

**UFZ34****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.

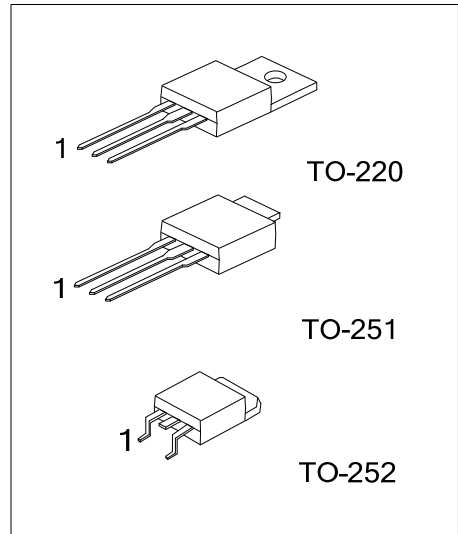
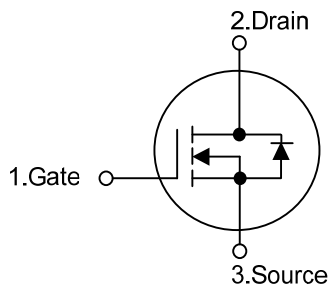
The UTC **UFZ34** is suitable for all commercial-industrial applications, etc.

FEATURES

* $R_{DS(ON)} \leq 0.042 \Omega$ @ $V_{GS}=10V$, $I_D=17A$

* High switching speed

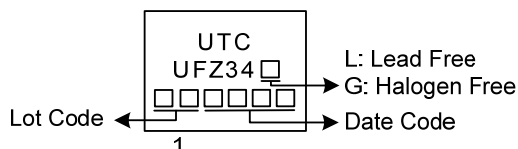
* Low gate charge

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

UFZ34G-TA3-T (1) Packing Type (2) Package Type (3) Green Package	(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
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MARKING

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous	T _C =25°C	I _D	28	A
		T _C =100°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	V/ns
Power Dissipation	TO-220	T _C =25°C	P _D	68	W
	TO-251			48	W
	TO-252				
Linear Derating Factor				0.46	W/°C
Junction Temperature			T _J	-55 ~ +175	°C
Storage Temperature Range			T _{STG}	-55 ~ +175	°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. $L = 670\mu\text{H}$, $I_{AS} = 17\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, 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	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62	$^{\circ}\text{C}/\text{W}$
	TO-251		110	$^{\circ}\text{C}/\text{W}$
	TO-252			
Junction to Case	TO-220	θ_{JC}	1.84	$^{\circ}\text{C}/\text{W}$
	TO-251		2.6 (Note)	$^{\circ}\text{C}/\text{W}$
	TO-252			

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

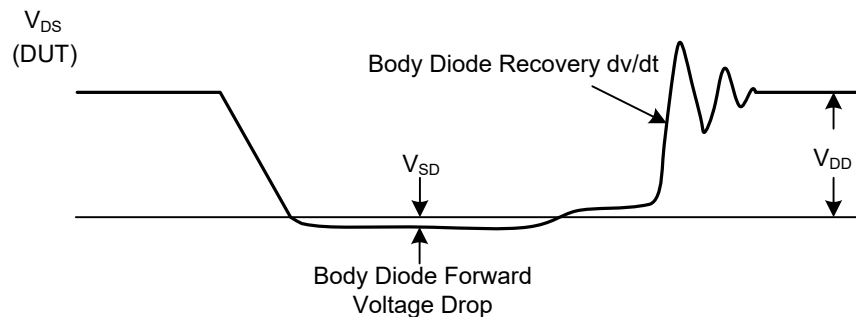
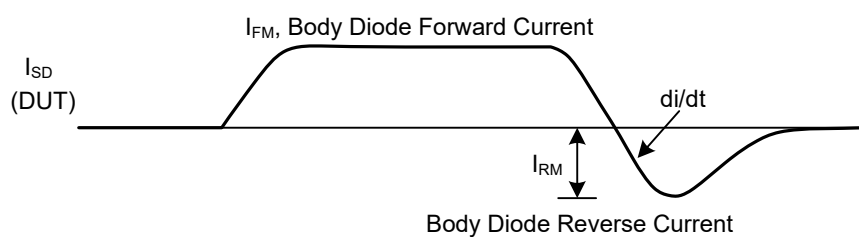
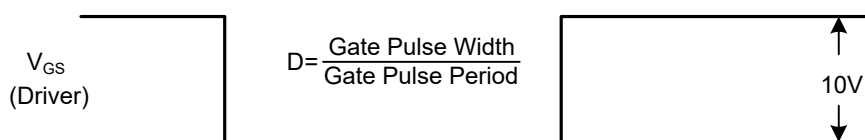
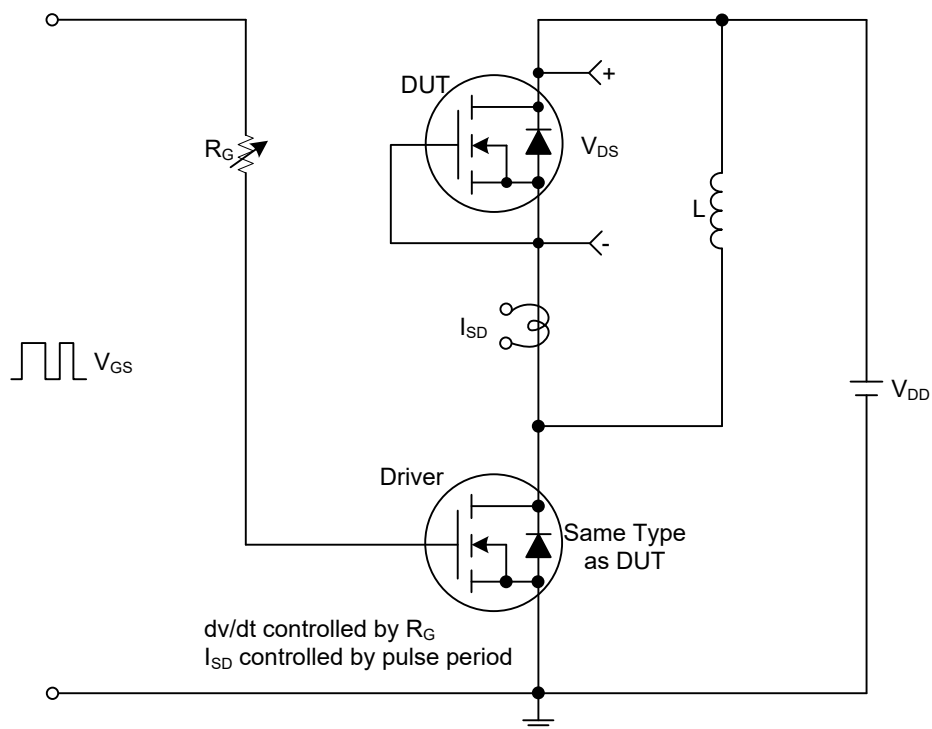
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, 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 =250μA	2.0		4.0	V
Static Drain-Source On-State Resistance (Note 2)		R _{DS(ON)}	V _{GS} =10V, I _D =17A			0.042	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		680		pF
Output Capacitance		C _{OSS}			220		pF
Reverse Transfer Capacitance		C _{RSS}			80		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =48V, V _{GS} =10V, I _D =17A			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} =30V, I _D =17A, R _G =13Ω, R _D =1.8Ω (Note 1)		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°C, I _S =17A, V _{GS} =0V			1.3	V
Body Diode Reverse Recovery Time		t _{rr}	T _J =25°C, I _F =17A, di/dt=100A/μs		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)				

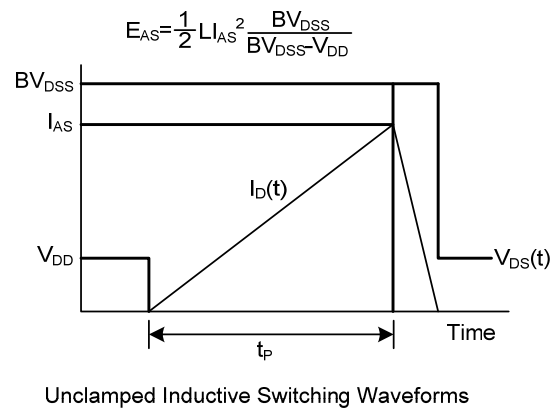
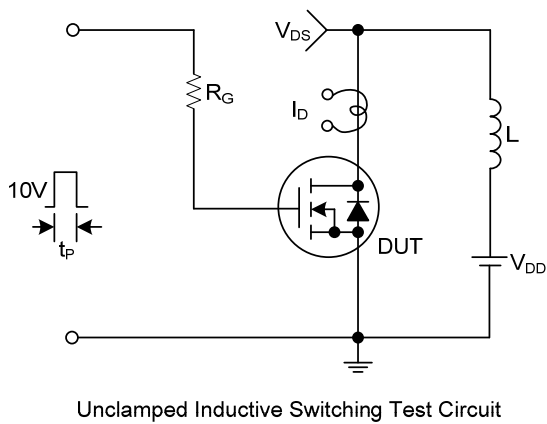
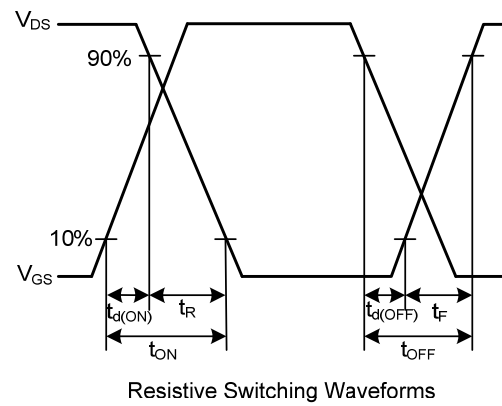
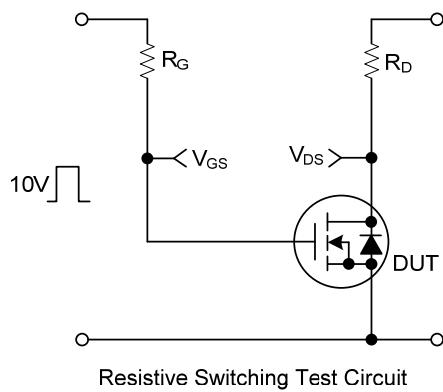
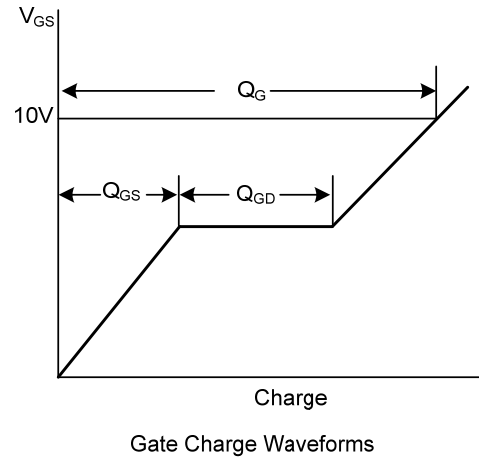
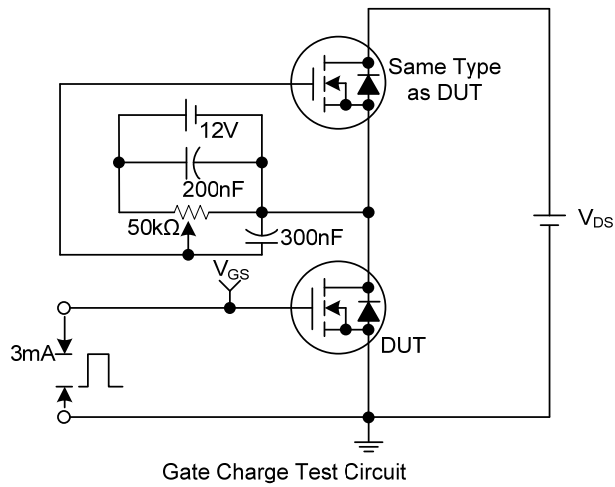
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

Peak Diode Recovery dv/dt Test Circuit and Waveforms

■ TEST CIRCUITS AND WAVEFORMS



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