



UF50N20

Preliminary

Power MOSFET

50A, 200V N-CHANNEL POWER MOSFET

DESCRIPTION

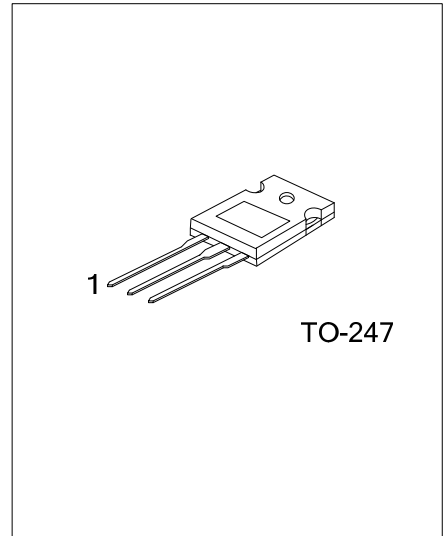
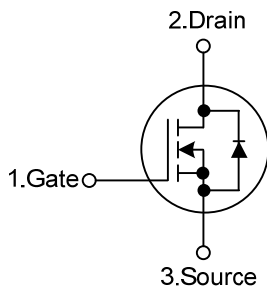
The UTC **UF50N20** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

The UTC **UF50N20** is suitable for motor control, AC-DC or DC-DC converters and audio amplifiers, etc.

FEATURES

- * $R_{DS(ON)} < 40m\Omega$ @ $V_{GS}=10V, I_D=50A$
- * 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	
UF50N20L-T47-T	UF50N20G-T47-T	TO-247	G	D	S	Tube

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

UF50N20L-T47-T	(1) Packing Type	(1) T: Tube
	(2) Package Type	(2) T47: TO-247
	(3) Lead Free	(3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage ($V_{GS}=0$)		V_{DSS}	200	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	50	A
	Pulsed (Note 1)	I_{DM}	200	A
Avalanche Current		I_{AR}	60	A
Avalanche Energy		E_{AS}	600	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}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	200			V			
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=200\text{V}$, $V_{GS}=0\text{V}$			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	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=30\text{A}$			40	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	$V_{GS}=10\text{V}$, $V_{DD}=100\text{V}$, $I_D=50\text{A}$		130	170	nC			
Gate to Source Charge	Q_{GS}			26		nC			
Gate to Drain Charge	Q_{GD}			55		nC			
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $I_D=25\text{A}$, $R_G=4.7\Omega$, $V_{GS}=10\text{V}$		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)			50	A			
Maximum Body-Diode Pulsed Current	I_{SM}				200	A			
Drain-Source Diode Forward Voltage	V_{SD}	$I_{SD}=50\text{A}$, $V_{GS}=0\text{V}$ (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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