



## 15N25

Preliminary

Power MOSFET

### 15A, 250V N-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **15N25** 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.

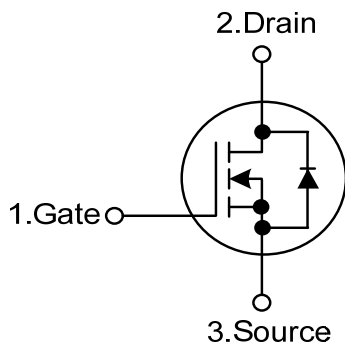
The UTC **15N25** is universally applied in low voltage such as automotive, high efficiency switching for DC/DC converters and DC motor control, etc.

#### FEATURES

\*  $R_{DS(ON)} < 0.32\Omega$  @  $V_{GS} = 10V, I_D = 7.5A$

\* High Switching Speed

#### SYMBOL

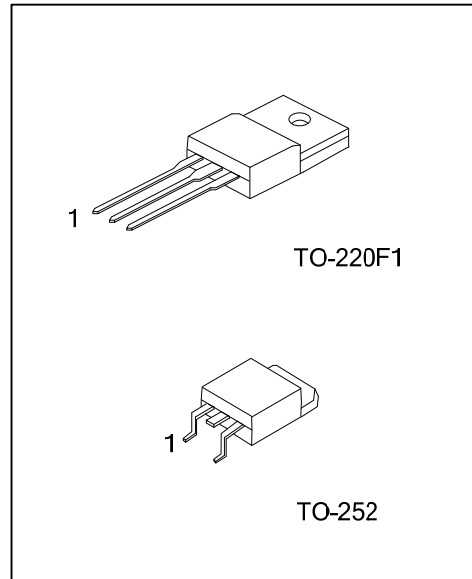


#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
15N25L-TF1-T	15N25G-TF1-T	TO-220F1	G	D	S	Tube
15N25L-TN3-T	15N25G-TN3-T	TO-252	G	D	S	Tube

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

<p>15N25L-TF1-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TF1: TO-220F1, TN3: TO-252 (3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	250	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Continuous Drain Current	Continuous	$I_D$	15	A
	Pulsed	$I_{DM}$	60	A
Single Pulsed Avalanche Current		$I_{AS}$	15	A
Single Pulsed Avalanche Energy		$E_{AS}$	170	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	8.0	V/ns
Power Dissipation	TO-220F1	$P_D$	25	W
	TO-252		85	W
Junction Temperature		$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-55 ~ +150	$^{\circ}\text{C}$

Notes: 1. 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.

2. Repetitive Rating : Pulse width limited by  $T_J$

3.  $L=1.58\text{mH}$ ,  $I_{AS}=15\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\ \Omega$ , Starting  $T_J = 25^{\circ}\text{C}$

4.  $I_{SD}\leq 15\text{A}$ ,  $di/dt\leq 200\text{A}/\mu\text{s}$ ,  $V_{DD}\leq BV_{DSS}$ , Starting  $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220F1	$\theta_{JA}$	62.5	$^{\circ}\text{C}/\text{W}$
	TO-252		110	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220F1	$\theta_{JC}$	5	$^{\circ}\text{C}/\text{W}$
	TO-252		1.47	$^{\circ}\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	250			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=250V, V_{GS}=0V$			1	$\mu A$
Gate-Source Leakage Current	Forward	$V_{GS}=+30V, V_{DS}=0V$			+100	nA
	Reverse	$V_{GS}=-30V, V_{DS}=0V$			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=7.5A$			0.32	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		830		pF
Output Capacitance	$C_{OSS}$			200		pF
Reverse Transfer Capacitance	$C_{RSS}$			25		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10V, V_{DD}=50V, I_D=1.3A$		67		nC
Gate to Source Charge	$Q_{GS}$			15		nC
Gate to Drain Charge	$Q_{GD}$			18		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30V, I_D=0.5A, R_G=25\Omega, V_{GS}=10V$		40		ns
Rise Time	$t_R$			50		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			130		ns
Fall-Time	$t_F$			50		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	$V_{SD}$	$I_S=15A, V_{GS}=0V$			1.5	V
Body Diode Reverse Recovery Time	$t_{rr}$	$I_S=15A, V_{GS}=0V, dI_F/dt=100A/\mu s$		190		ns
Reverse Recovery Charge	$Q_{rr}$	(Note 1)		1.3		$\mu C$

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