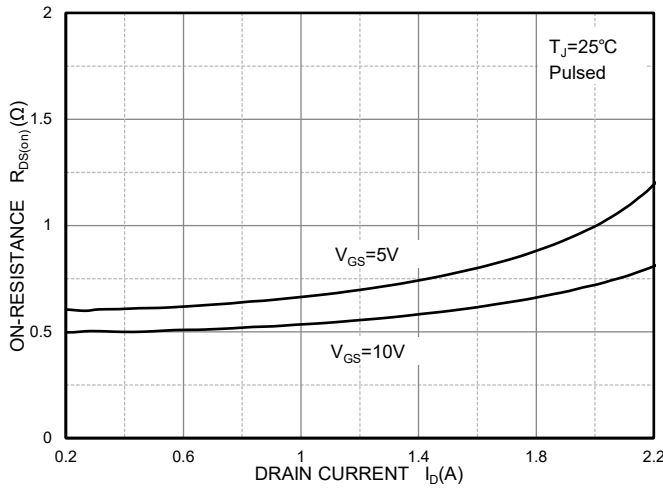
Output Characteristics



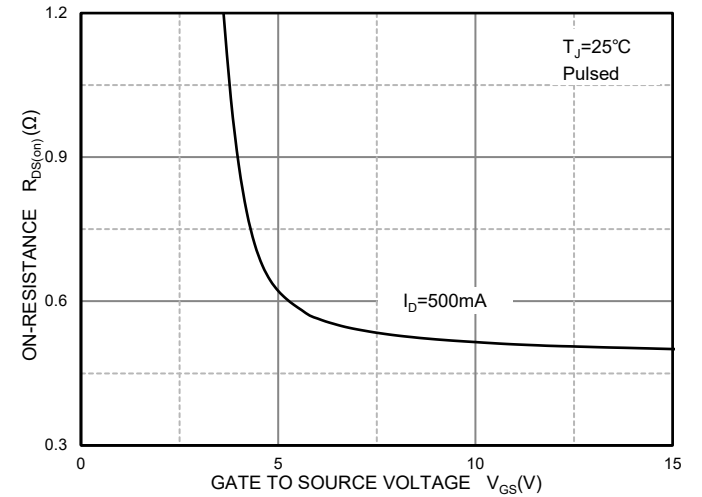
Transfer Characteristics



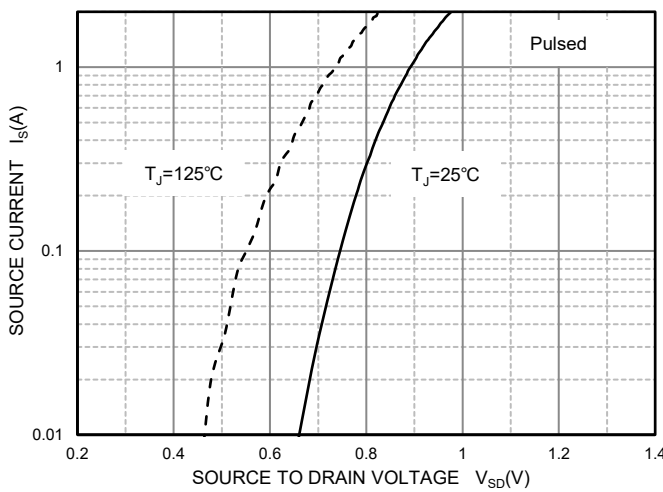
On Resistance vs. Drain Current



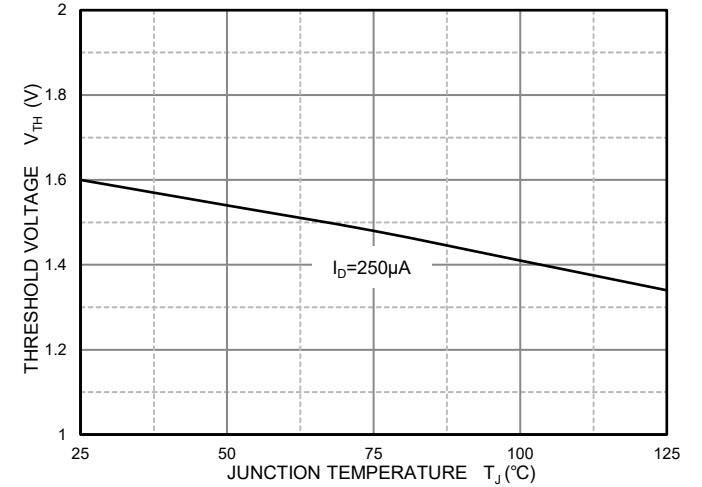
On Resistance vs. Gate-Source Bias



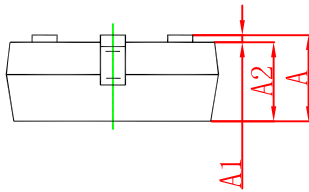
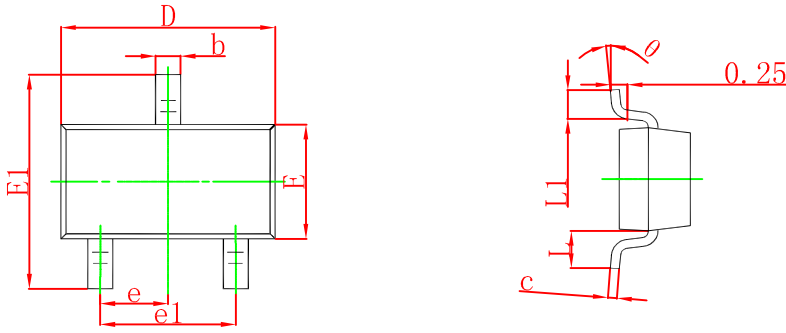
Source-Drain Diode Forward Characteristics



Threshold Voltage vs. Temperature

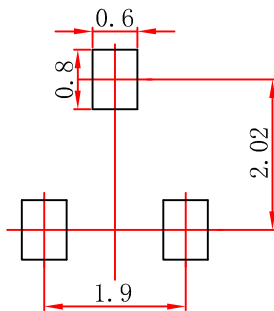


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

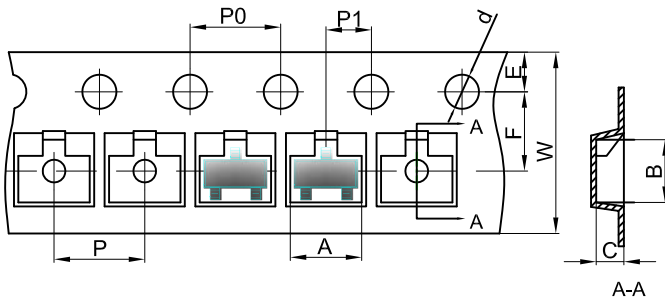
1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape



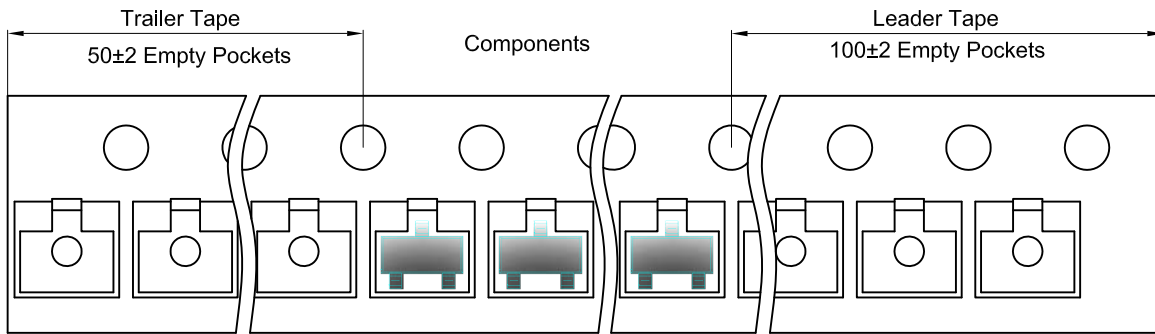
Packaging Description:

SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

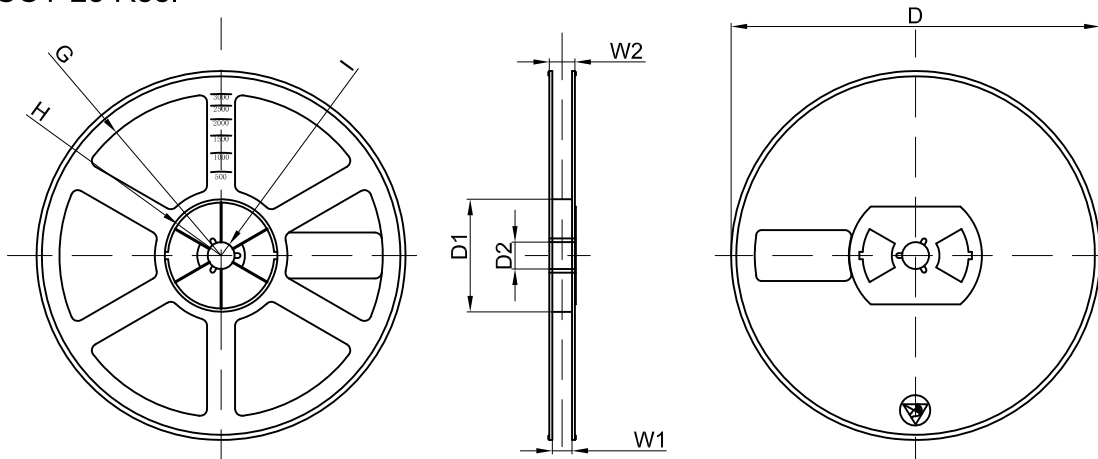
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	