



## 2N7002ZT

Preliminary

Power MOSFET

### 300m Amps, 60 Volts DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

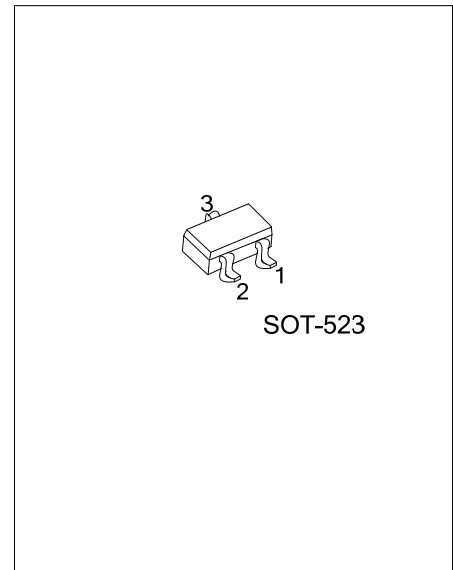
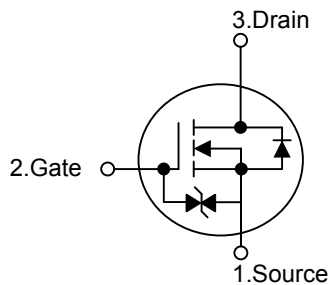
#### DESCRIPTION

The UTC **2N7002ZT** uses advanced technology to provide excellent  $R_{DS(ON)}$ , low gate charge and low gate voltages during operation. This device is suitable for use as a load switch or in PWM applications.

#### FEATURES

- \* Low Reverse Transfer Capacitance ( $C_{RSS}$  = typical 3.0 pF)
- \* ESD Protected
- \* Fast Switching Capability
- \* Avalanche Energy Specified
- \* Improved dv/dt Capability, High Ruggedness

#### SYMBOL

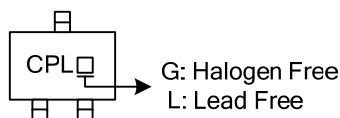


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2N7002ZTL-AN3-R	2N7002ZTG-AN3-R	SOT-523	S	G	D	Tape Reel

<p>2N7002ZTG-AL6-R</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Halogen Free</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AL6: SOT-363</li> <li>(3) G: Halogen Free, L: Lead Free</li> </ul>
--	---

#### MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	300	mA
		Pulse(Note 2)	
Power Dissipation	$P_D$	200	mW
Derating above $T_A=25^\circ\text{C}$		1.6	mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=10\mu\text{A}$	60			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1.0	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 10$	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=10V, I_D=1\text{mA}$	1.0	1.85	2.5	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10V, I_D=0.5A, T_J=125^\circ\text{C}$			13.5	$\Omega$
		$V_{GS}=5V, I_D=0.05A$			7.5	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25V, V_{GS}=0V, f=1.0\text{MHz}$		25	50	pF
Output Capacitance	$C_{OSS}$			10	25	pF
Reverse Transfer Capacitance	$C_{RSS}$			3.0	5.0	pF
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	$t_{D(ON)}$	$I_D=0.2\text{A}, V_{DD}=30V, V_{GS}=10V,$		12	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$	$R_L=150\Omega, R_G=10\Omega$		20	30	ns
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=115\text{mA}$ (Note )		0.88	1.5	V
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				0.8	A
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				115	mA

Note: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. Minimum land pad size.

2. Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 1\%$

■ TEST CIRCUITS AND WAVEFORMS

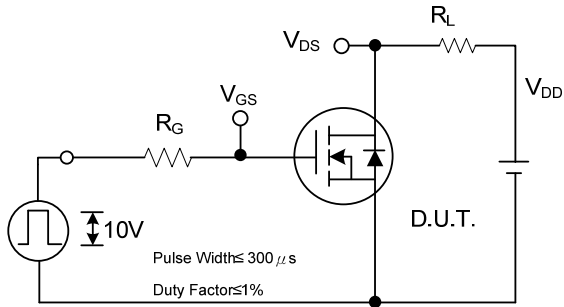


Fig. 2A Switching Test Circuit

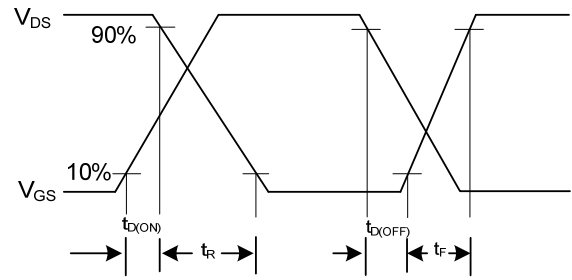


Fig. 2B Switching Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.