

**UT4435ZM1**

Preliminary

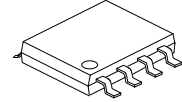
Power MOSFET

**-8.8A, -30V P-CHANNEL
POWER MOSFET****DESCRIPTION**

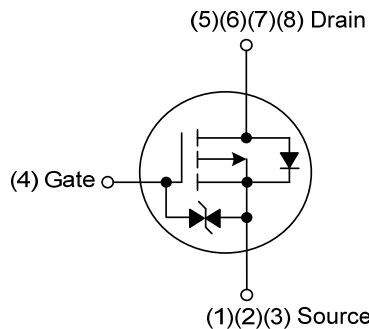
The **UT4435ZM1** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $R_{DS(ON)} \leq 20 \text{ m}\Omega$ @ $V_{GS} = -10\text{V}$, $I_D = -8.8\text{A}$
- * $R_{DS(ON)} \leq 35 \text{ m}\Omega$ @ $V_{GS} = -4.5\text{V}$, $I_D = -6.7\text{A}$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified



SOP-8

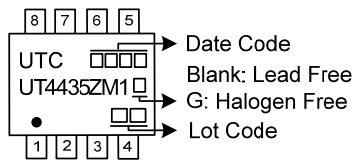
SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Pb Free	Halogen Free		1	2	3	4	5	6	7	8	
UT4435ZM1-S08-R	UT4435ZM1G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UT4435ZM1G-S08-R		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) S08: SOP-8
		(3) Green Package	(3) G: Halogen Free and Lead Free, Blank: Pb free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	-30	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	-8.8	A
Pulsed Drain Current	I _{DM}	-50	A
Avalanche Energy	E _{AS}	30	mJ
Power Dissipation	P _D	2	W
Junction Temperature	T _J	+150	°C
Storage Temperature	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 max. junction temperature.

3. L=0.1mH, I_{AS}=-24.5A, V_{DD}= -20V, R_G=25Ω, Starting T_J=25°C.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	90	°C/W
Junction to Case	θ _{JC}	62.5	°C/W

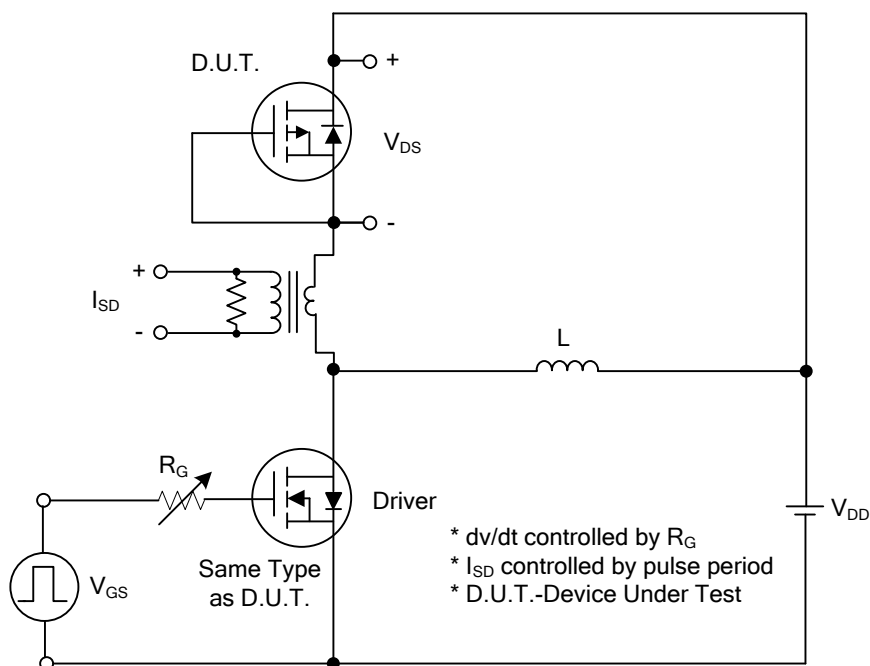
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate

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

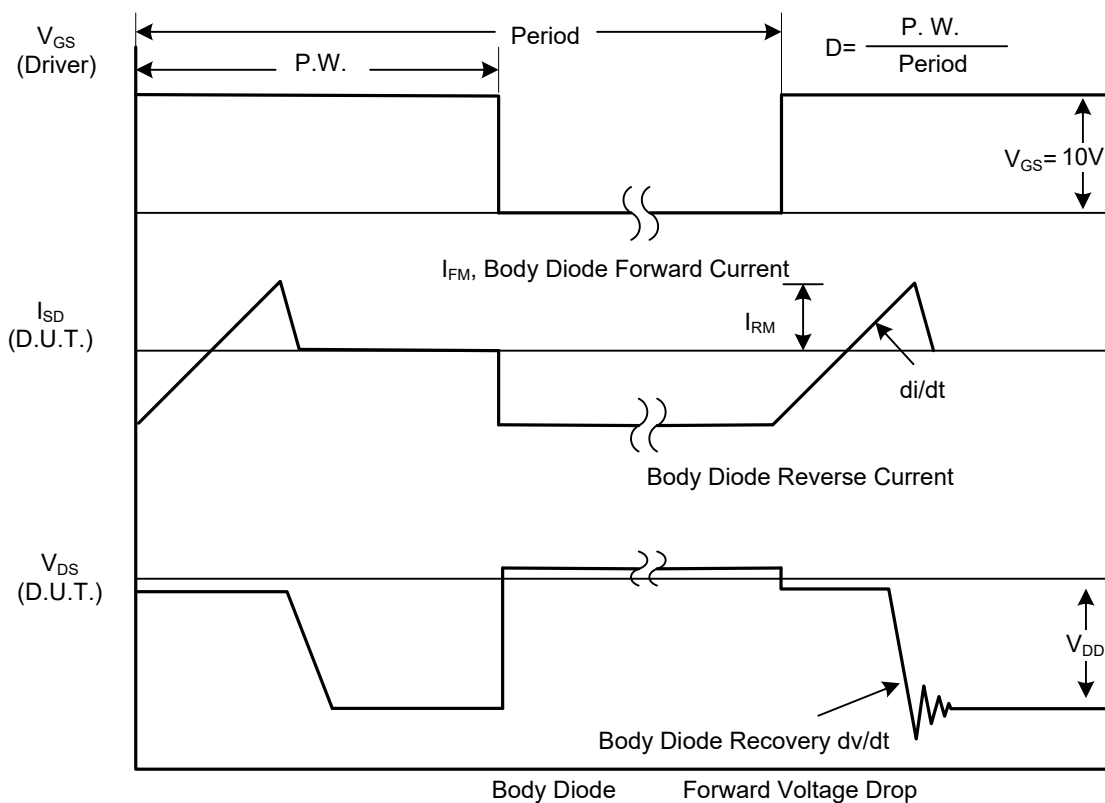
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-30 V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±10	μA
ON CHARACTERISTICS(Note)						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.0		-3.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-8.8A			20	mΩ
		V _{GS} =-4.5V, I _D =-6.7A			35	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V, f=1.0MHz		1740		pF
Output Capacitance	C _{OSS}			320		pF
Reverse Transfer Capacitance	C _{RSS}			205		pF
SWITCHING PARAMETERS(Note)						
Total Gate Charge	Q _G	V _{DS} =-15V, V _{GS} =-10V, I _D =-8.8A		32		nC
Gate-Source Charge	Q _{GS}			6		nC
Gate-Drain Charge	Q _{GD}			6.4		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =-15V,V _{GS} =-10V, I _D =-8.8A R _G =3Ω		6.4		ns
Turn-ON Rise Time	t _R			17		ns
Turn-OFF Delay Time	t _{D(OFF)}			175		ns
Turn-OFF Fall-Time	t _F			98		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Body-Diode Continuous Current	I _S				-8.8	A
Diode Forward Voltage(Note)	V _{SD}	I _S =-8.8A, V _{GS} =0V			1.4	V

Note: Pulse Test: Pulse Width < 300μs, Duty Cycle < 2.0%.

■ TEST CIRCUITS AND WAVEFORMS

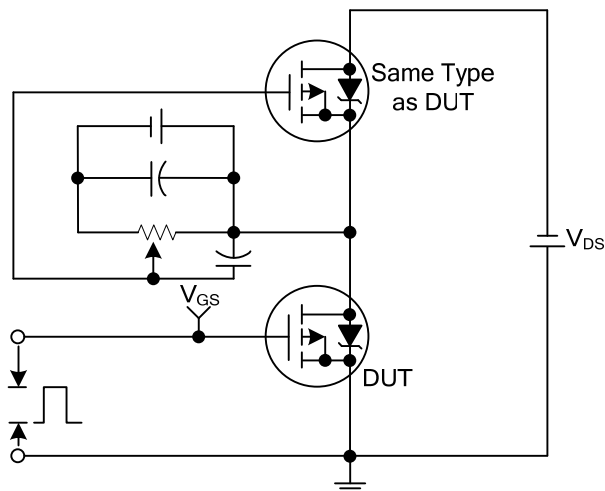


Peak Diode Recovery dv/dt Test Circuit

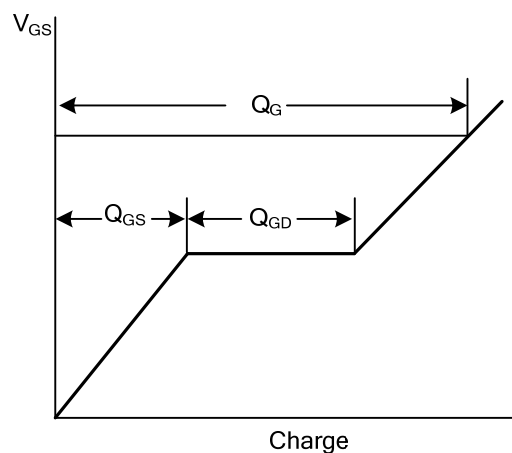


Peak Diode Recovery dv/dt Waveforms

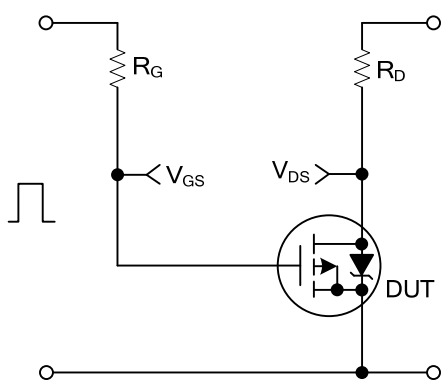
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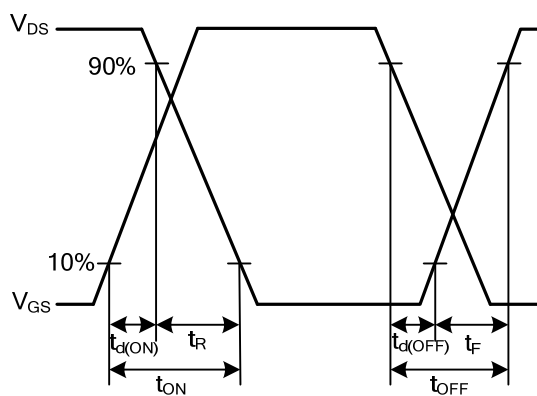
Gate Charge Test Circuit



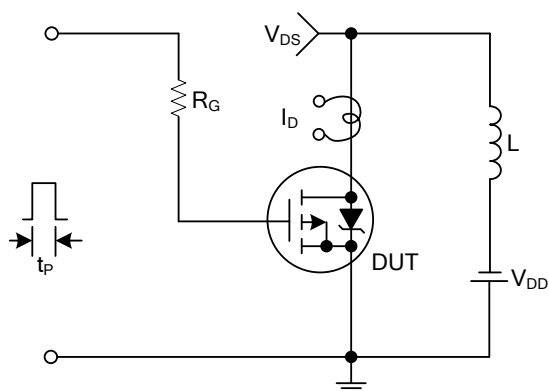
Gate Charge Waveforms



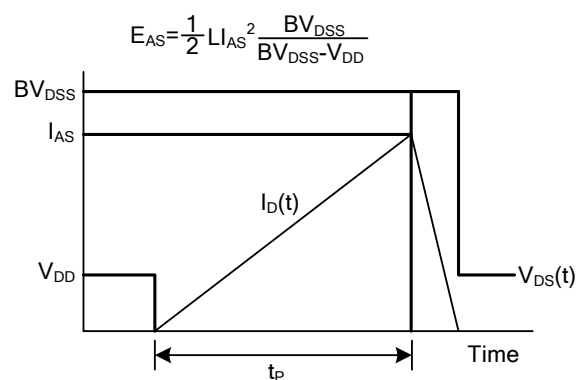
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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