



UT4446

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

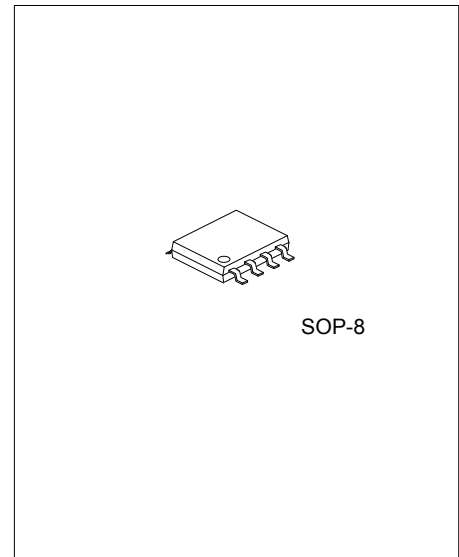
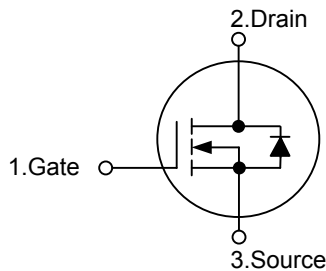
DESCRIPTION

The **UT4446** uses UTC's 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

- * $R_{DS(ON)} < 8.5m\Omega @ V_{GS}=10V$
- * $R_{DS(ON)} < 14.5m\Omega @ V_{GS}=4.5V$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



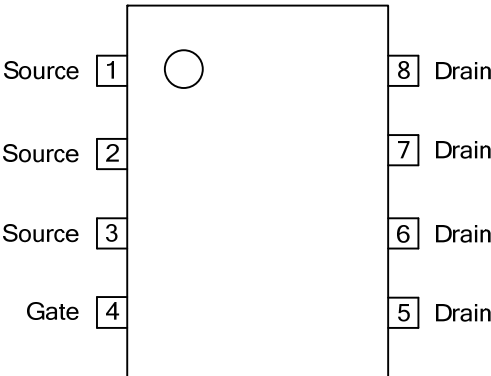
Lead-free: UT4446L
Halogen-free: UT4446G

ORDERING INFORMATION

Ordering Number			Package	Packing
Normal	Lead Free	Halogen Free		
UT4446-S08-R	UT4446L-S08-R	UT4446G-S08-R	SOP-8	Tape Reel
UT4446-S08-T	UT4446L-S08-T	UT4446G-S08-T	SOP-8	Tube

<p>UT4446L-S08-R</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</p>
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■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$, 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	15	A
Pulsed Drain Current	I_{DM}	40	A
Avalanche Current	I_{AR}	20	A
Repetitive avalanche energy L=0.1mH	E_{AR}	50	mJ
Power Dissipation	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. Pulse width limited by $T_{J(MAX)}$

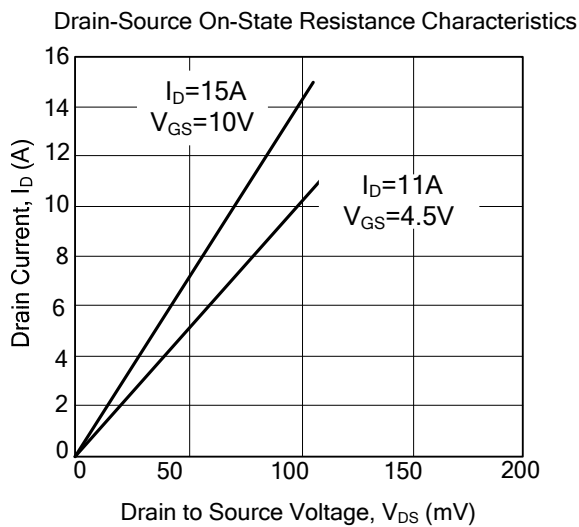
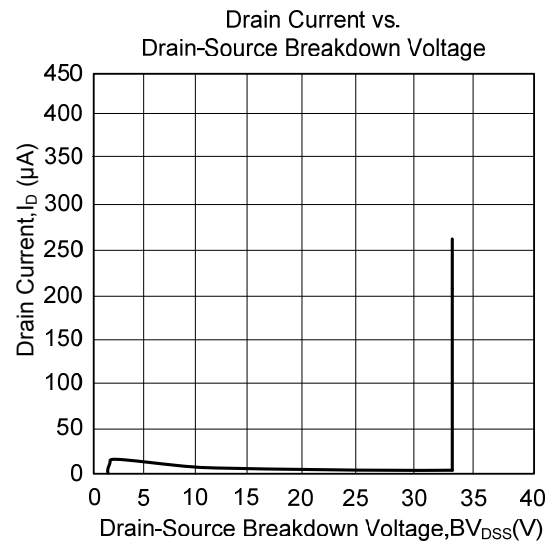
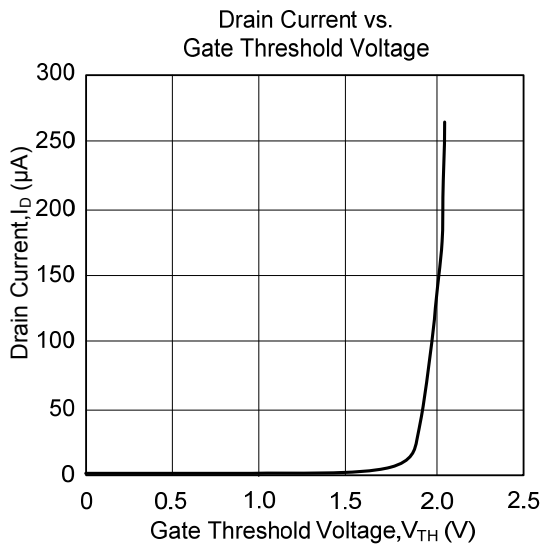
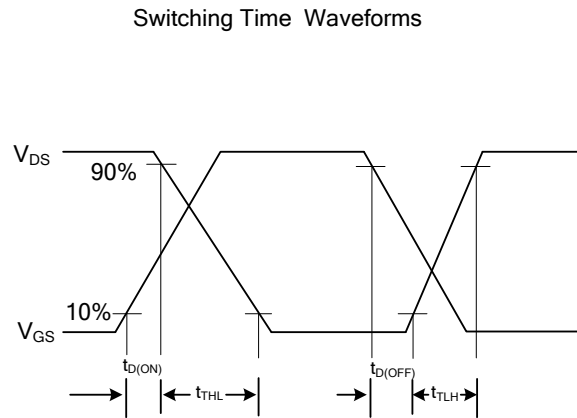
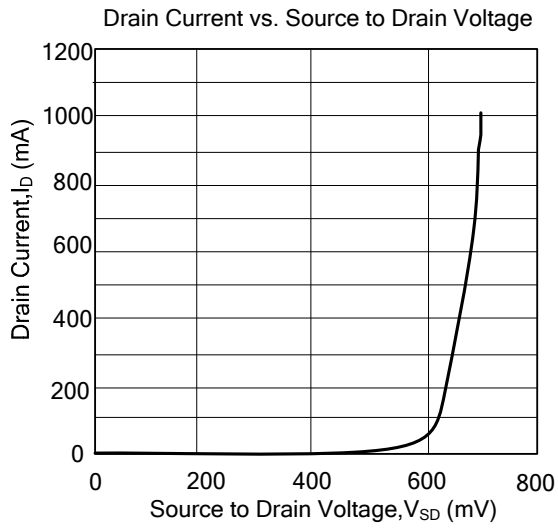
■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		59	75	$^{\circ}\text{C}/\text{W}$
Junction-to-Case	θ_{JC}		16	24	$^{\circ}\text{C}/\text{W}$

■ 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}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30			V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$			1	μA	
Gate-Body 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	2.2	3	V	
On State Drain Current	$I_{D(ON)}$	$V_{DS}=5\text{V}, V_{GS}=10\text{V}$	40			A	
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=15\text{A}$		6.9	8.5	m Ω	
		$V_{GS}=4.5\text{V}, I_D=11\text{A}$		11.8	14.5		
Forward Transconductance	g_{FS}	$V_{DS}=5\text{V}, I_D=15\text{A}$		27		S	
DYNAMIC PARAMETERS							
Input Capacitance	C_{ISS}	$V_{DS}=15\text{V}, V_{GS}=0\text{V}, f=100\text{kHz}$		1520	1825	pF	
Output Capacitance	C_{OSS}			306		pF	
Reverse Transfer Capacitance	C_{RSS}			214		pF	
SWITCHING PARAMETERS							
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=10\text{V}, V_{DS}=15\text{V}, R_L=1.0\Omega, R_G=3\Omega$		7.2	56	ns	
Turn-ON Rise Time	t_R			8.2	80	ns	
Turn-OFF Delay Time	$t_{D(OFF)}$			22	392	ns	
Turn-OFF Fall-Time	t_F			6.7	216	ns	
Total Gate Charge	Q_G	$V_{DS}=15\text{V}, V_{GS}=4.5\text{V}, I_D=15\text{A}$	4.5V	17	20	nC	
			10V	33.7	40		
Gate Source Charge	Q_{GS}			6.2		nC	
Gate Drain Charge	Q_{GD}			10		nC	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Diode Forward Voltage	V_{SD}		$I_S=1\text{A}, V_{GS}=0\text{V}$		0.71	1	V
Maximum Body-Diode Continuous Current	I_S				4	A	
Body Diode Reverse Recovery Time	t_{RR}	$I_F=15\text{A}, dI/dt=100\text{A}/\mu\text{s}$		24	30	ns	
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F=15\text{A}, dI/dt=100\text{A}/\mu\text{s}$		19		nC	

TYPICAL CHARACTERISTICS



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