



FUFZ24N-Q

Preliminary

Power MOSFET

**17A, 55V N-CHANNEL
POWER MOSFET**

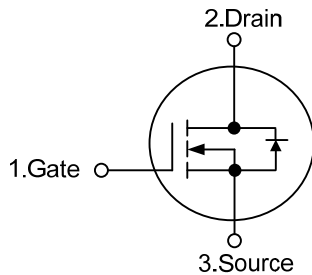
■ DESCRIPTION

The UTC **FUFZ24N-Q** is a N-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

- * $R_{DS(ON)} \leq 41\text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=10\text{A}$
- * High Switching Speed

■ SYMBOL



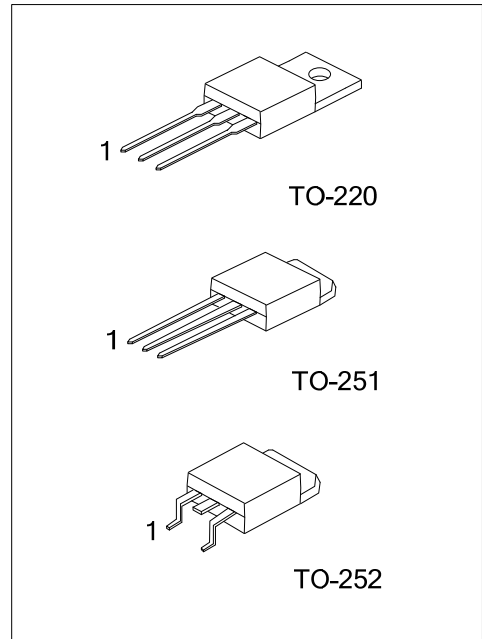
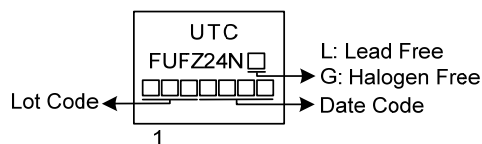
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
FUFZ24NL-TA3-T	FUFZ24NG-TA3-T	TO-220	G	D	S	Tube
FUFZ24NL-TM3-T	FUFZ24NG-TM3-T	TO-251	G	D	S	Tube
FUFZ24NL-TN3-R	FUFZ24NG-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>FUFZ24NG-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TM3: TO-251, TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
---------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	55	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	17	A
	Pulsed	I_{DM}	34	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	270	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.18	V/ns
Power Dissipation	TO-220	P_D	51	W
	TO-251/TO-252		30	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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $L = 30\text{mH}$, $I_{AS} = 4.24\text{A}$, $V_{DD} = 25\text{V}$, $R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 17\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
	TO-251/TO-252		110	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	2.45	$^\circ\text{C}/\text{W}$
	TO-251/TO-252		4.16(Note)	$^\circ\text{C}/\text{W}$

Note: Device mounted on FR-4 substrate P_c board, 2oz copper, with 1inch square copper plate.

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

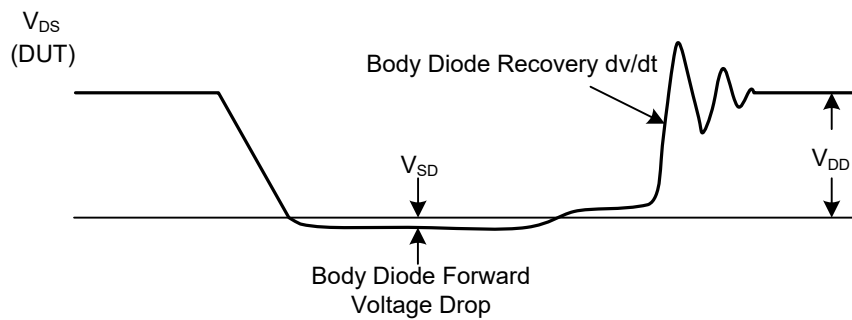
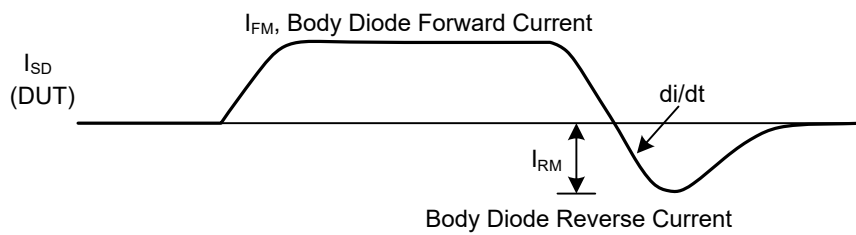
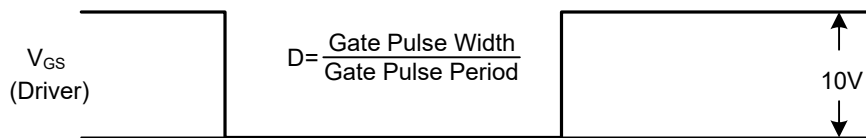
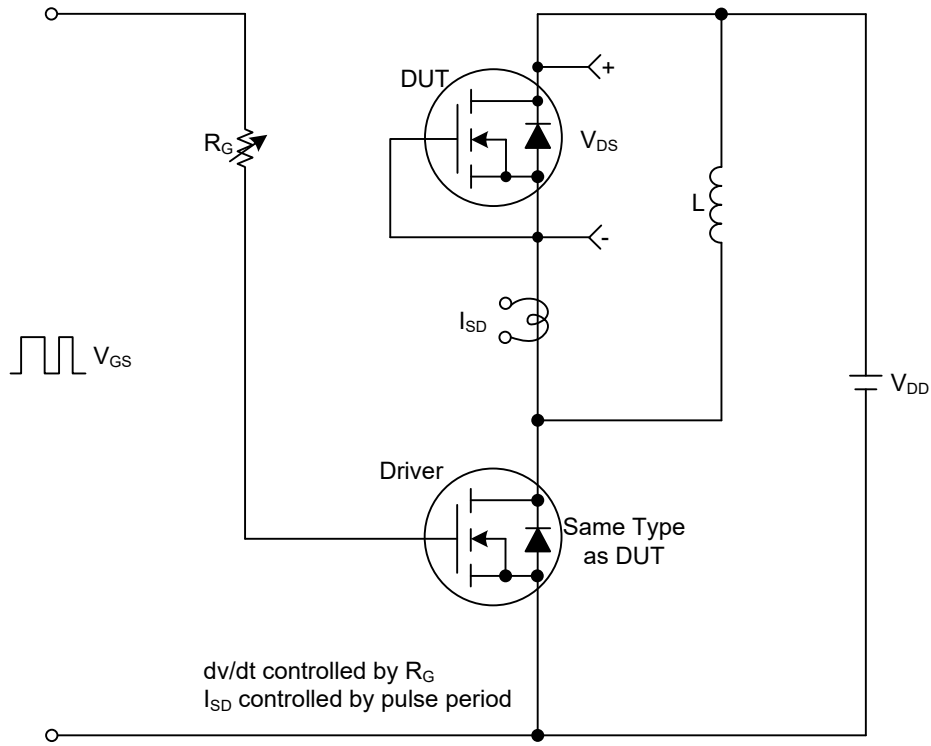
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	55			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=55\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS} $V_{GS}=+20\text{V}$			+10	nA
	Reverse		$V_{GS}=-20\text{V}$		-10	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=10\text{A}$			41	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$ (Note 2)		507		pF
Output Capacitance	C_{OSS}			192		pF
Reverse Transfer Capacitance	C_{RSS}			53		pF
SWITCHING PARAMETERS						
Total Gate Charge(Note 1)	Q_G	$V_{DS}=30\text{V}$, $V_{GS}=10\text{V}$, $I_D=17\text{A}$		28.6		nC
Gate to Source Charge	Q_{GS}			4.1		nC
Gate to Drain Charge	Q_{GD}			10		nC
Turn-ON Delay Time(Note 1)	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $I_D=17\text{A}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$		5.7		ns
Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			63		ns
Fall-Time	t_F			31		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 2)						
Maximum Body-Diode Continuous Current	I_S				17	A
Maximum Body-Diode Pulsed Current	I_{SM}				34	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$, $I_S=17\text{A}$ (Note 1)			1.4	V
Body Diode Reverse Recovery Time(Note 1)	t_{rr}	$V_{GS}=0\text{V}$, $I_S=17\text{A}$		36		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$di/dt=100\text{A}/\mu\text{s}$		43		nC

Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

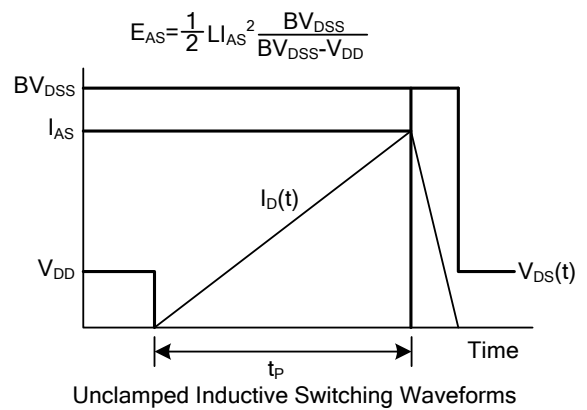
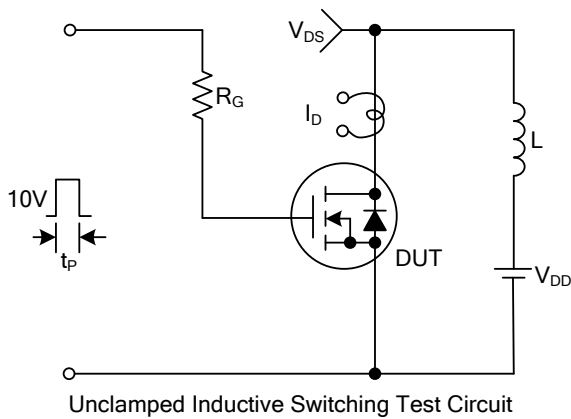
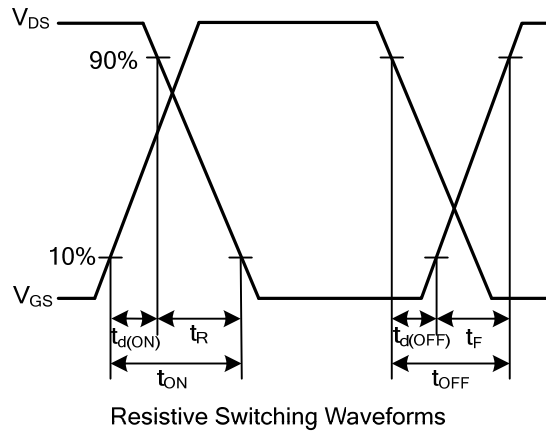
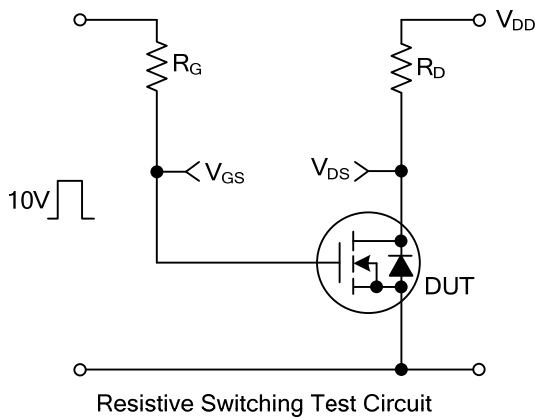
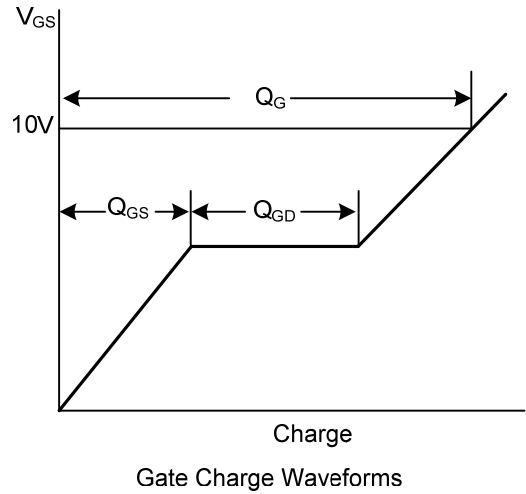
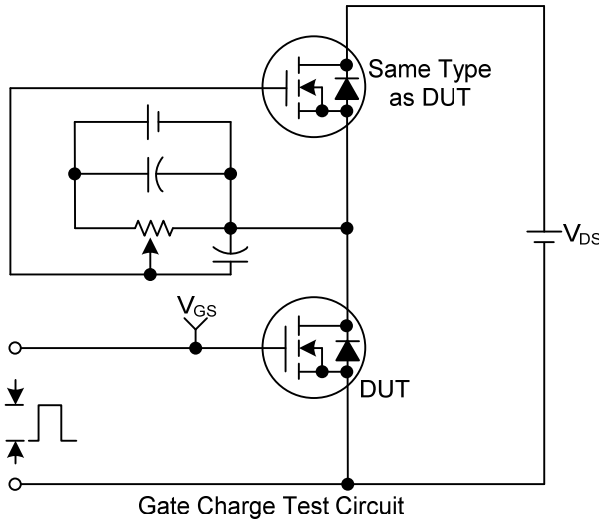
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit & Waveforms



■ TEST CIRCUITS AND WAVEFORMS



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. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.