



# 2N7002TB

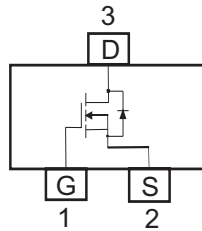
## 60V N-CANNEL ENHANCEMENT MODE MOSFET

### FEATURES

- $R_{DS(ON)}, V_{GS}@10V, I_{DS}@500mA=5\Omega$
- $R_{DS(ON)}, V_{GS}@4.5V, I_{DS}@50mA=7.5\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for Battery Operated Systems, Solid-State Relays Drivers : Relays, Displays, Lamps, Solenoids, Memories, etc.
- Lead free in comply with EU RoHS 2002/95/EC directives.
- Green molding compound as per IEC61249 Std. . (Halogen Free)

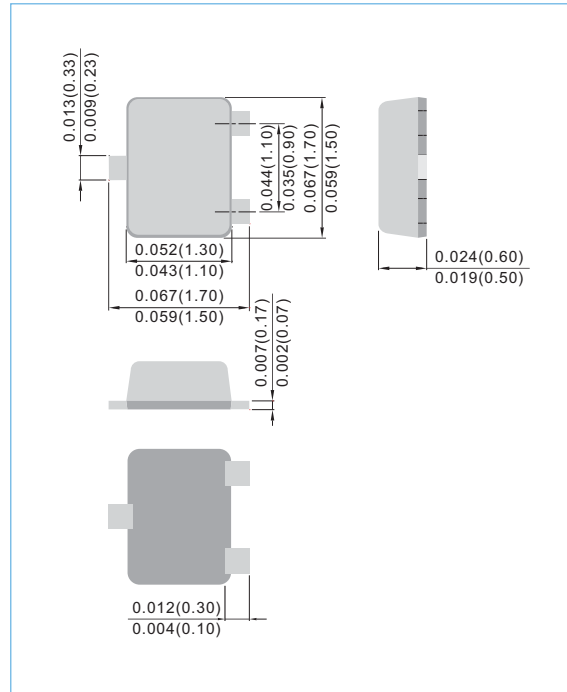
### MECHANICAL DATA

- Case: SOT-523, Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.002 grams
- Marking: 72



### SOT-523

Unit : inch(mm)



### Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted )

PARAMETER	SYMBOL	LIMIT	UNITS
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	115	mA
Pulsed Drain Current <sup>(1)</sup>	$I_{DM}$	800	mA
Maximum Power Dissipation	$P_D$	$T_A=25^\circ\text{C}$	150
		$T_A=75^\circ\text{C}$	90
Junction-to Ambient Thermal Resistance (PCB mounted) <sup>2</sup>	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

Note 1 : Maximum DC current limited by the package

2 : Surface mounted on FR4 board,  $t \leq 10$  sec

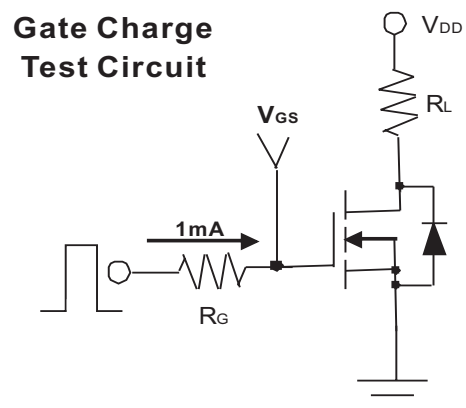
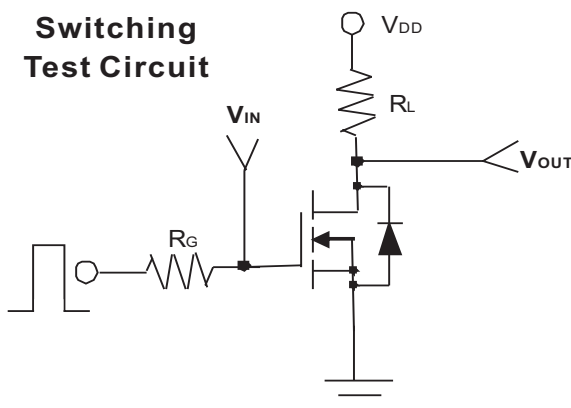
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## ELECTRICAL CHARACTERISTICS

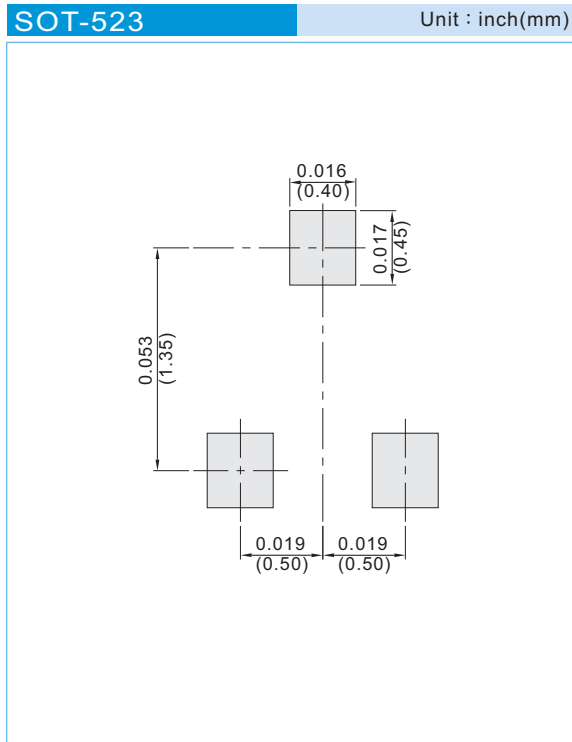
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DS}$	$V_{GS}=0V, I_D=10\mu A$	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=50mA$	-	-	7.5	$\Omega$
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=500mA$	-	-	5	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	1	$\mu A$
Gate Body Leakage	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Forward Transconductance	$g_{FS}$	$V_{DS}=15V, I_D=250mA$	100	-	-	mS
<b>Dynamic</b>						
Total Gate Charge	$Q_G$	$V_{DS}=15V, I_D=500mA, V_{GS}=4.5V$	-	0.6	0.7	nC
Gate-Source Charge	$Q_{GS}$		-	0.1	-	
Gate-Drain Charge	$Q_{GD}$		-	0.08	-	
Turn-On Delay Time	$t_{ON}$	$V_{DD}=10V, R_L=20\Omega$ $I_D=500mA, V_{GEN}=10V, R_G=10\Omega$	-	9	15	ns
Turn-Off Delay Time	$t_{OFF}$		-	21	26	
Input Capacitance	$C_{ISS}$	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	-	50	pF
Output Capacitance	$C_{OSS}$		-	-	25	
Reverse Transfer Capacitance	$C_{RSS}$		-	-	5	
<b>Source-Drain Diode</b>						
Max.Diode Forward Current	$I_S$	-	-	-	250	mA
Diode Foreard Voltage	$V_{SD}$	$I_S=250mA, V_{GS}=0V$	-	0.93	1.2	





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## MOUNTING PAD LAYOUT



## ORDER INFORMATION

- Packing information

T/R - 4K per 7" plastic Reel



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Part No\_packing code\_Version  
2N7002TB\_R1\_00001

For example :

**RB500V-40** **R2** **00001**



Packing Code <b>XX</b>				Version Code <b>XXXXX</b>		
Packing type	1 <sup>st</sup> Code	Packing size code	2 <sup>nd</sup> Code	HF or RoHS	1 <sup>st</sup> Code	2 <sup>nd</sup> ~5 <sup>th</sup> Code
T/B	<b>A</b>	N/A	<b>0</b>	HF	<b>0</b>	serial number
T/R	<b>R</b>	7"	<b>1</b>	RoHS	<b>1</b>	serial number
B/P	<b>B</b>	13"	<b>2</b>			
T/P	<b>T</b>	26mm	<b>X</b>			
TRR	<b>S</b>	52mm	<b>Y</b>			
TRL	<b>L</b>	PBCU	<b>U</b>			
FORMING	<b>F</b>	PBCD	<b>D</b>			



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