



20N50

Preliminary

Power MOSFET

20A, 500V N-CHANNEL POWER MOSFET

DESCRIPTION

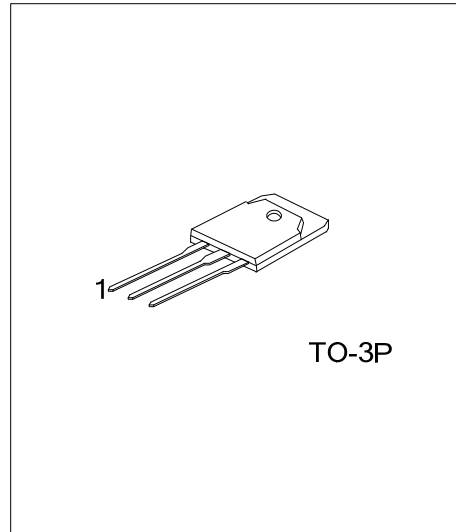
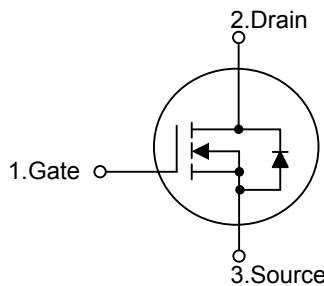
The UTC **20N50** is an N-channel MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on-state resistance, high switching speed and low leakage current, etc.

The UTC **20N50** is suitable for switching regulator application, etc.

FEATURES

- * $R_{DS(on)}=0.21\Omega @V_{GS}=10V, I_D=10A$
- * High switching speed
- * Low leakage current

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
20N50L-T3P-T	20N50G-T3P-T	TO-3P	G	D	S	Tube

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

<p>20N50L-T3P-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) T: Tube</p> <p>(2) T3P: TO-3P</p> <p>(3) L: Lead Free, G: Halogen Free</p>
---	---

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	500	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current (Note 2)	Continuous	I_D	20
	Pulsed	I_{DM}	80
Avalanche Current	I_{AR}	20	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	960
	Repetitive (Note 4)	E_{AR}	15
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	150	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55~+150	$^\circ\text{C}$

Note: 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. Ensure that the channel temperature does not exceed 150°C .

3. $V_{DD}=90\text{V}$, $T_{ch}=25^\circ\text{C}$ (initial), $L=4.08\text{mH}$, $R_G=25\Omega$, $I_{AR}=20\text{A}$.

4. Repetitive rating: pulse width limited by maximum channel temperature This transistor is an electrostatic-sensitive device. Handle with care.

■ THERMAL CHARACTERISTICS THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	50	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	0.833	$^\circ\text{C/W}$

■ ELECTRICAL CHARACTERISTICS (T_A=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =10mA, V _{GS} =0V	500			V	
Drain-Source Leakage Current	I _{DSS}	V _{DS} =500V, V _{GS} =0V			100	μA	
Gate-Source Leakage Current	I _{GSS}	Forward			+10	μA	
		Reverse			-10	μA	
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G =±10μA, V _{DS} =0V	±30			V	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =10V, I _D =1mA	2.0		4.0	V	
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A		0.21	0.27	Ω	
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		3400		pF	
Output Capacitance	C _{OSS}			320		pF	
Reverse Transfer Capacitance	C _{RSS}			25		pF	
SWITCHING PARAMETERS							
Total Gate Charge	Q _G	V _{GS} =10V, V _{DD} ≈400V, I _D =20A		70		nC	
Gate to Source Charge	Q _{GS}			45		nC	
Gate to Drain Charge	Q _{GD}			25		nC	
Turn-ON Delay Time	t _{D(ON)}	<p>Duty ≤1%, t_w=10μs</p>		130		ns	
Rise Time	t _R				70		ns
Turn-OFF Delay Time	t _{D(OFF)}				280		ns
Fall-Time	t _F				70		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current (Note)	I _S				20	A	
Maximum Body-Diode Pulsed Current (Note)	I _{SM}				80	A	
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.7	V	
Body Diode Reverse Recovery Time	t _{RR}	I _S =20A, V _{GS} =0V, dI _{DR} /dt=100A/μs		1300		ns	
Body Diode Reverse Recovery Charge	Q _{RR}				20		μC

Note: Ensure that the channel temperature does not exceed 150°C.

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.