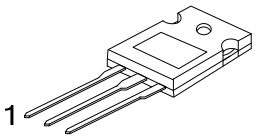
50A, 200V N-CHANNEL POWER MOSFET



TO-247

■ DESCRIPTION

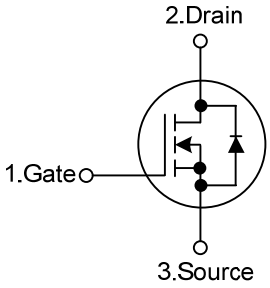
The UTC **UF50N20** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

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

■ FEATURES

* $R_{DS(ON)}$<40mΩ @ 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	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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	°C/W
Junction to Case	θ_{JC}	1	°C/W

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	200			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=200V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS (Note 2)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2	3	4	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=30A			40	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		3900		pF
Output Capacitance		C_{OSS}			950		pF
Reverse Transfer Capacitance		C_{RSS}			250		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DD}=100V, I_D=50A		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}=30V, I_D=25A, R_G=4.7Ω, V_{GS}=10V		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}=50A, V_{GS}=0V (Note 2)			1.6	V

Notes: 1. Pulse width limited by safe operating area
2. Pulsed: Pulse duration=300μs, Duty cycle 1.5%