



## 15N20

Preliminary

Power MOSFET

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

#### DESCRIPTION

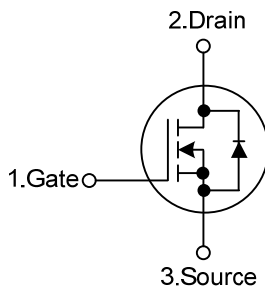
The UTC **15N20** is an N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , high switching speed, high current capacity and low gate charge.

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

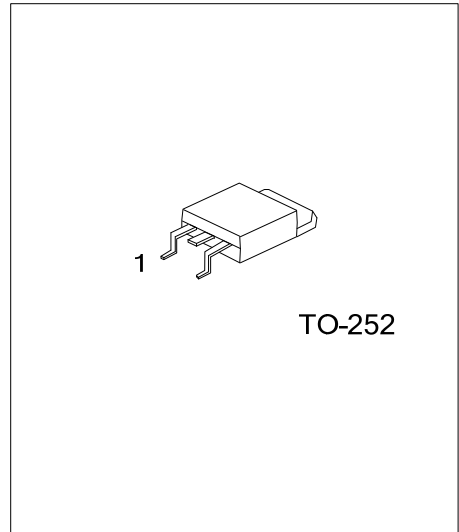


#### ORDERING INFORMATION

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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TO-252

■ 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	°C
Storage Temperature	$T_{STG}$	-55 ~ +150	°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	°C/W
Junction to Case	$\theta_{JC}$	1.5	°C/W

■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	200			V
Drain-Source Leakage Current		I <sub>DSS</sub>	V <sub>DS</sub> =200V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage Current	Forward	I <sub>GSS</sub>	V <sub>GS</sub> =+30V, V <sub>DS</sub> =0V			+100	nA
	Reverse		V <sub>GS</sub> =-30V, V <sub>DS</sub> =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	3		5	V
Static Drain-Source On-State Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =7.5A		0.12	0.14	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz		830	1080	pF
Output Capacitance		C <sub>OSS</sub>			200	260	pF
Reverse Transfer Capacitance		C <sub>RSS</sub>			25	33	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =120V, I <sub>D</sub> =18A		20	26	nC
Gate to Source Charge		Q <sub>GS</sub>			5.6		nC
Gate to Drain Charge		Q <sub>GD</sub>			10		nC
Turn-ON Delay Time		t <sub>D(ON)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =1A, R <sub>G</sub> =25Ω, V <sub>GS</sub> =10V, R <sub>L</sub> =30 Ω		16	40	ns
Rise Time		t <sub>R</sub>			133	275	ns
Turn-OFF Delay Time		t <sub>D(OFF)</sub>			38	85	ns
Fall-Time		t <sub>F</sub>			62	135	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I <sub>S</sub>				15	A
Maximum Body-Diode Pulsed Current		I <sub>SM</sub>				60	A
Drain-Source Diode Forward Voltage		V <sub>SD</sub>	I <sub>S</sub> =15A, V <sub>GS</sub> =0V			1.5	V

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