



## 02N50

Preliminary

Power MOSFET

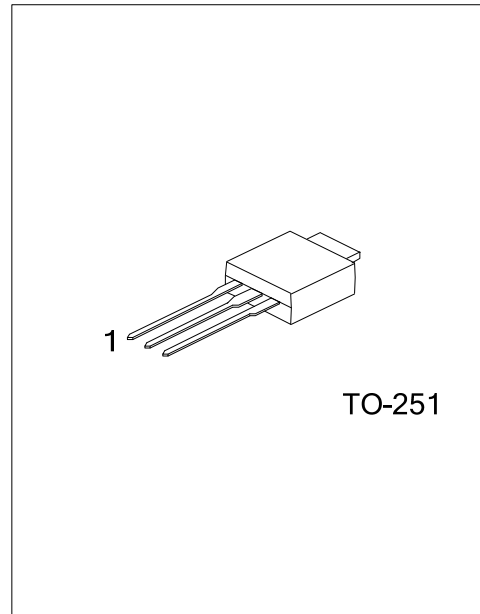
### 0.2A, 500V N-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **02N50** is an N-channel MOSFET, it uses UTC's advanced technology to provide the customers with high breakdown voltage

#### FEATURES

- \*  $R_{DS(on)}=75\Omega$  @  $V_{GS}=10V$ ,  $I_D=0.15A$
- \* High breakdown voltage



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
02N50L-TM3-T	02N50G-TM3-T	TO-251	G	D	S	Tube

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

<p>02N50L-TM3-T</p> <pre> graph TD     A[02N50L-TM3-T] --- B[ ]     B --- C[ ]     B --- D[ ]     C --- E["(1)Packing Type"]     D --- F["(2)Package Type"]     E --- G["(3)Lead Free"]           </pre>	<p>(1) T: Tube</p> <p>(2) TM3: TO-251</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	500	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Drain Current	Continuous	$I_D$	0.2	A
	Pulsed	$I_{DM}$	1	A
Avalanche Current (Note 1)		$I_{AR}$	0.2	A
Power Dissipation		$P_D$	40	W
Junction Temperature		$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range		$T_{STG}$	-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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>								
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	500			V	
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=500\text{V}, V_{GS}=0\text{V}, T_A=25^{\circ}\text{C}$			10	$\mu\text{A}$	
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+30\text{V}, V_{DS}=0\text{V}$			+100	nA	
	Reverse		$V_{GS}=-30\text{V}, V_{DS}=0\text{V}$			-100	nA	
<b>ON CHARACTERISTICS</b>								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.5		4.5	V	
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=0.15\text{A}, T_A=25^{\circ}\text{C}$		62	75	$\Omega$	
<b>DYNAMIC PARAMETERS</b>								
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		200		pF	
Output Capacitance		$C_{OSS}$				20		pF
Reverse Transfer Capacitance		$C_{RSS}$				8		pF
<b>SWITCHING PARAMETERS</b>								
Total Gate Charge		$Q_G$	$V_{GS}=10\text{V}, I_D=0.2\text{A}, V_{PS}=400\text{V}$		3.0	4.5	nC	
Gate to Source Charge		$Q_{GS}$			0.45	0.7	nC	
Gate to Drain Charge		$Q_{GD}$			0.4	0.75	nC	
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=250\text{V}, I_D=0.2\text{A}, R_G=25\Omega$		9		ns	
Rise Time		$t_R$			4		ns	
Turn-OFF Delay Time		$t_{D(OFF)}$			28		ns	
Fall-Time		$t_F$			45		ns	
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>								
Maximum Body-Diode Continuous Current		$I_S$				0.2	A	
Maximum Body-Diode Pulsed Current		$I_{SM}$				1	A	
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_S=0.2\text{A}, V_{GS}=0\text{V}$			1	V	

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