



UFZ34V

Preliminary

Power MOSFET

28A, 60V N-CHANNEL POWER MOSFET

DESCRIPTION

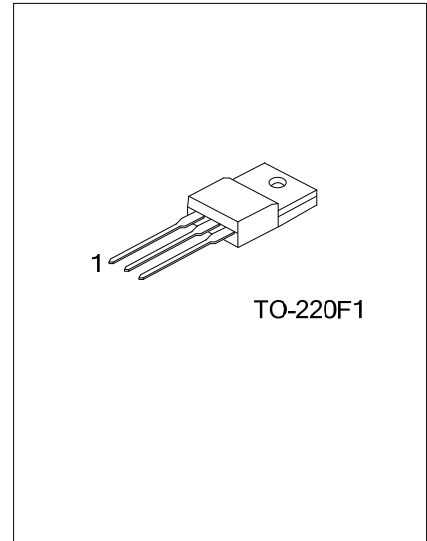
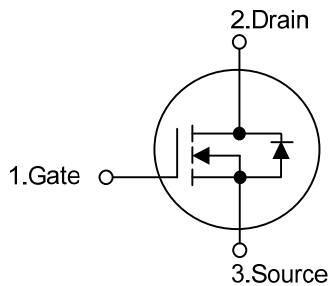
The UTC **UFZ34V** is an N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge.

The UTC **UFZ34V** is suitable for all commercial-industrial applications, etc.

FEATURES

- * $R_{DS(ON)} < 42m\Omega @ V_{GS}=10V, I_D=14A$
- * High switching speed
- * Low gate charge

SYMBOL



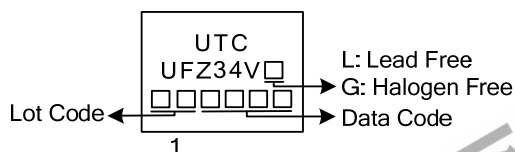
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UFZ34VL-TF1-T	UFZ34VG-TF1-T	TO-220F1	G	D	S	Tube

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

<p>UFZ34VL-TF1-T</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube (2) TF1: TO-220F1 (3) L: Lead Free, G: Halogen Free and Lead Free</p>
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	Continuous	I_D	28
	Pulsed (Note 2)	I_{DM}	112
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	540
Peak Diode Recovery dv/dt (Note 4)	dv/dt	20	V/ns
Power Dissipation	P_D	55	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	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. $L=120\text{mH}$, $I_{AS}=3.0\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

4. $I_{SD} \leq 28\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.27	$^\circ\text{C}/\text{W}$

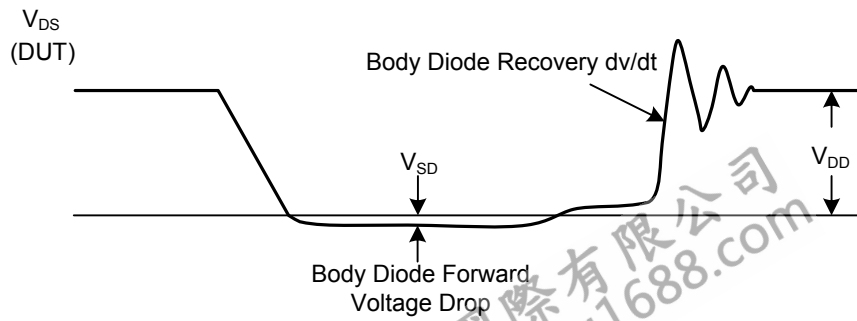
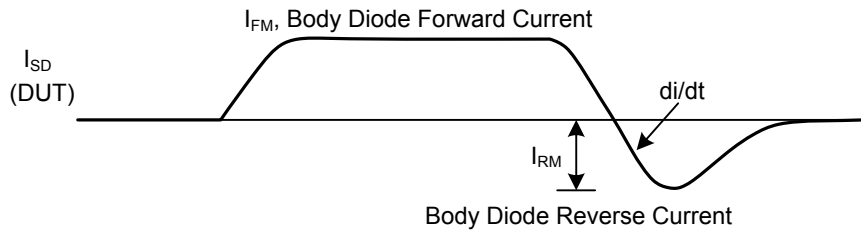
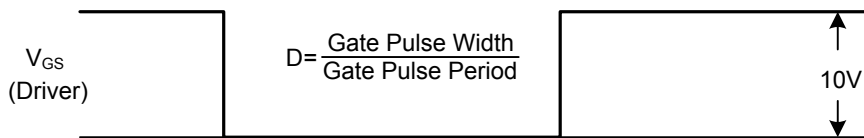
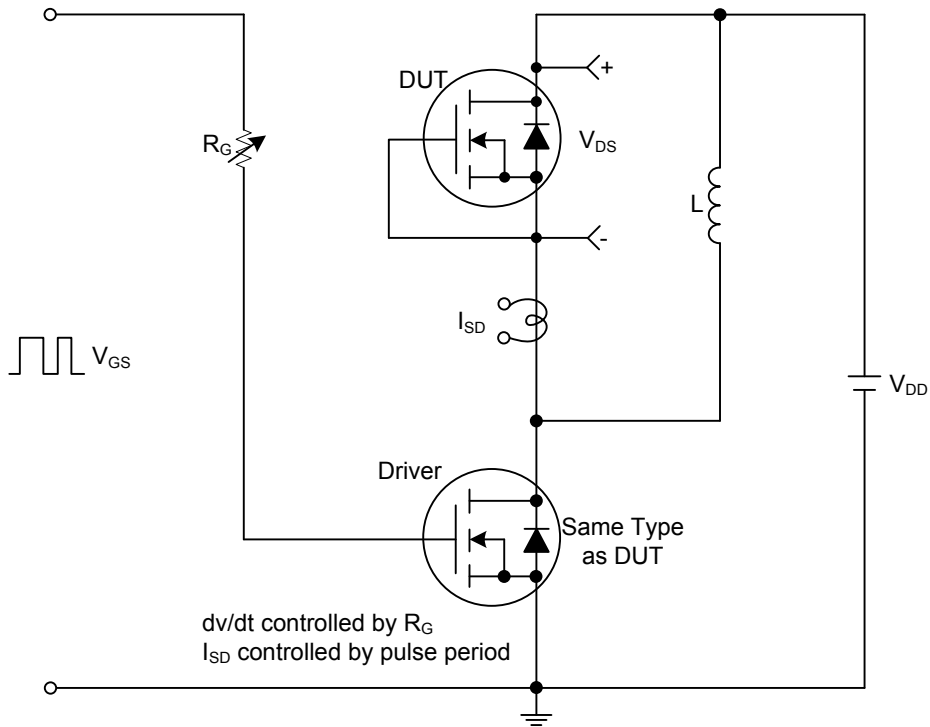
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			25	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=14\text{A}$			42	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		810		pF
Output Capacitance	C_{OSS}			260		pF
Reverse Transfer Capacitance	C_{RSS}			18		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	$V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $I_D=1.3\text{A}$, $I_G=100\mu\text{A}$ (Note 1, 2)		86		nC
Gate to Source Charge	Q_{GS}			6		nC
Gate to Drain Charge	Q_{GD}			5		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DD}=30\text{V}$, $V_{GS}=10\text{V}$, $I_D=0.5\text{A}$, $R_G=25\Omega$, $R_D=1.8\Omega$ (Note 1, 2)		36		ns
Rise Time	t_R			24		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			366		ns
Fall-Time	t_F			64		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				28	A
Maximum Body-Diode Pulsed Current	I_{SM}				112	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	$I_S=28\text{A}$, $V_{GS}=0\text{V}$			1.3	V
Body Diode Reverse Recovery Time (Note 1)	t_{rr}	$I_S=28\text{A}$, $V_{GS}=0\text{V}$		50		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$dI_F/dt=100\text{A}/\mu\text{s}$		0.1		μC

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

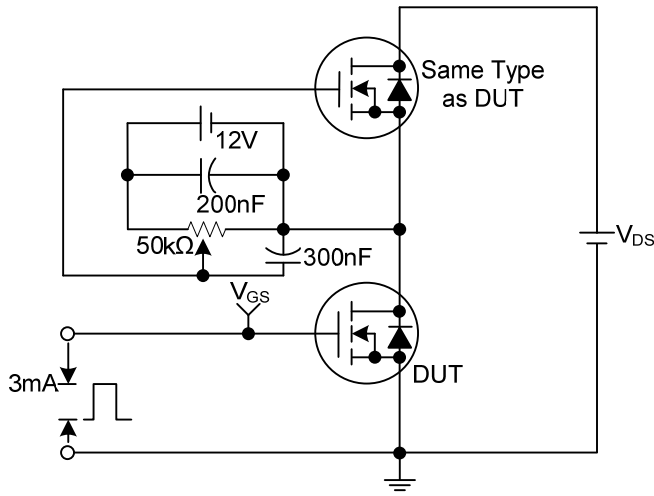
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

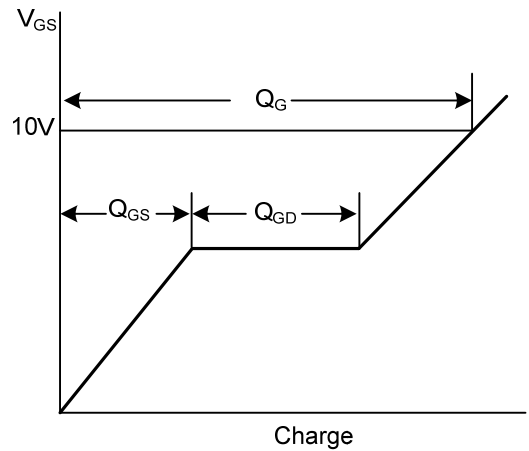


Peak Diode Recovery dv/dt Test Circuit and Waveforms

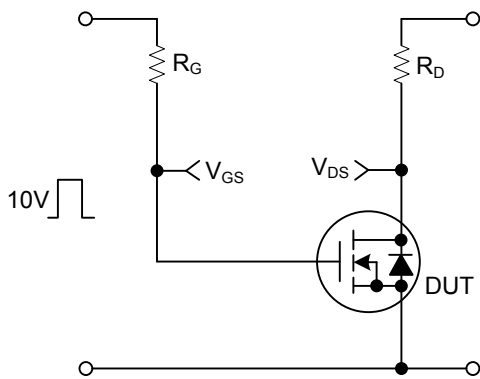
■ TEST CIRCUITS AND WAVEFORMS



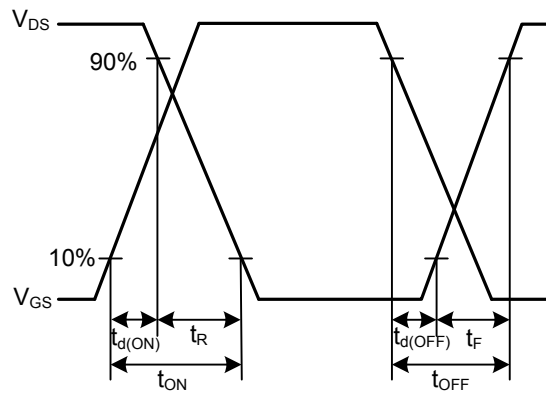
Gate Charge Test Circuit



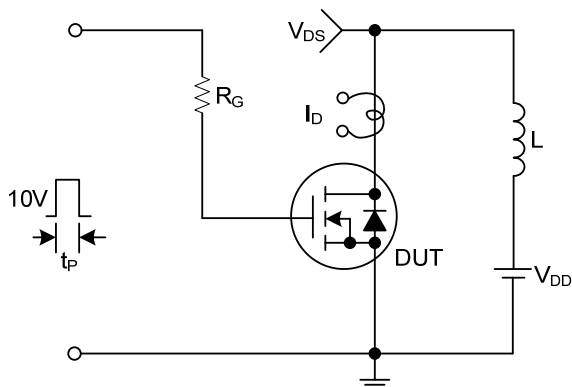
Gate Charge Waveforms



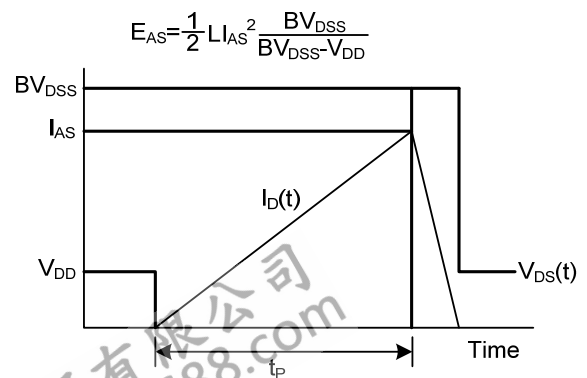
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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