



**60N15**

Preliminary

*Power MOSFET*

**60A, 150V N-CHANNEL  
POWER MOSFET**

■ DESCRIPTION

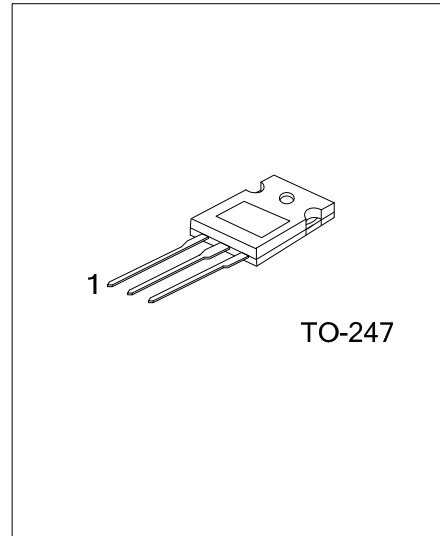
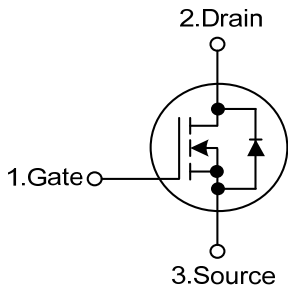
The UTC **60N15** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , high switching speed, high current capacity and low gate charge.

The UTC **60N15** is suitable for motor control, AC-DC or DC-DC converters and audio amplifiers, etc.

■ FEATURES

- \*  $R_{DS(ON)} < 30m\Omega$  @  $V_{GS}=10V, I_D=30A$
- \* High Switching Speed
- \* High Current Capacity
- \* Low Gate Charge (typical 130nC)

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
60N15L-T47-T	60N15G-T47-T	TO-247	G	D	S	Tube

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

<p>60N15L-T47-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube</p> <p>(2) T47: TO-247</p> <p>(3) G: Halogen Free, L: Lead Free</p>
--	--

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage ( $V_{GS}=0$ )		$V_{DSS}$	150	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	60	A
	Pulsed (Note 1)	$I_{DM}$	240	A
Avalanche Current		$I_{AR}$	60	A
Avalanche Energy		$E_{AS}$	1000	mJ
Power Dissipation		$P_D$	125	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. Pulse width limited by safe operating area

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	1	$^{\circ}\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT			
<b>OFF CHARACTERISTICS</b>									
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	150			V			
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=150\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$			
Gate-Source Leakage Current		$I_{GSS}$							
							Forward	$V_{GS}=+20\text{V}$ , $V_{DS}=0\text{V}$	+100
						Reverse	$V_{GS}=-20\text{V}$ , $V_{DS}=0\text{V}$	-100	nA
<b>ON CHARACTERISTICS (Note 2)</b>									
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	2	3	4	V			
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=30\text{A}$			30	m $\Omega$			
<b>DYNAMIC PARAMETERS</b>									
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		3900		pF			
Output Capacitance	$C_{OSS}$				950		pF		
Reverse Transfer Capacitance	$C_{RSS}$				250		pF		
<b>SWITCHING PARAMETERS</b>									
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DD}=75\text{V}$ , $I_D=60\text{A}$		130	170	nC			
Gate to Source Charge	$Q_{GS}$				26		nC		
Gate to Drain Charge	$Q_{GD}$				55		nC		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $I_D=60\text{A}$ , $R_G=4.7\Omega$ , $V_{GS}=10\text{V}$		30		ns			
Rise Time	$t_R$				180		ns		
Fall-Time	$t_F$				35		ns		
Off-Voltage Rise Time	$t_{R(OFF)}$				135		ns		
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>									
Maximum Body-Diode Continuous Current	$I_S$	(Note 1)			60	A			
Maximum Body-Diode Pulsed Current	$I_{SM}$				240	A			
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_{SD}=60\text{A}$ , $V_{GS}=0\text{V}$ (Note 2)			1.6	V			

Notes: 1. Pulse width limited by safe operating area

2. Pulsed: Pulse duration=300 $\mu\text{s}$ , Duty cycle 1.5%

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. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.