



## 15N20

Preliminary

Power MOSFET

### 15A, 200V N-CHANNEL POWER MOSFET

#### DESCRIPTION

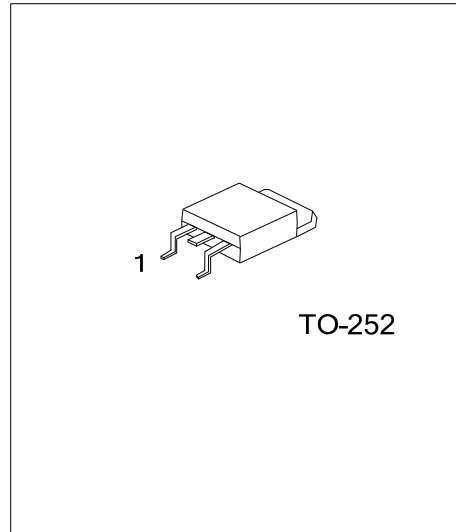
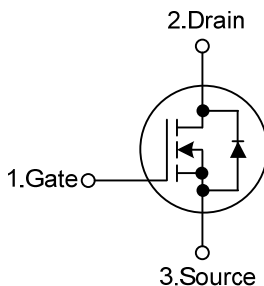
The UTC **15N20** is an N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , high switching speed, high current capacity and low gate charge.

The UTC **15N20** is universally applied in low voltage such as automotive, high efficiency switching for DC/DC converters and DC motor control, etc.

#### FEATURES

- \*  $R_{DS(ON)}=0.12\Omega @ V_{GS}=10V, I_D=7.5A$
- \* Low Gate Charge (Typical 20nC)
- \* Low  $C_{RSS}$  (Typical 25pF)
- \* High Switching Speed

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
15N20L-TN3-R	15N20G-TN3-R	TO-252	G	D	S	Tape Reel
15N20L-TN3-T	15N20G-TN3-T	TO-252	G	D	S	Tube

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

<p>15N20L-TN3-R</p> <p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	200	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Continuous Drain Current	Continuous	$I_D$	15
	Pulsed	$I_{DM}$	60
Single Pulsed Avalanche Current	$I_{AS}$	15	A
Single Pulsed Avalanche Energy	$E_{AS}$	340	mJ
Power Dissipation	$P_D$	83	W
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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	110	$^{\circ}\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	1.5	$^{\circ}\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	200			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=200\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	Forward			+100	nA
		Reverse			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	3		5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=7.5\text{A}$		0.12	0.14	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		830	1080	pF
Output Capacitance	$C_{OSS}$			200	260	pF
Reverse Transfer Capacitance	$C_{RSS}$			25	33	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}, V_{DD}=120\text{V}, I_D=18\text{A}$		20	26	nC
Gate to Source Charge	$Q_{GS}$			5.6		nC
Gate to Drain Charge	$Q_{GD}$			10		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}, I_D=1\text{A}, R_G=25\Omega,$ $V_{GS}=10\text{V}, R_L=30\Omega$		16	40	ns
Rise Time	$t_R$			133	275	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			38	85	ns
Fall-Time	$t_F$			62	135	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				15	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				60	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=15\text{A}, V_{GS}=0\text{V}$			1.5	V

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