



UT4430

Power MOSFET

N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

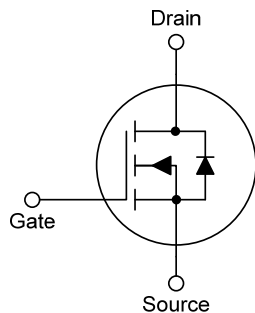
DESCRIPTION

The **UT4430** uses UTC advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for applications, such as high-side DC/DC conversion, notebook and server.

FEATURES

- * $V_{DS}(V)=30V$
- * $I_D=18A$ ($V_{GS} = 10V$)
- * $R_{DS(ON)} < 5.5m\Omega @ V_{GS}=10V$
- * $R_{DS(ON)} < 7.5m\Omega @ V_{GS}=4.5V$

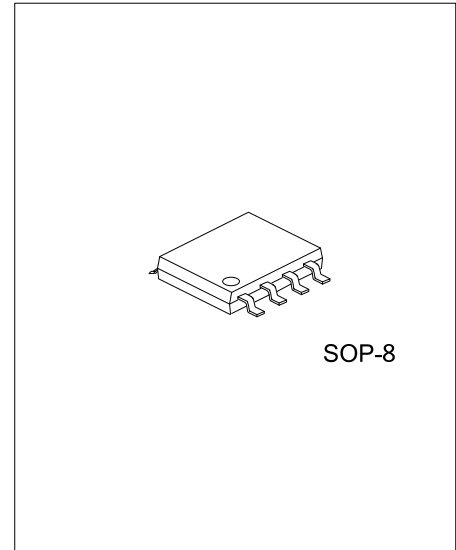
SYMBOL



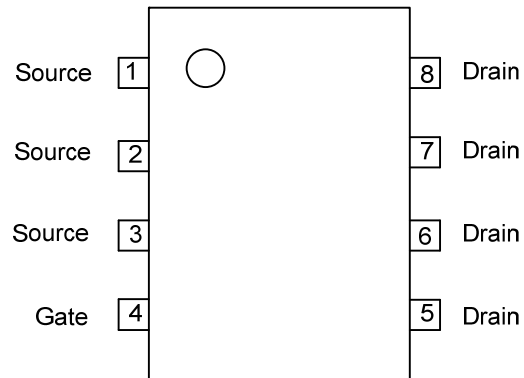
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UT4430L-S08-R	UT4430G-S08-R	SOP-8	Tape Reel

UT4430L-S08-R	(1) Packing Type	(1) R: Tape Reel
	(2) Package Type	(2) S08: SOP-8
	(3) Lead Free	(3) G: Halogen Free, L: Lead Free



■ PIN CONFIGURATION



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_A=25^{\circ}\text{C}$) (Note 2)	I_D	18	A
Pulsed Drain Current (Note 3)	I_{DM}	80	A
Avalanche Current (Note 3)	I_{AR}	30	A
Repetitive avalanche energy (Note 3)	E_{AR}	135	mJ
Power Dissipation ($T_A=25^{\circ}\text{C}$)	P_D	3	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note: 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. Surface mounted on 1 in² copper pad of FR4 board

3. Pulse width limited by $T_{J(MAX)}$

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note)	θ_{JA}		59	75	$^{\circ}\text{C/W}$

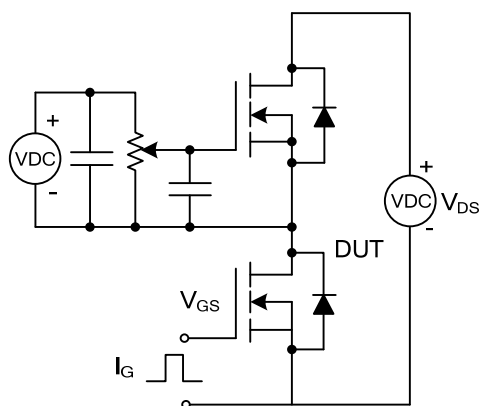
Note: Surface mounted on 1 in² copper pad of FR4 board

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

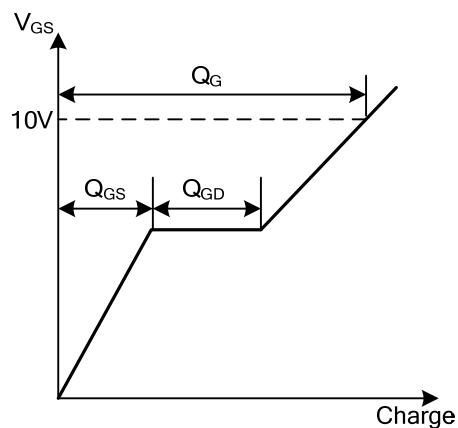
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{D S} =V _{GS} , I _D =250μA	1	1.8	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =18A		4.7	5.5	mΩ
		V _{GS} =4.5V, I _D =15A		6.2	7.5	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0 V, f=1MHz	4660	6060	7270	pF
Output Capacitance	C _{OSS}		425	638	960	pF
Reverse Transfer Capacitance	C _{RSS}		240	355	530	pF
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz	0.2	0.45	0.9	Ω
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V,V _{DS} =15V, R _L =0.83Ω, R _{GEN} =3Ω		12	16	ns
Turn-ON Rise Time	t _R			8	12	ns
Turn-OFF Delay Time	t _{D(OFF)}			51.5	70	ns
Turn-OFF Fall-Time	t _F			8.8	14	ns
Total Gate Charge	Q _G	V _{GS} =10 V, V _{DS} =15 V, I _D =18 A	80	103	124	nC
Gate Source Charge	Q _{GS}			18		nC
Gate Drain Charge	Q _{GD}			15		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1 A, V _{GS} =0 V		0.7	1	V
Diode Continuous Forward Current	I _S				4.5	A
Reverse Recovery Time	t _{RR}	I _F =18A, dI/dt=100A/μs		33.5	44	ns
Reverse Recovery Charge	Q _{RR}			22	30	nC

■ SWITCHING TIME TEST CIRCUIT

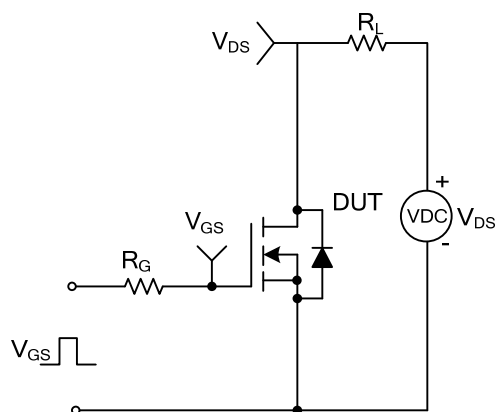
Gate Charge Test Circuit



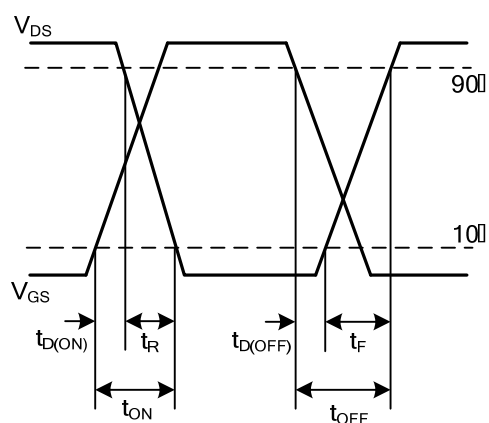
Gate Charge Waveform



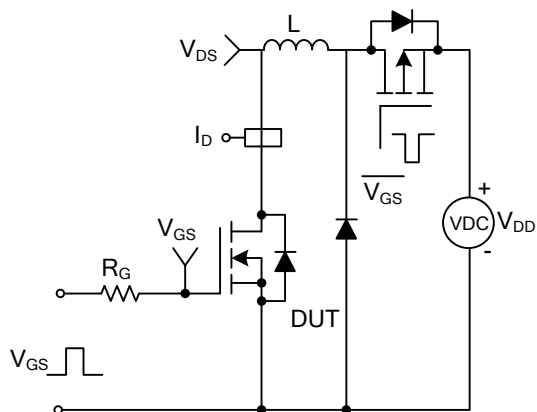
Resistive Switching Test Circuit



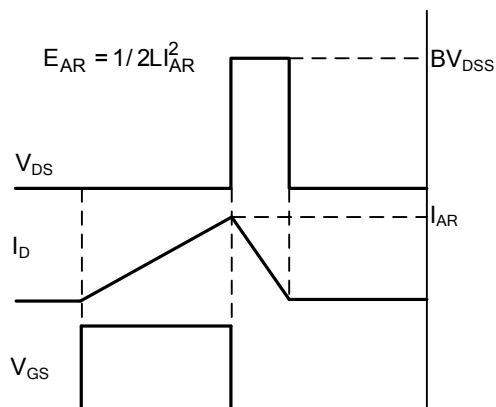
Resistive Switching Waveforms



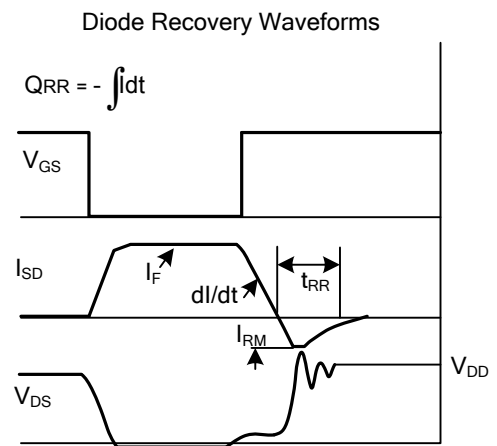
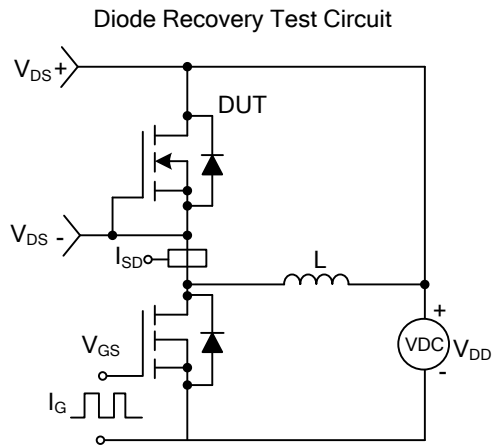
Unclamped Inductive Switching (UIS) Test Circuit



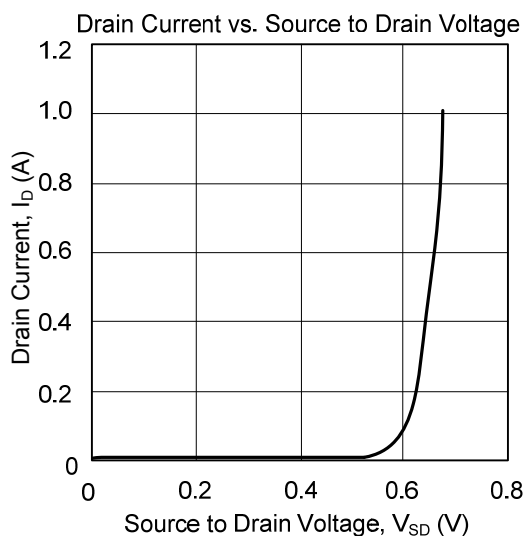
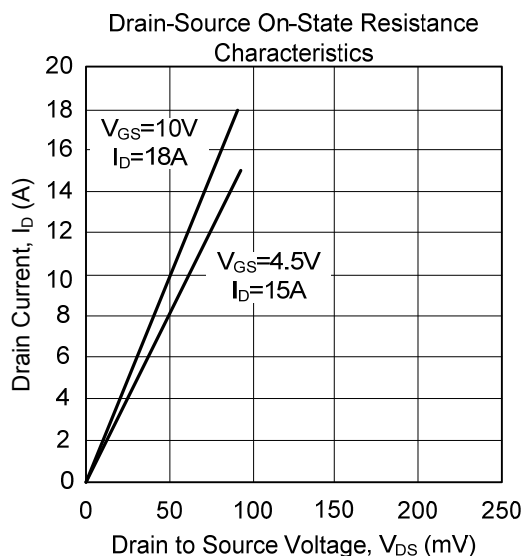
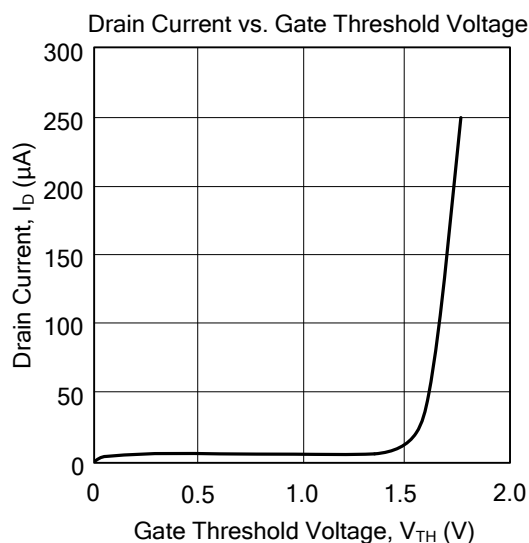
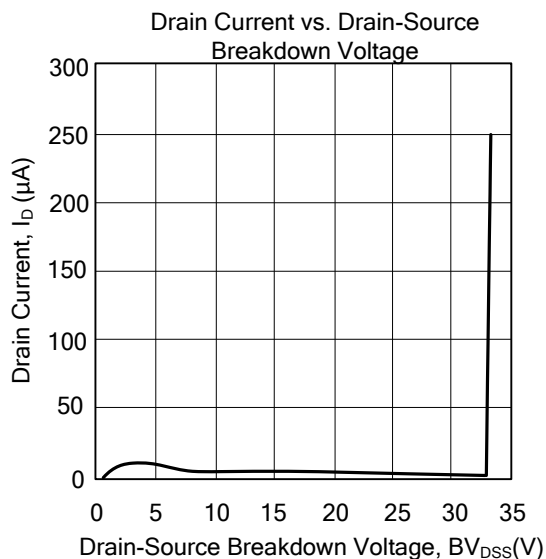
Unclamped Inductive Switching (UIS) Waveforms



■ SWITCHING TIME TEST CIRCUIT



■ TYPICAL CHARACTERISTICS



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