



UFZ24N

Power MOSFET

28A, 60V N-CHANNEL
POWER MOSFET

■ DESCRIPTION

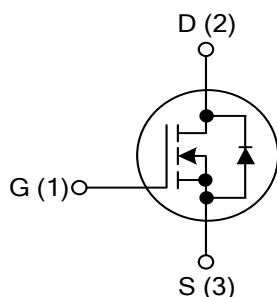
The UTC **UFZ24N** is an N -channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge.

The UTC **UFZ24N** is suitable for all commercial-industrial applications, etc.

■ FEATURES

- * $R_{DS(ON)} < 0.07\Omega$ @ $V_{GS}=10V$, $I_D=10A$
- * High switching speed
- * Low gate charge

■ SYMBOL

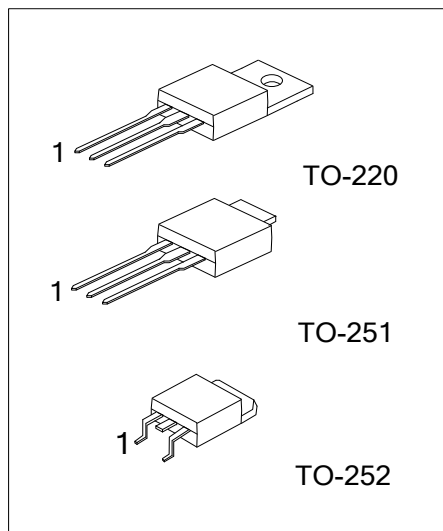


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UFZ24NL-TA3-T	UFZ24NG-TA3-T	TO-220	G	D	S	Tube
UFZ24NL-TM3-T	UFZ24NG-TM3-T	TO-251	G	D	S	Tube
UFZ24NL-TN3-T	UFZ24NG-TN3-T	TO-252	G	D	S	Tube
UFZ24NL-TN3-R	UFZ24NG-TN3-R	TO-252	G	D	S	Tape Reel

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

UFZ24NL-TA3-T		(1)Packing Type	(1) T: Tube, R: Tape Reel
		(2)Package Type	(2) TA3: TO-220, TM3: TO-251, TN3: TO-252
		(3)Lead Free	(3) L: Lead Free, G: Halogen Free



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	55	V
Gate-Source Voltage			V_{GSS}	± 20	V
Drain Current	Continuous	$T_C=25^{\circ}\text{C}$	I_D	17	A
		$T_C=100^{\circ}\text{C}$		12	A
	Pulsed (Note 1)		I_{DM}	68	A
Avalanche Current (Note 1)			I_{AR}	10	A
Avalanche Energy	Single Pulsed (Note 2)		E_{AS}	71	mJ
	Repetitive (Note 1)		E_{AR}	4.5	mJ
Peak Diode Recovery dv/dt (Note 3)			dv/dt	5.0	V/ns
Power Dissipation ($T_C=25^{\circ}\text{C}$)	TO-220		P_D	73	W
	TO-251/TO-252			46	W
Linear Derating Factor				0.30	W/ $^{\circ}\text{C}$
Junction Temperature			T_J	-55~+175	$^{\circ}\text{C}$
Storage Temperature Range			T_{STG}	-55~+175	$^{\circ}\text{C}$

Note: 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.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^{\circ}\text{C/W}$
	TO-251/TO-252		100	$^{\circ}\text{C/W}$
Junction to Case	TO-220	θ_{JC}	1.71	$^{\circ}\text{C/W}$
	TO-251/TO-252		2.7	$^{\circ}\text{C/W}$

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. $L=1.0\text{mH}$, $I_{AS}=10\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.

3. $I_{SD}\leq 10\text{A}$, $di/dt\leq 280\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J\leq 175^{\circ}\text{C}$.

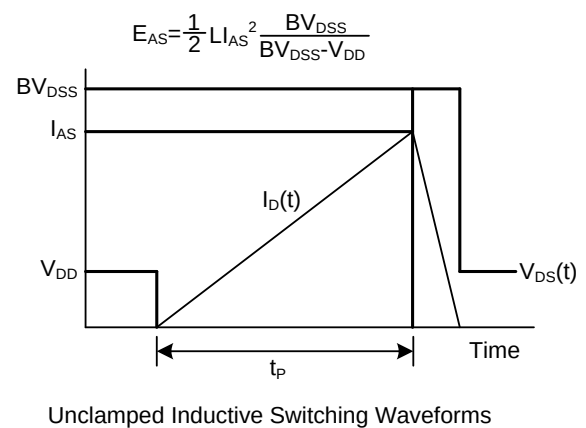
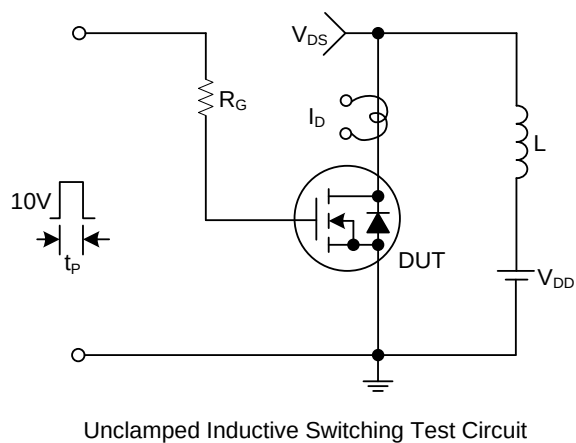
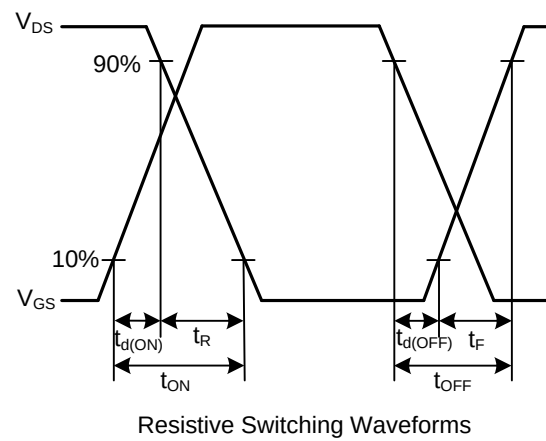
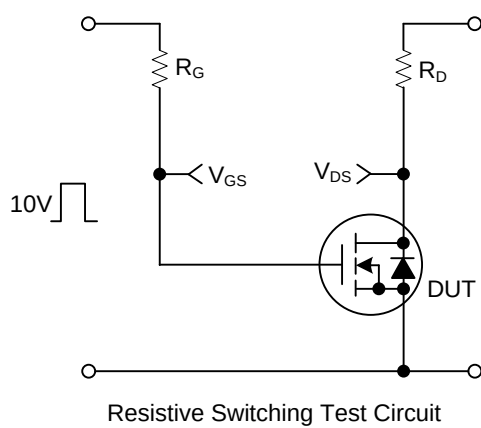
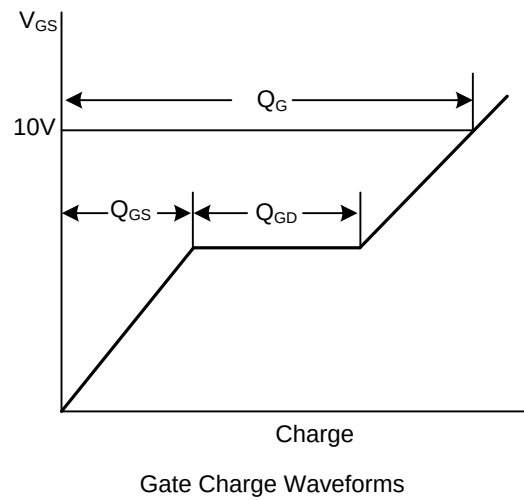
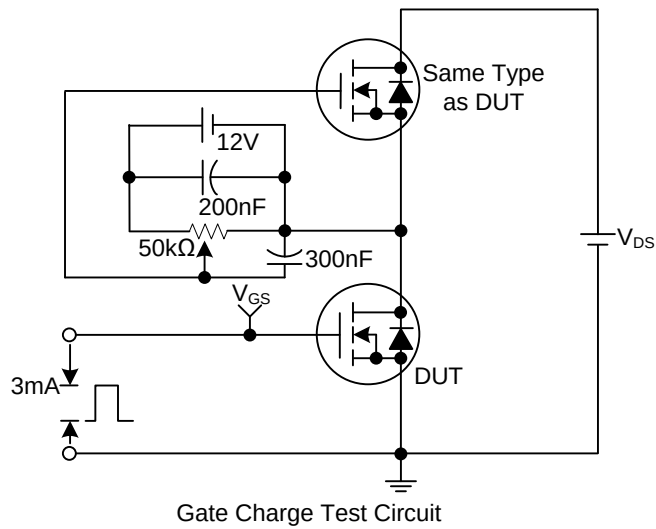
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	55			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=55V, V_{GS}=0V$			25	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							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-State Resistance (Note 2)		$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$			0.07	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		370		pF
Output Capacitance		C_{OSS}			140		pF
Reverse Transfer Capacitance		C_{RSS}			65		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	$V_{GS}=10V, V_{DS}=44V, I_D=10A$ (Note 4)			20	nC
Gate to Source Charge		Q_{GS}				5.3	nC
Gate to Drain Charge		Q_{GD}				7.6	nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=28V, I_D=10A, R_G=24\Omega, R_D=2.6\Omega$ (Note 4)		4.9		ns
Rise Time		t_R			34		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			19		ns
Fall-Time		t_F			27		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				17	A
Maximum Body-Diode Pulsed Current (Note 1)		I_{SM}				68	A
Drain-Source Diode Forward Voltage (Note 2)		V_{SD}	$T_J=25^{\circ}C, I_S=10A, V_{GS}=0V$			1.3	V
Body Diode Reverse Recovery Time		t_{RR}	$I_F=10A, T_J=25^{\circ}C, di/dt=100A/\mu s$		56	83	ns
Body Diode Reverse Recovery Charge (Note 2)		Q_{RR}			120	180	nC

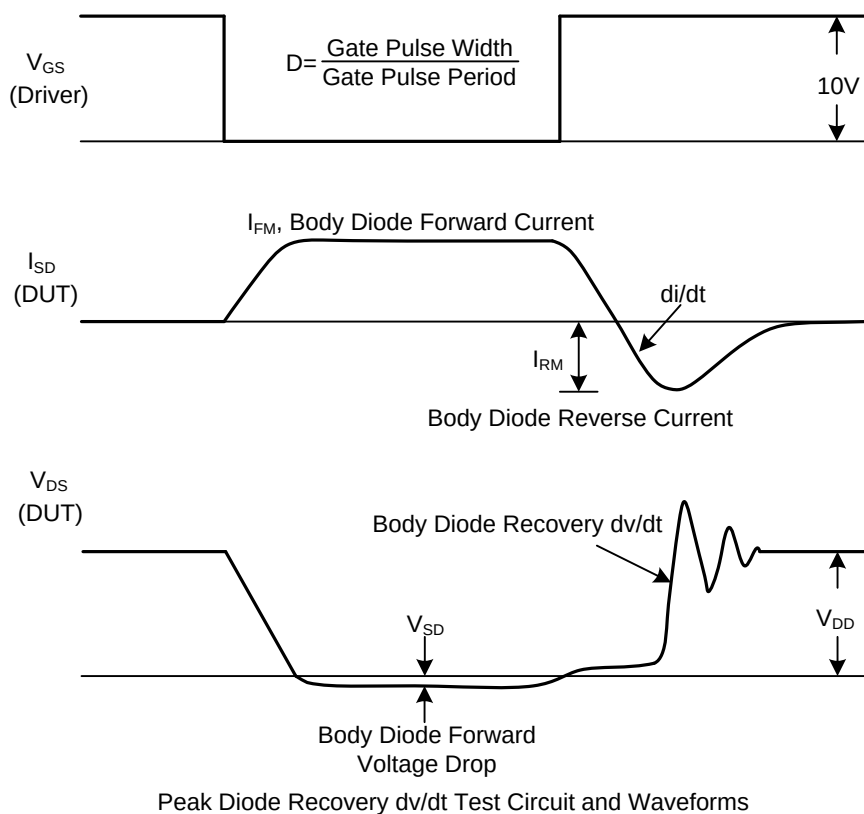
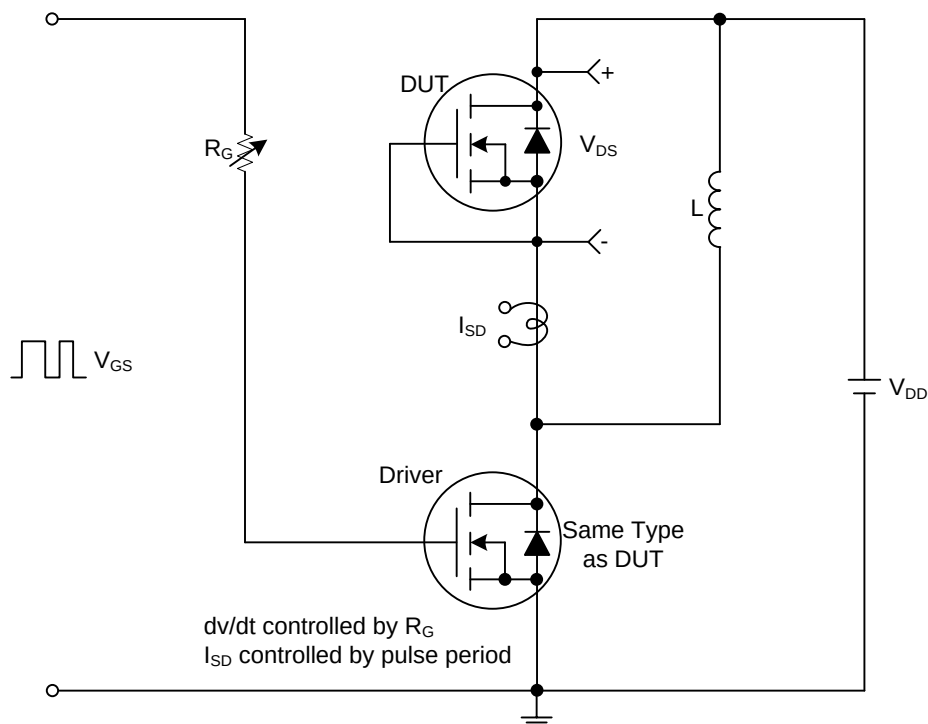
Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

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

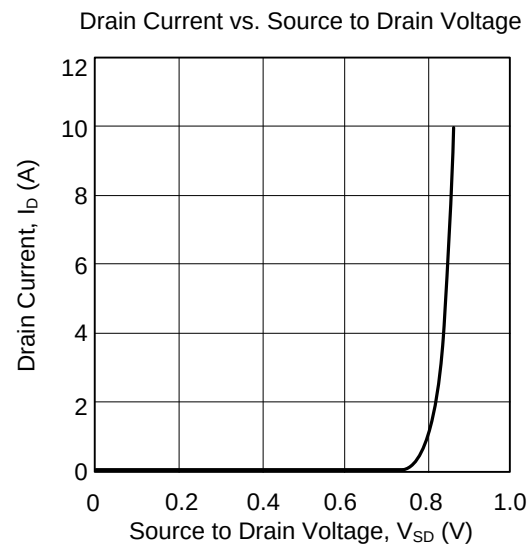
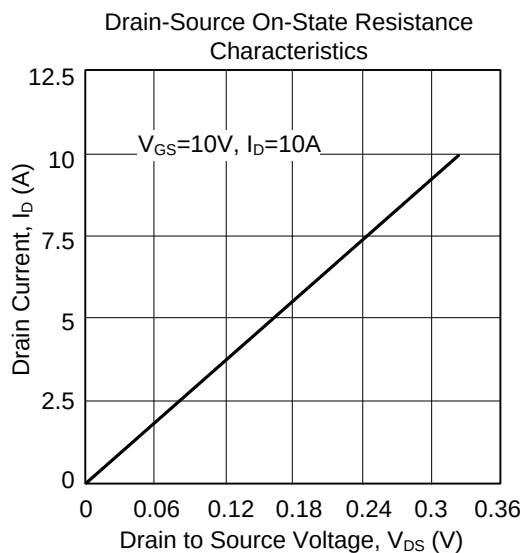
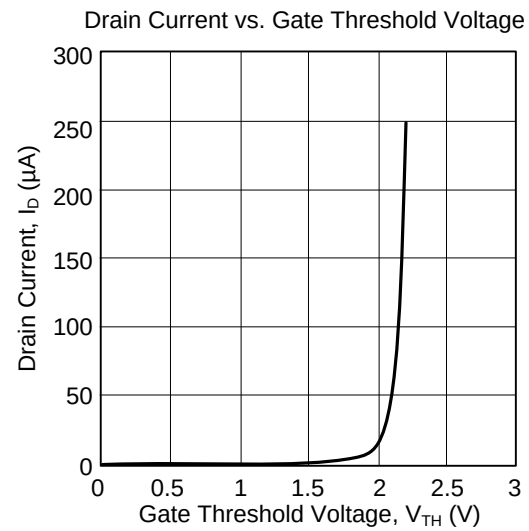
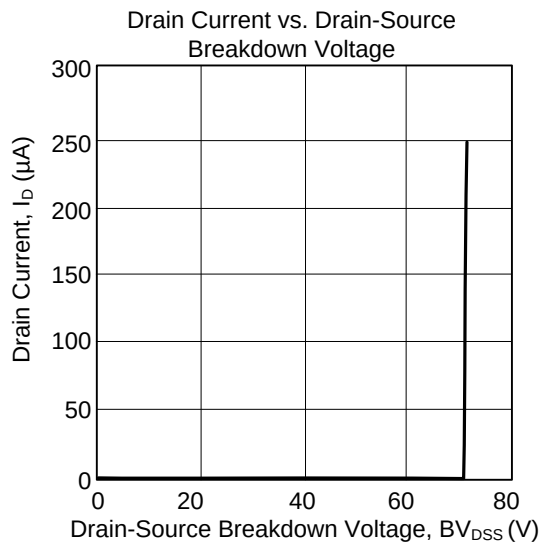
■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS(Cont.)



TYPICAL CHARACTERISTICS



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