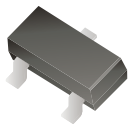
MOSFET

2N7002T-HF

N-Channel
RoHS Device
Halogen Free



Features

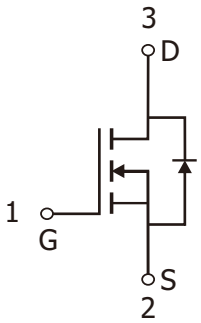
- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

Mechanical data

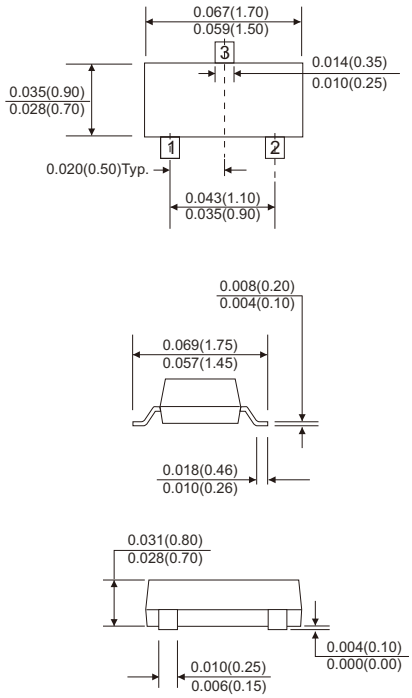
- Case: SOT-523, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Weight: 0.002 grams(Approx.)

Circuit Diagram

- 1. Gate
- 2. Source
- 3. Drain



SOT-523



Dimensions in inches and (millimeter)

Maximum Ratings (at T_A=25 °C unless otherwise noted)

Parameter	Symbol	Value	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 to ambient	$R_{\theta JA}$	833	°C/W
Junction temperature range	T_J	150	°C
Storage temperature range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (at T_A=25 °C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V , I_D = 250μA	60			V
Gate-threshold voltage	$V_{th(GS)}$	V_{DS} = V_{GS} , I_D = 250μA	1		2.5	
Gate-body leakage	I_{GSS}	V_{DS}= 0V , V_{GS}= ±20V			±80	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 60V , V_{GS} = 0V			80	nA
On-state drain current	$I_{D(ON)}$	V_{GS} = 10V , V_{DS} = 7V	500			mA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10V , I_D = 500mA			5	Ω
		V_{GS} = 5V , I_D = 50mA			7	
Forward trans conductance	g_{fs}	V_{DS} = 10V , I_D = 200mA	80			ms
Drain-source on-voltage	$V_{DS(on)}$	V_{GS} = 10V , I_D = 500mA			3.75	V
		V_{GS} = 5V , I_D = 50mA			0.375	V
Diode forward voltage	V_{SD}	I_S = 115mA , V_{GS} = 0V	0.55		1.2	V
Input capacitance	C_{iss}	V_{DS} = 25V , V_{GS} = 0V, f = 1MHz			50	pF
Output capacitance	C_{oss}				25	
Reverse transfer capacitance	C_{rss}				5	

SWITCHING TIME

Turn-on time	$t_{d(on)}$	V_{DD} = 25V , R_L = 50Ω I_D = 500mA , V_{GEN} = 10V R_G = 25Ω			20	nS
Turn-off time	$t_{d(off)}$				40	

RATING AND TYPICAL CHARACTERISTIC CURVES (2N7002T-HF)

Fig.1 - Output Characteristics

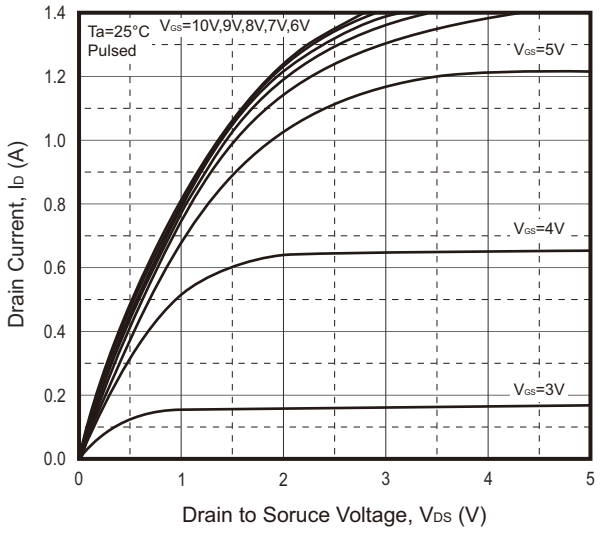


Fig.2 - Transfer Characteristics

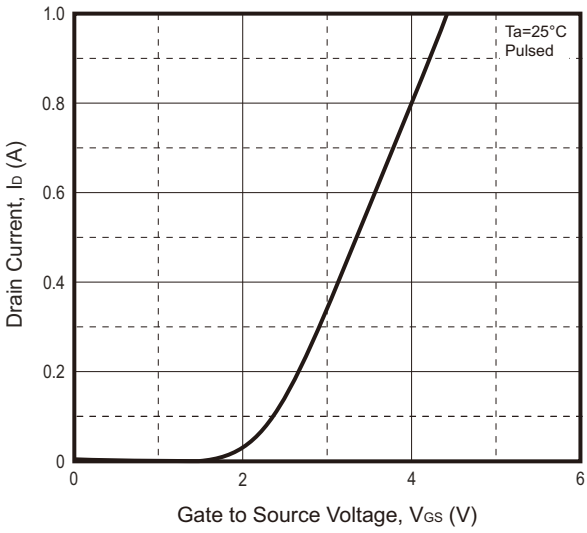


Fig.3 - $R_{DS(ON)}$ — I_D

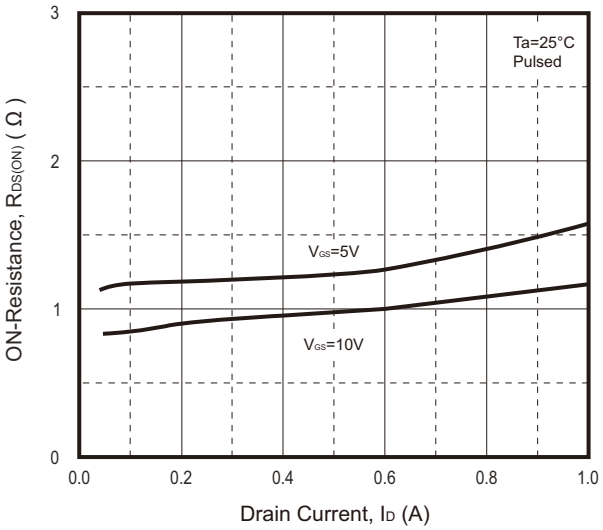


Fig.4 - $R_{DS(ON)}$ — V_{GS}

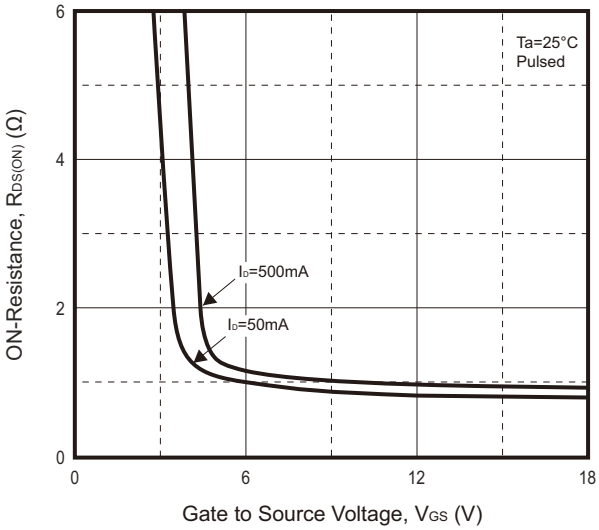
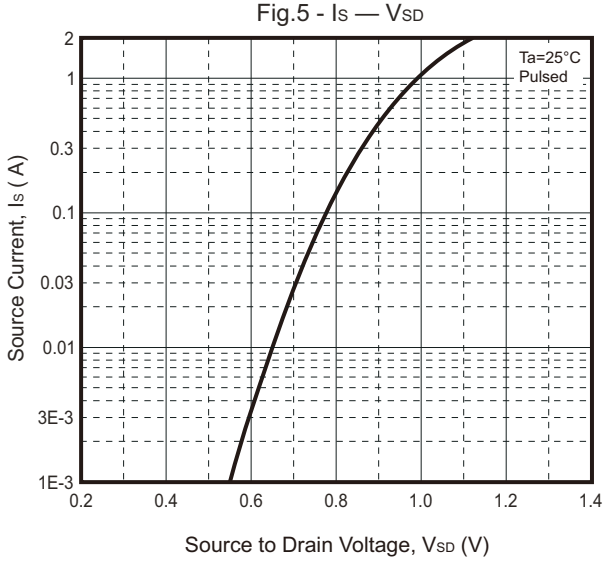
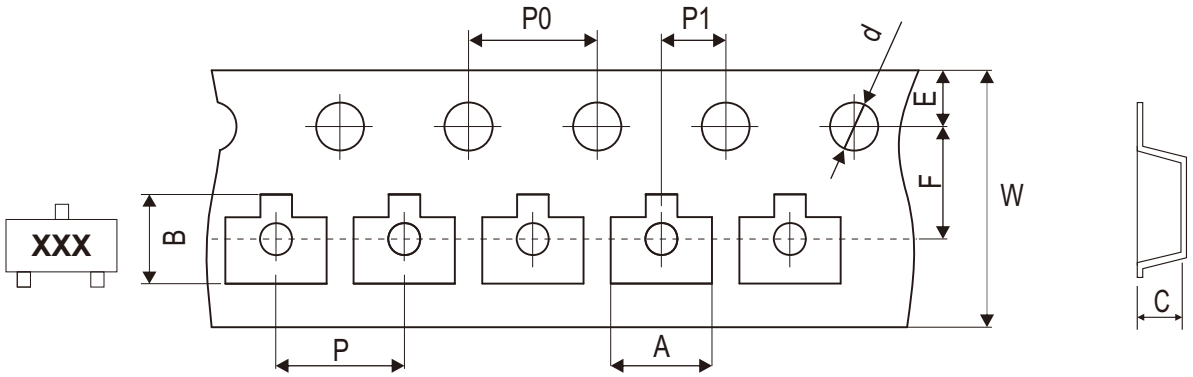
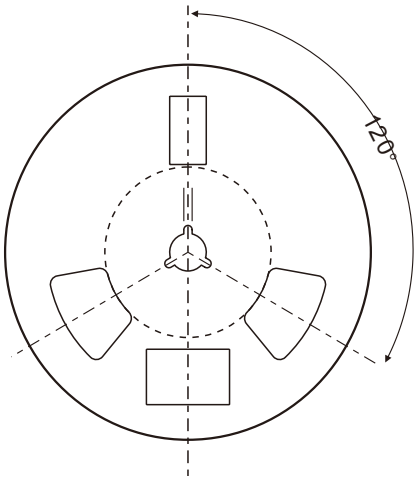


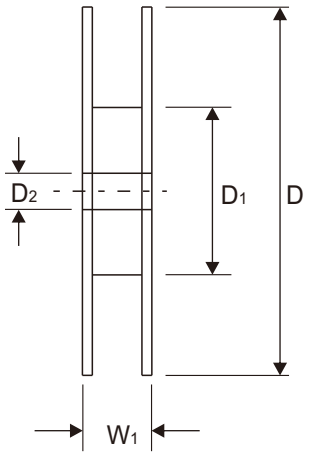
Fig.5 - I_S — V_{SD}

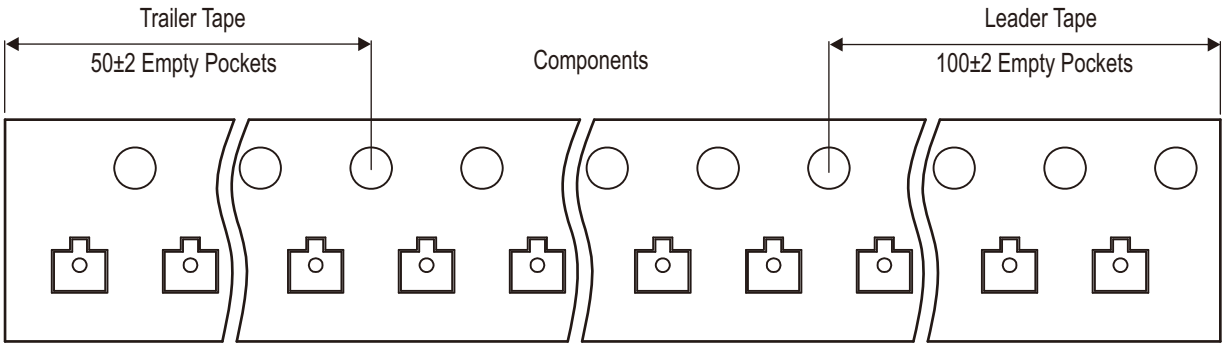


Reel Taping Specification







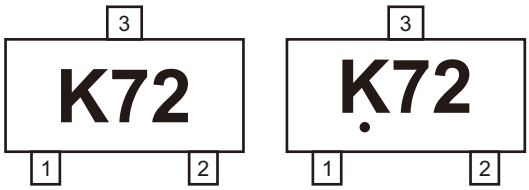


	SYMBOL	A	B	C	d	D	D1	D2
SOT-523	(mm)	1.85 ± 0.05	1.85 ± 0.05	0.875 ± 0.05	1.50 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.073 ± 0.002	0.073 ± 0.002	0.034 ± 0.002	0.059 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-523	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 / - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 / - 0.004	0.484 ± 0.039

Marking Code

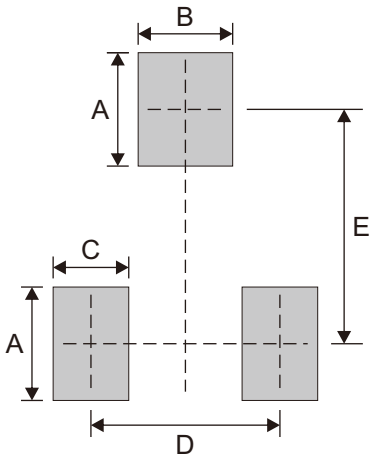
Part Number	Marking Code
2N7002T-HF	K72



Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-523	
	(mm)	(inch)
A	0.60	0.024
B	0.50	0.020
C	0.40	0.016
D	1.00	0.039
E	1.24	0.049



Note: 1. The pad layout is for reference purposes only.

Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-523	3,000	7