



60N15

Preliminary

Power MOSFET

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

■ DESCRIPTION

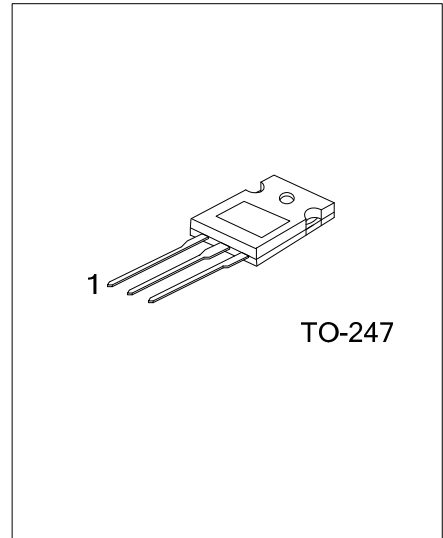
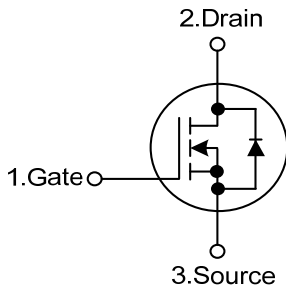
The UTC **60N15** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

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) T: Tube</p> <p>(2) T47: TO-247</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage ($V_{GS}=0$)		V_{DSS}	150	V
Gate-Source Voltage		V_{GSS}	± 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	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	θ_{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			
OFF CHARACTERISTICS									
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	μA			
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
ON CHARACTERISTICS (Note 2)									
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 Ω			
DYNAMIC PARAMETERS									
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		
SWITCHING PARAMETERS									
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		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS									
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 μs , Duty cycle 1.5%

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