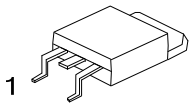
4.4 A, 250 V N-CHANNEL POWER MOSFET



TO-252

■ DESCRIPTION

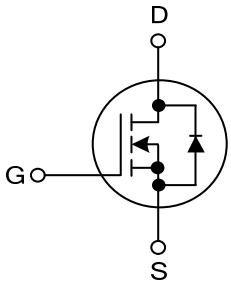
The UTC **UF624** is an N-Channel enhancement MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

The UTC **UF624** is suitable for all commercial-industrial applications.

■ FEATURES

* $R_{DS(ON)}$=1.1Ω @V_{GS}=10V,I_D=2.6A
* Low gate charge (Max=14nC)
* Low C_{RSS} (Typ=15pF)
* High switching speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF624L-TN3-T	UF624G-TN3-T	TO-252	G	D	S	Tube
UF624L-TN3-R	UF624G-TN3-R	TO-252	G	D	S	Tape Reel

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

UF624L-TN3-R (1)Packing Type (2)Package Type (3)Lead Free	(1) T: Tube, R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free

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■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise noted)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	250	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous	V_{GS} at 10V, T_C=25°C	I_D	4.4	A
		V_{GS} at 10V, T_C=100°C		2.8	A
	Pulsed (Note 2)		I_{DM}	14	A
Avalanche Current (Note 2)			I_{AR}	4.4	A
Avalanche Energy		Single Pulsed (Note 3)	E_{AS}	100	mJ
		Repetitive (Note 2)	E_{AR}	5.0	mJ
Peak Diode Recovery dv/dt (Note 4)			dv/dt	4.8	V/ns
Power Dissipation			P_D	50	W
Linear Derating Factor				0.40	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. Repetitive rating; pulse width limited by maximum junction temperature.
3. V_{DD}=50V, starting T_J=25°C, L=8.3mH, Rg=25Ω, I_{AS}=4.4A.
4. I_{SD}≤4.4A, dI/dt≤90A/μs, V_{DD}≤V_{DS}, T_J≤150°C.

■ THERMAL CHARACTERISTICS

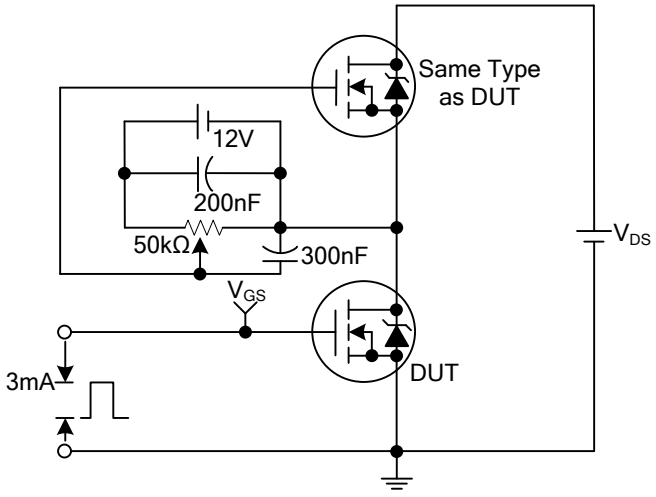
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	°C/W
Junction to Case	θ_{JC}	2.5	°C/W

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

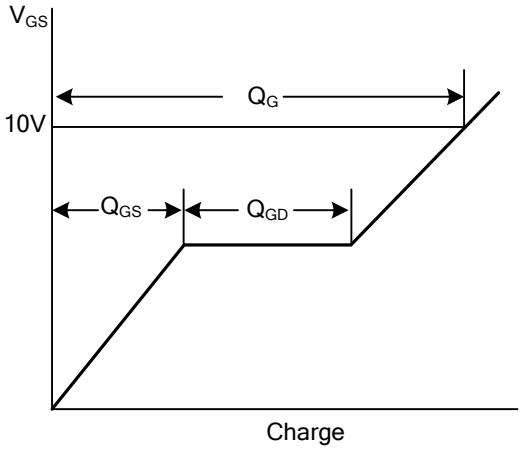
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	250			V
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=1mA		0.36		V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=250V, V_{GS}=0V			25	μA
		V_{DS}=200V, V_{GS}=0V , T_J=125°C			250	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			±10	μA
		V_{GS}=-20V, V_{DS}=0V			±10	μA
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	$R_{DS(ON)}$	V_{GS}=10V, I_D=2.6A (Note 2)			1.1	Ω
Forward Transconductance	g_{FS}	V_{DS}=50V, I_D=2.6A (Note 2)	1.5			S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		260		pF
Output Capacitance	C_{OSS}			77		pF
Reverse Transfer Capacitance	C_{RSS}			15		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{GS}=10V, V_{DS}=200V, I_D=4.4A			14	nC
Gate to Source Charge	Q_{GS}				2.7	nC
Gate to Drain Charge	Q_{GD}				7.8	nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=125V, I_D=4.4A, R_G=18Ω, R_D=28Ω		7.0		ns
Rise Time	t_R			13		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20		ns
Fall-Time	t_F			12		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				4.4	A
Maximum Body-Diode Pulsed Current (Note 1)	I_{SM}				14	A
Drain-Source Diode Forward Voltage	V_{SD}	T_J=25°C, I_S=4.4A, V_{GS}=0V (Note 2)			1.8	V
Body Diode Reverse Recovery Time	t_{RR}	T_J=25°C, I_F=4.4A, dI/dt=100A/μs (Note 2)		200	400	ns
Body Diode Reverse Recovery Charge	Q_{RR}			0.93	1.9	μC
Forward Turn-On Time	t_{ON}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S and L_D)				

Notes: 1. Repetitive rating; pulse width limited by maximum junction temperature.
2. Pulse width≤300μs; duty cycle≤2%.

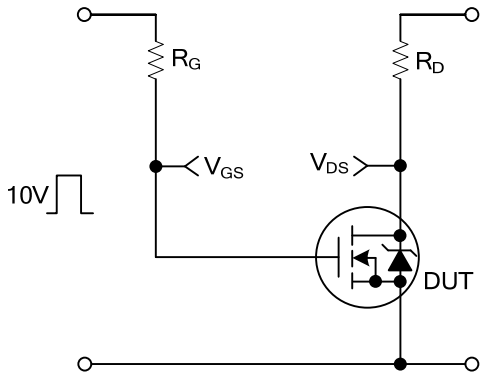
■ TEST CIRCUITS AND WAVEFORMS



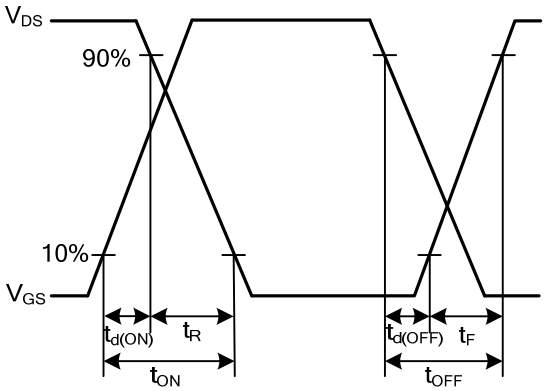
Gate Charge Test Circuit



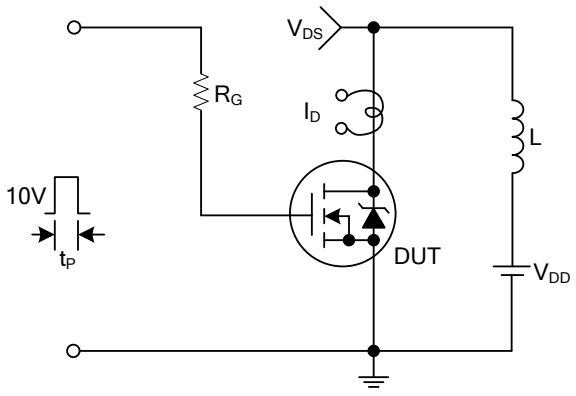
Gate Charge Waveforms



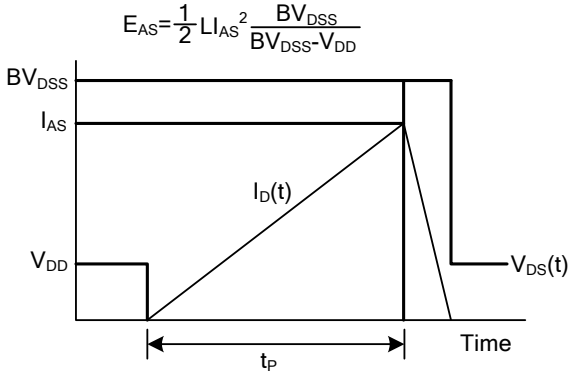
Resistive Switching Test Circuit



Resistive Switching Waveforms

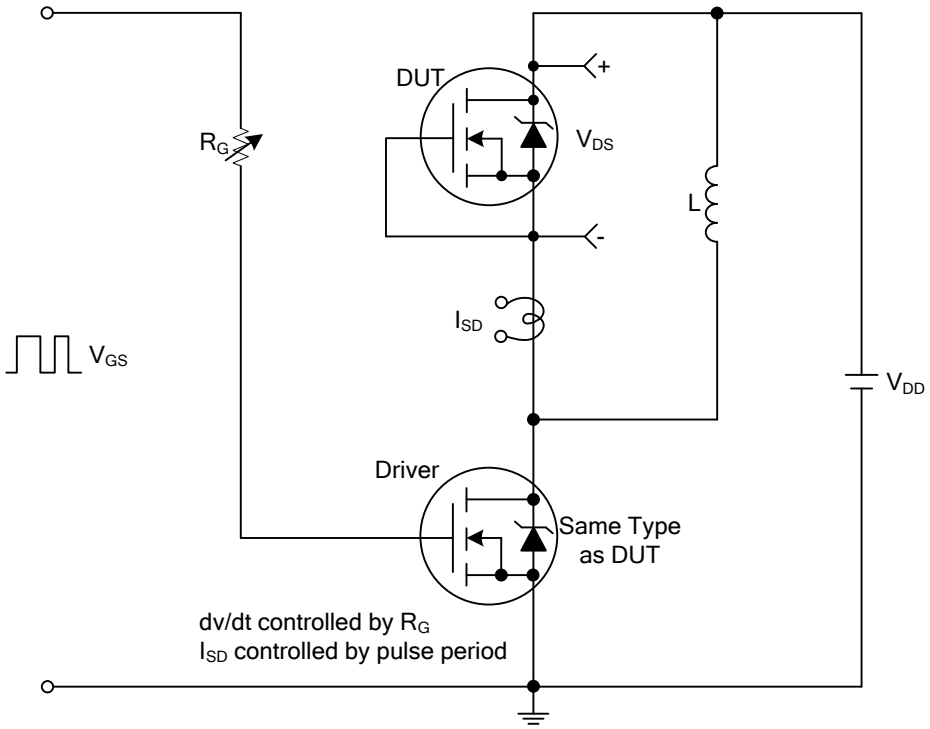


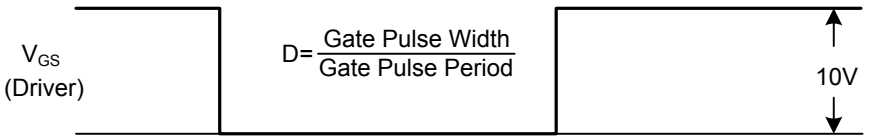
Unclamped Inductive Switching Test Circuit

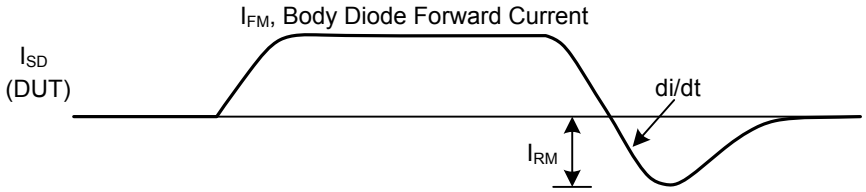


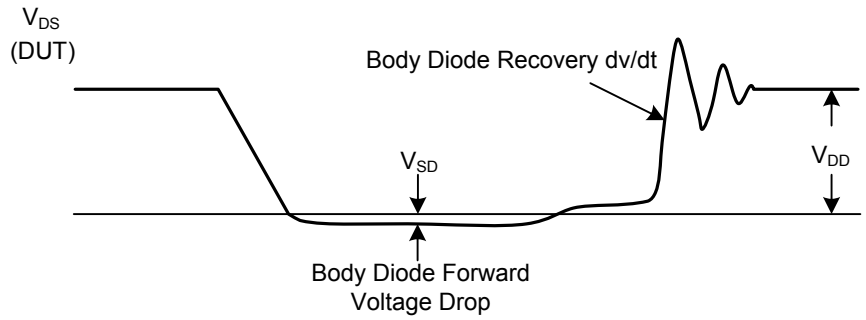
Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)









Peak Diode Recovery dv/dt Test Circuit and Waveforms

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