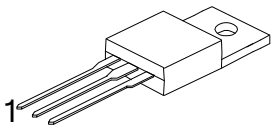
UF9Z34

Preliminary

POWER MOSFET

-17A, -55V P-CHANNEL POWER MOSFET



TO-220

■ DESCRIPTION

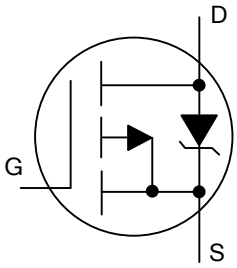
The UTC **UF9Z34** is a P-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

The UTC **UF9Z34** is suitable for all commercial-industrial applications, etc.

■ FEATURES

* $R_{DS(ON)}$<0.1Ω @ V_{GS}=-10V, I_D=-10A
* High Switching Speed
* Dynamic dv/dt Rating

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF9Z34L-TA3-T	UF9Z34G-TA3-T	TO-220	G	D	S	Tube

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

UF9Z34L-TA3-T (1)Packing Type (2)Package Type (3)Lead Free	(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATING

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	-55	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous	V_{GS}=-10V, T_C=25°C	I_D	-17	A
		V_{GS}=10V, T_C=100°C		-12	A
	Pulsed (Note 2)		I_{DM}	-68	A
Avalanche Current (Note 2)			I_{AR}	-10	A
Avalanche Energy	Single Pulse (Note 3)		E_{AS}	180	mJ
	Repetitive (Note 2)		E_{AR}	5.6	mJ
Peak Diode Recovery dv/dt (Note 4)			dv/dt	-6.7	V/ns
Power Dissipation (T_C=25°C)			P_D	56	W
Linear Derating Factor				0.37	W/°C
Junction Temperature			T_J	-55~+150	°C
Storage Temperature Range			T_{STG}	-55~+150	°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. Starting T_J=25°C, L=3.6mH, R_G=25Ω, I_{AS}=-10A.
3. I_{SD}≤-10A, di/dt≤-290A/μs, V_{DD}≤BV_{DSS}, T_J≤150°C.
4. Pulse width≤300μs; duty cycle≤2%.

■ THERMAL RESISTANCE

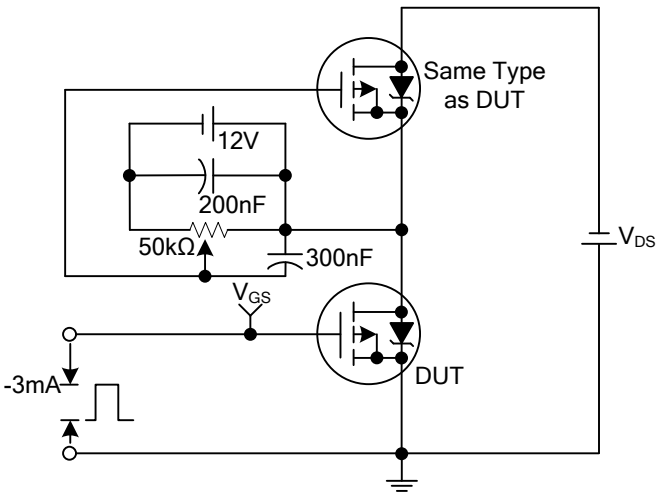
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	°C/W
Junction to Case	θ_{JC}	2.7	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

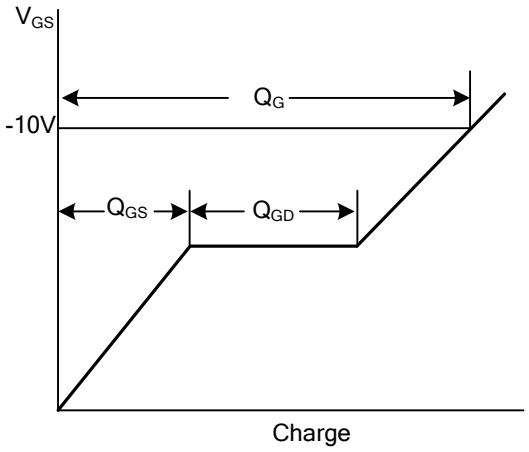
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=-250μA	-55			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=-1mA		-0.05		V/°C
Drain -Source Leakage Current		I_{DSS}	V_{DS}=-55V, V_{GS}=0V			-25	μA
			V_{DS}=-44V, V_{GS}=0V, T_J=150°C			-250	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							
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A (Note 2)			0.10	Ω
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0		-4.0	V
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=-25V, f=1.0MHz		620		pF
Output Capacitance		C_{OSS}			280		pF
Reverse Transfer Capacitance		C_{RSS}			140		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	I_D=-10A, V_{DS}=-44V, V_{GS}=-10V (Note 2)			35	nC
Gate to Source Charge		Q_{GS}				7.9	nC
Gate to Drain ("Miller") Charge		Q_{GD}				16	nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=-28V, I_D=-10A, R_G=13Ω R_D=2.6Ω (Note 2)		13		ns
Rise Time		t_R			55		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			30		ns
Fall Time		t_F			41		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body Diode Continuous Source Current		I_S				-17	A
Maximum Body-Diode Pulsed Current (Note 1)		I_{SM}				-68	A
Drain-Source Diode Forward Voltage		V_{SD}	T_J=25°C, I_S=-10A, V_{GS}=0V (Note 2)			-1.3	V
Body Diode Reverse Recovery Time		t_{RR}	T_J=25°C, I_F=-10A, di/dt=-100A/μs (Note 2)		54	82	ns
Body Diode Reverse Recovery Charge		Q_{RR}			110	160	nC

Note: 1. Starting T_J=25°C, L=3.6mH, R_G=25Ω, I_{AS}=-10A
2. Pulse width≤300μs; duty cycle≤2%.

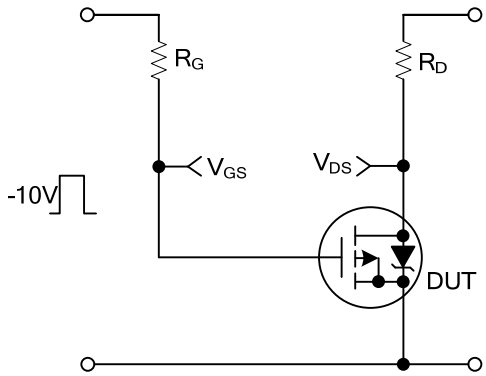
■ TEST CIRCUITS AND WAVEFORMS



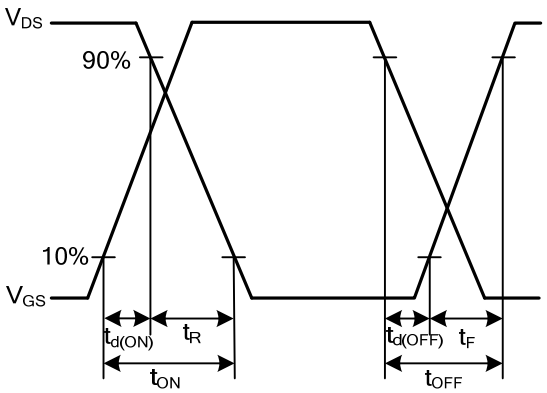
Gate Charge Test Circuit



Gate Charge Waveforms

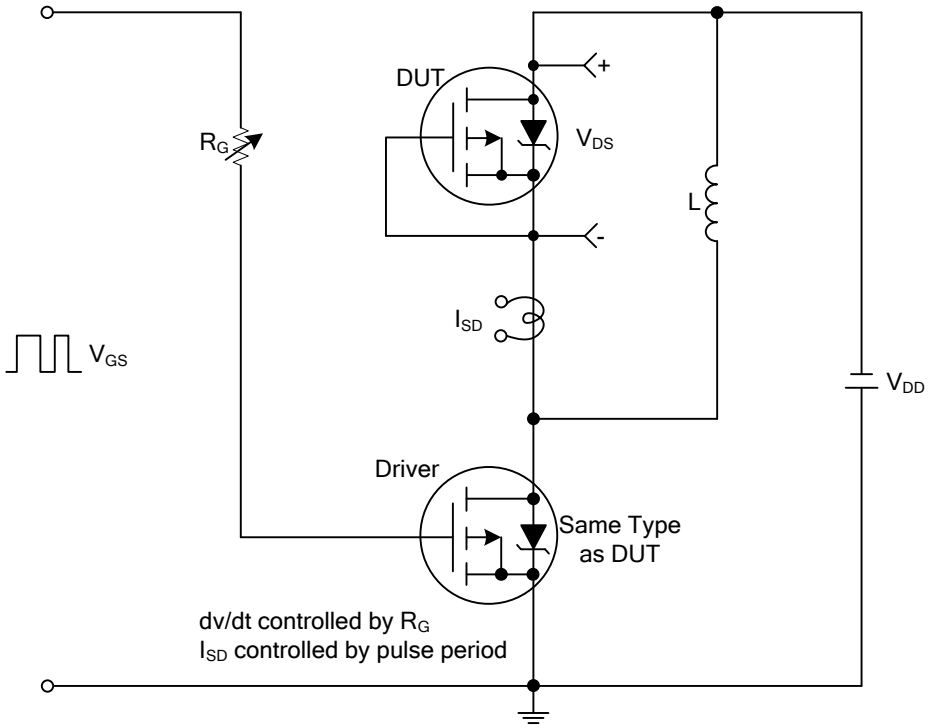


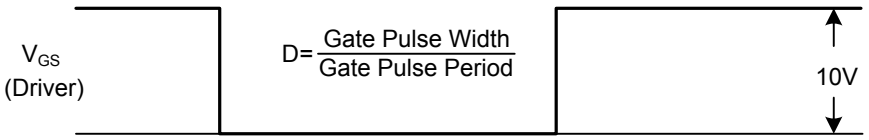
Resistive Switching Test Circuit

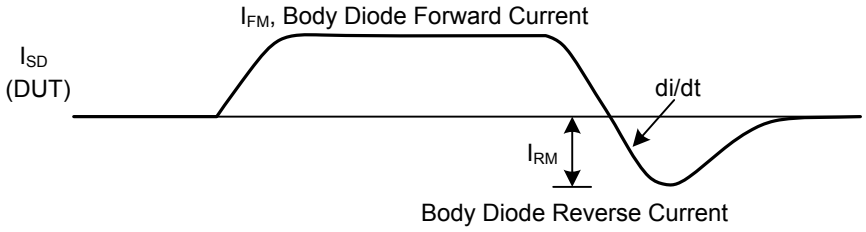


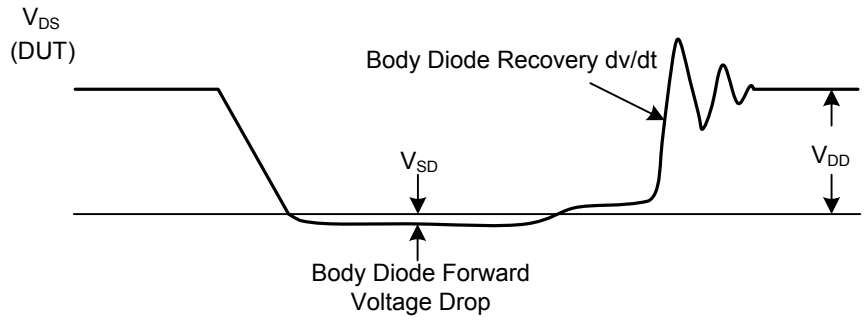
Resistive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)









Peak Diode Recovery dv/dt Test Circuit and Waveforms