



UFZ34

Preliminary

Power MOSFET

28A, 60V N-CHANNEL POWER MOSFET

DESCRIPTION

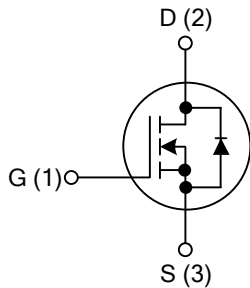
The UTC **UFZ34** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge.

The UTC **UFZ34** is suitable for all commercial-industrial applications, etc.

FEATURES

- * $R_{DS(ON)} < 0.042\Omega @ V_{GS}=10V, I_D=17A$
- * High switching speed
- * Low gate charge

SYMBOL

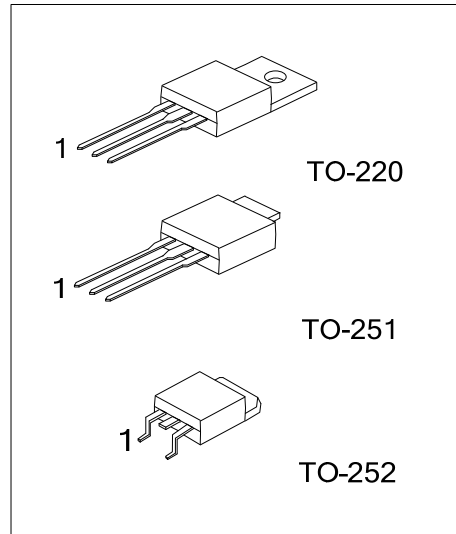


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UFZ34L-TA3-T	UFZ34G-TA3-T	TO-220	G	D	S	Tube
UFZ34L-TM3-T	UFZ34G-TM3-T	TO-251	G	D	S	Tube
UFZ34L-TN3-R	UFZ34G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UFZ34L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TM3: TO-251, TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	60	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Drain Current	Continuous	I_D	$T_C=25^\circ\text{C}$	28	A
			$T_C=100^\circ\text{C}$	20	A
	Pulsed (Note 1)		I_{DM}	112	A
Avalanche Current (Note 1)		I_{AR}	17	A	
Avalanche Energy	Single Pulsed (Note 2)		E_{AS}	97	mJ
	Repetitive (Note 1)		E_{AR}	6.8	mJ
Peak Diode Recovery dv/dt (Note 3)		dv/dt	5.0	V/ns	
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	68	W	
Linear Derating Factor			0.46	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	θ_{JA}	62	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	3.3	$^\circ\text{C}/\text{W}$

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. $L=670\mu\text{H}$, $I_{AS}=17\text{A}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
3. $I_{SD}\leq 17\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J\leq 175^\circ\text{C}$.

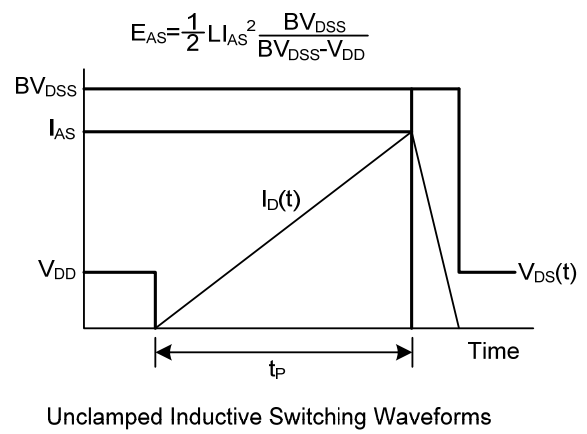
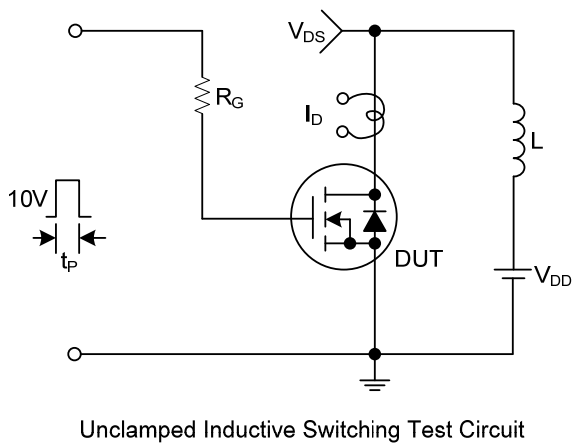
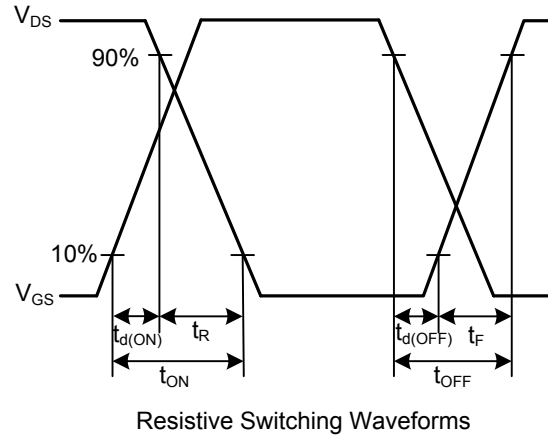
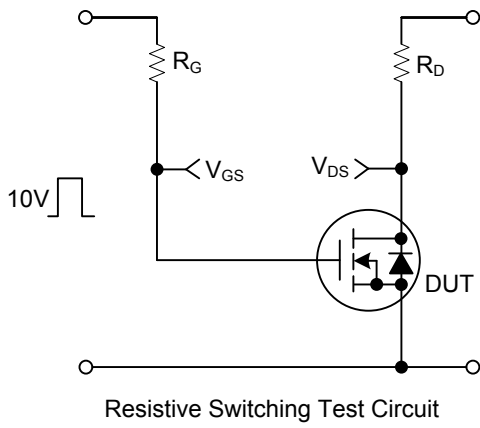
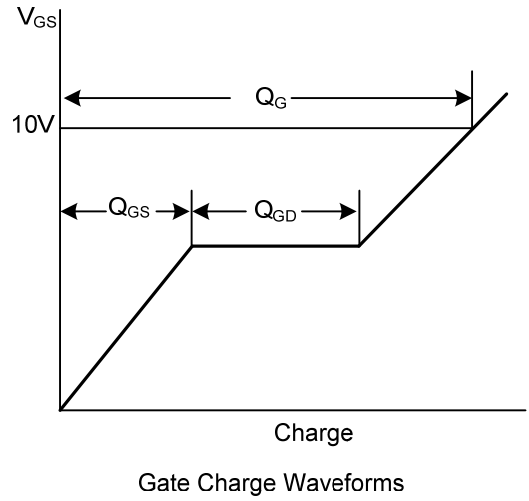
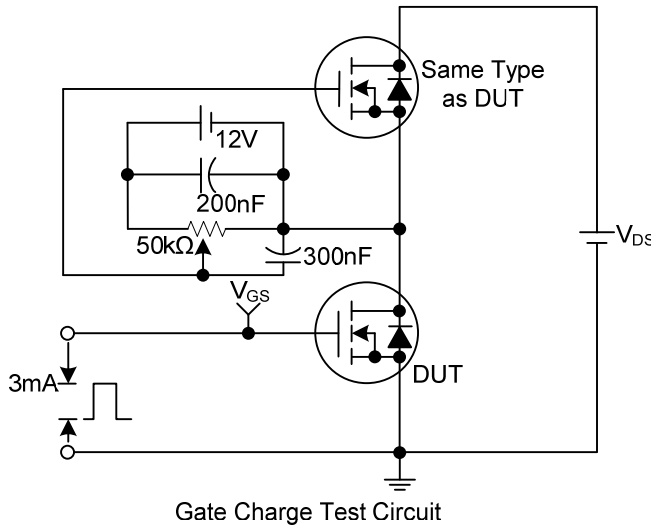
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			25	μA
Gate-Source Leakage Current	Forward	$V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$			+100	nA
	Reverse	$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=17\text{A}$			0.042	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		680		pF
Output Capacitance	C_{OSS}			220		pF
Reverse Transfer Capacitance	C_{RSS}			80		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{GS}=10\text{V}$, $V_{DS}=48\text{V}$, $I_D=17\text{A}$ (Note 4)			30	nC
Gate to Source Charge	Q_{GS}				6.7	nC
Gate to Drain Charge	Q_{GD}				12	nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $I_D=17\text{A}$, $R_G=13\Omega$, $R_D=1.8\Omega$ (Note 2)		5.1		ns
Rise Time	t_R			30		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			22		ns
Fall-Time	t_F			30		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				28	A
Maximum Body-Diode Pulsed Current (Note 1)	I_{SM}				100	A
Drain-Source Diode Forward Voltage (Note 2)	V_{SD}	$T_J=25^\circ\text{C}$, $I_S=17\text{A}$, $V_{GS}=0\text{V}$			1.3	V
Body Diode Reverse Recovery Time	t_{RR}	$T_J=25^\circ\text{C}$, $I_F=17\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		63	95	ns
Body Diode Reverse Recovery Charge (Note 2)	Q_{RR}			130	200	nC
Forward Turn-On Time	t_{ON}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

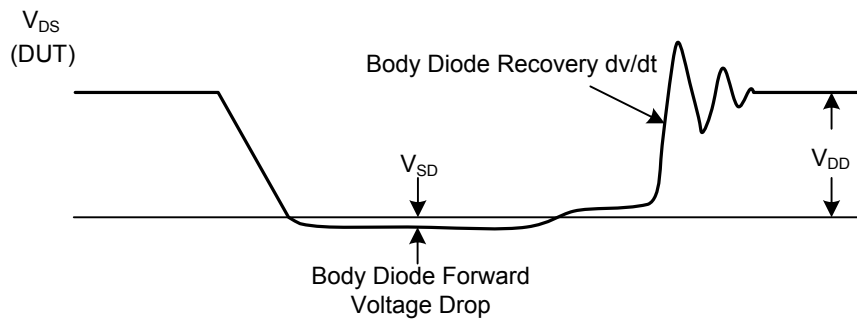
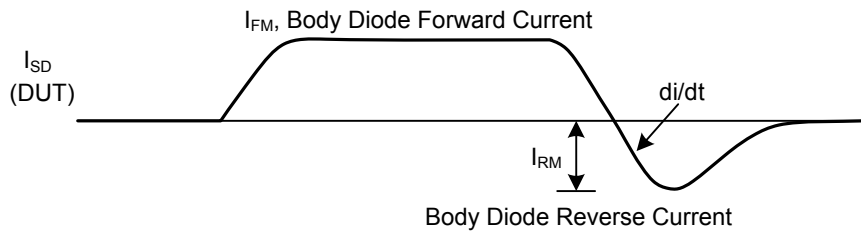
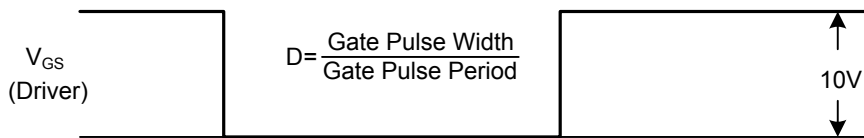
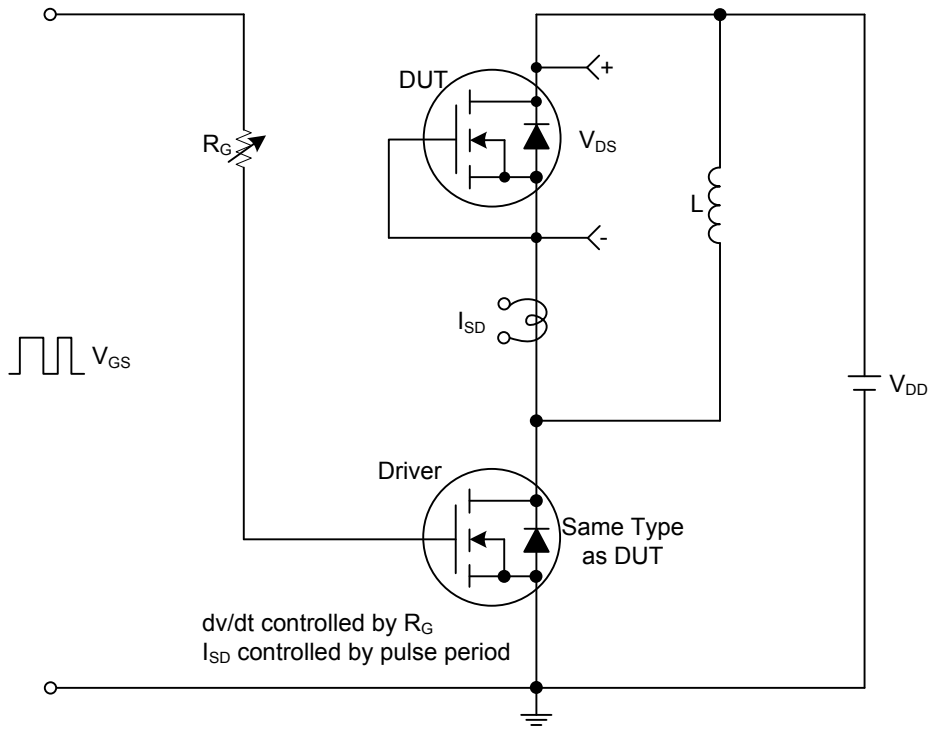
Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

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

■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS



Peak Diode Recovery dv/dt Test Circuit and Waveforms

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