



N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

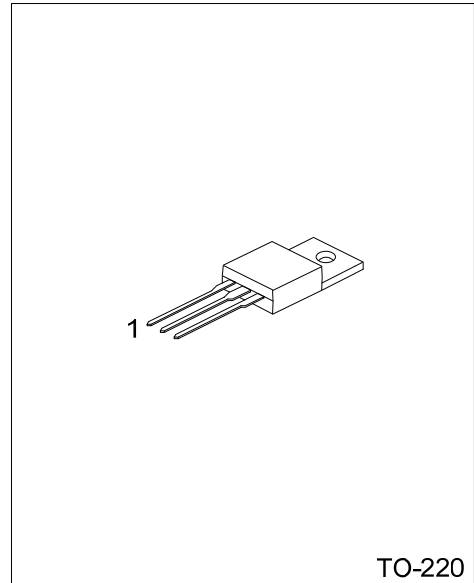
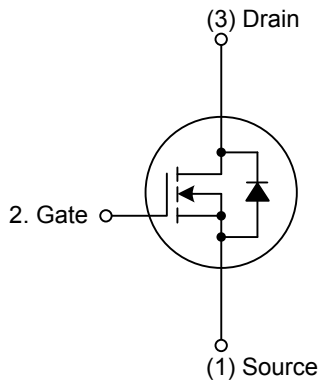
The UTC **UP9972** is an N-ch enhancement mode Power MOS Field Effect Transistor using advanced technology to provide fast speed switching, low on-resistance and perfect cost-effectiveness.

The UTC **UP9972** is ideal for commercial-industrial surface mount applications applied to DC/DC converters or other low voltage applications.

FEATURES

- * Single drive required
- * Fast switching capability
- * Ultra low gate charge
- * Halogen Free

SYMBOL



TO-220

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UP9972L-TA3-T	UP9972G-TA3-T	TO-220	G	D	S	Tube

<p>UP9972L-TA3-T</p> <p>(1)Packing Type (2)Package Type (3) Lead Plating</p>	<p>(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free, L: Lead Free</p>
--	--

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current ($V_{GS}=10V$, $T_C=25^\circ C$)	I_D	60	A
Pulsed Drain Current (Note 2)	I_{DM}	230	A
Avalanche Current (Note 3)	I_{AR}	30	A
Single Pulse Avalanche Energy (Note 3)	E_{AS}	45	mJ
Power Dissipation ($T_C=25^\circ C$)	P_D	89	W
Junction Temperature	T_J	+150	$^\circ C$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ C$

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 $T_{J(MAX)}$

3. $L = 100\mu H$, $V_{DD} = 30V$, $I_{AS} = 30A$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to ambient	θ_{JA}	62	$^\circ C/W$
Junction to case	θ_{JC}	1.4	$^\circ C/W$

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	60			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Reference to $25^\circ C$, $I_D=1mA$		0.06		$V/^\circ C$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V$, $V_{GS}=0V$			10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V$, $V_{DS}=0V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1		3	V
Drain to Source On-state Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=35A$			18	m Ω
		$V_{GS}=4.5V$, $I_D=25A$			22	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0V$, $V_{DS}=25V$, $f=1.0MHz$		3170	5070	pF
Output Capacitance	C_{OSS}			280		pF
Reverse Transfer Capacitance	C_{RSS}			230		pF
Gate Resistance	R_G	$f=1.0MHz$		1.7		Ω
SWITCHING PARAMETERS						
Turn-ON Delay Time (Note)	$t_{D(ON)}$	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=35A$ $R_G=3.3\Omega$, $R_D=0.86\Omega$		11		ns
Turn-ON Rise Time	t_R			58		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			45		ns
Turn-OFF Fall-Time	t_F			80		ns
Total Gate Charge (Note)	Q_G			32	51	nC
Gate Source Charge	Q_{GS}	$I_D=35A$, $V_{DS}=48V$, $V_{GS}=4.5V$		8		nC
Gate Drain Charge	Q_{GD}			20		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage (Note)	V_{SD}	$I_S=35A$, $V_{GS}=0V$			1.2	V
Reverse Recovery Time (Note)	t_{RR}	$I_S=35A$, $V_{GS}=0V$		50		ns
Reverse Recovery Charge	Q_{RR}	$di/dt=100A/\mu s$		48		nC

Note: Pulse test

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.