



## 2N7002ZT

Power MOSFET

### 300mA, 60V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

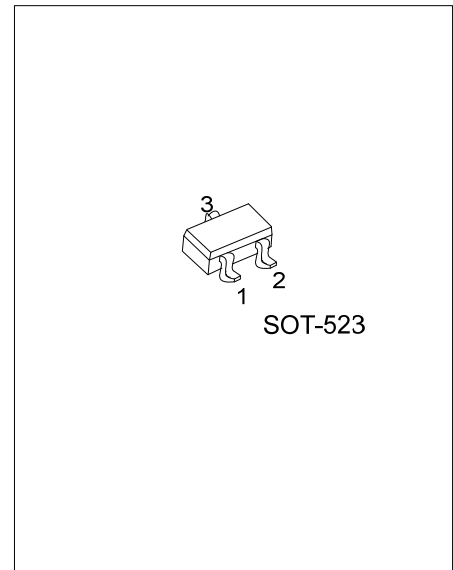
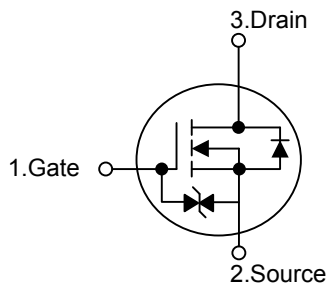
#### DESCRIPTION

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



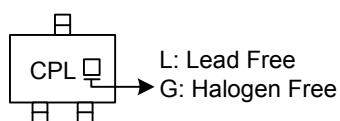
#### ORDERING INFORMATION

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

Note: Pin Assignment: G: Gate S: Source D: Drain

<p>2N7002ZTG-AN3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AN3: SOT-523</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
------------------------	--

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified.)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	Continuous	300
		Pulse(Note 2)	800
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.

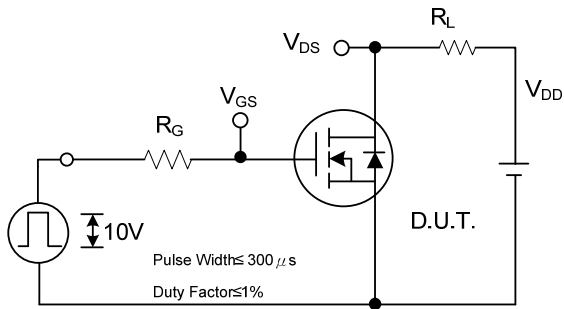
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=10\mu\text{A}$	60			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			$\pm 10$	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	1.0	1.85	2.5	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=0.3\text{A}, T_J=125^\circ\text{C}$			13.5	$\Omega$
		$V_{GS}=5\text{V}, I_D=0.05\text{A}$			7.5	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		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	$t_{D(ON)}$	$I_D=0.2\text{A}, V_{DD}=30\text{V}, V_{GS}=10\text{V},$		12	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$	$R_L=150\Omega, R_G=10\Omega$		20	30	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				300	mA
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				0.8	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0\text{V}, I_S=300\text{mA}$ (Note )		0.88	1.5	V

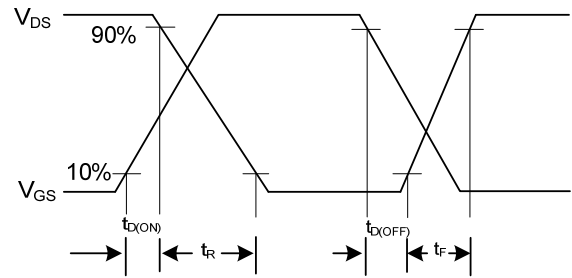
Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. Minimum land pad size.

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

### ■ TEST CIRCUITS AND WAVEFORMS



**Switching Test Circuit**



**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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [Unisonic](#) manufacturer:*

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [2SK2267\(Q\)](#) [BUK455-60A/B](#) [TK100A10N1,S4X\(S](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#)  
[IRS2092STRPBF-EL](#) [IPS70R2K0CEAKMA1](#) [TK31J60W5,S1VQ\(O](#) [TK31J60W,S1VQ\(O](#) [TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#)  
[DMN1017UCP3-7](#) [EFC2J004NUZTDG](#) [P85W28HP2F-7071](#) [DMN1053UCP4-7](#) [NTE2384](#) [DMC2700UDMQ-7](#) [DMN2080UCB4-7](#)  
[DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [IPS60R3K4CEAKMA1](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)  
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [IPS60R360PFD7SAKMA1](#)  
[DMN2990UFB-7B](#) [SSM3K35CT,L3F](#) [IPLK60R1K0PFD7ATMA1](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [IPWS65R035CFD7AXKSA1](#)  
[MCQ7328-TP](#) [SSM3J143TU,LXHF](#) [DMN12M3UCA6-7](#) [PJMF280N65E1\\_T0\\_00201](#) [PJMF380N65E1\\_T0\\_00201](#)  
[PJMF280N60E1\\_T0\\_00201](#) [PJMF600N65E1\\_T0\\_00201](#) [PJMF900N65E1\\_T0\\_00201](#)