



## UTT4815

Preliminary

Power MOSFET

### 8 Amps, -30 Volts P-CHANNEL POWER MOSFET

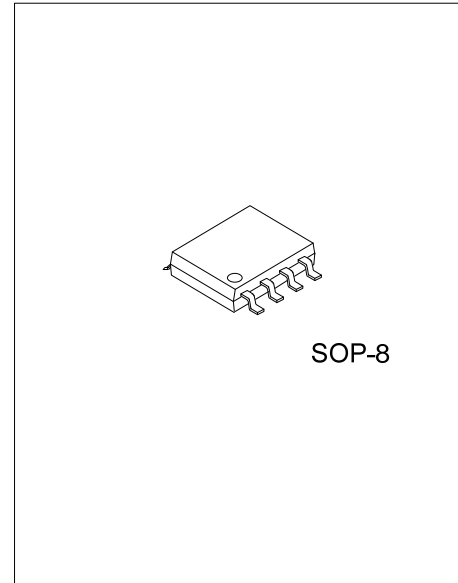
#### DESCRIPTION

The UTC **UTT4815** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremely gate charge with a 25V gate rating

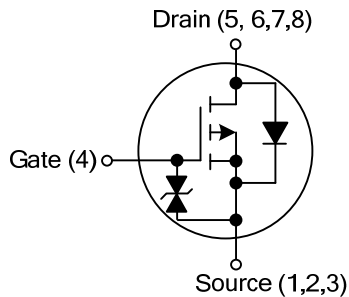
The UTC **UTT4815** is ESD protected and universally applied in PWM or used as a load switch.

#### FEATURES

- \*  $V_{DS(V)} = -30V$
- \*  $I_D = -8A, (V_{GS} = -20V)$
- \*  $R_{DS(ON)} < 18m\Omega @ (V_{GS} = -20V)$
- $R_{DS(ON)} < 20m\Omega @ (V_{GS} = -10V)$



#### SYMBOL



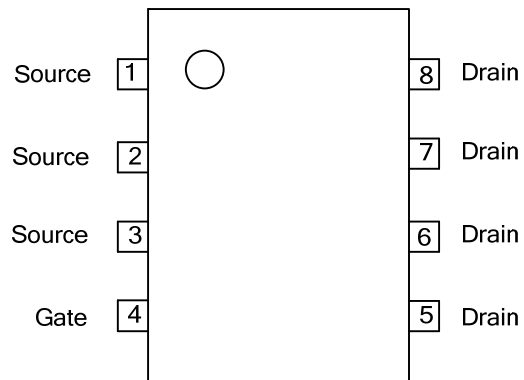
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT4815L-S08-R	UTT4815G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT4815L-S08-T	UTT4815G-S08-T	SOP-8	S	S	S	G	D	D	D	D	Tube

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

UTT4815L-S08-R (1) Packing Type (2) Package Type (3) Lead Free	(1) R: Tape Reel, T: Tube (2) S08: SOP-8 (3) G: Halogen Free, L: Lead Free
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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			$V_{GSS}$	$\pm 25$	
Drain Current	Continuous (Note 2)	$T_A = 25^\circ\text{C}$	$I_D$	-8	A
		$T_A = 70^\circ\text{C}$		-6.9	
	Pulsed (Note 3)		$I_{DM}$	-40	
Power Dissipation (Note 2)		$T_A = 25^\circ\text{C}$	$P_D$	2	W
		$T_A = 70^\circ\text{C}$		1.44	
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. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ . The value in any given application depends on the user's specific board design.

The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.

3. Repetitive rating, pulse width limited by junction temperature.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	$\theta_{JA}$	110	$^\circ\text{C/W}$

Note: 1. The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ . The value in any given application depends on the user's specific board design.

The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub> =25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		BV <sub>DSS</sub>	V <sub>GS</sub> =0 V, I <sub>D</sub> =-250μA	-30			V
Drain-Source Leakage Current		I <sub>DSS</sub>	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0 V			-1	μA
Gate- Source Leakage Current	Forward	I <sub>GSS</sub>	V <sub>GS</sub> =+25V, V <sub>DS</sub> =0V			+1	μA
	Reverse		V <sub>GS</sub> =-25V, V <sub>DS</sub> =0V			-1	
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage		V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250 μA	-1	-2.8	-3	V
Drain-Source On-State Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =-20V, I <sub>D</sub> =-8A		14.1	18	mΩ
			V <sub>GS</sub> =-20V, I <sub>D</sub> =-8A, T <sub>J</sub> =125°C		19	24	mΩ
			V <sub>GS</sub> =-10V, I <sub>D</sub> =-8A		16.2	20	mΩ
			V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-5A		37		mΩ
On State Drain Current		I <sub>D(ON)</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-5V	-40			A
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance		C <sub>ISS</sub>	V <sub>DS</sub> =-15 V, V <sub>GS</sub> =0V, f=1MHz		2330	2900	pF
Output Capacitance		C <sub>OSS</sub>			480		
Reverse Transfer Capacitance		C <sub>RSS</sub>			320		
Gate Resistance		R <sub>g</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz		6.8	10	Ω
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge		Q <sub>G</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-8A (Note 1,2)		41	52	nC
Gate Source Charge		Q <sub>GS</sub>			10		
Gate Drain Charge		Q <sub>GD</sub>			12		
Turn-ON Delay Time		t <sub>D(ON)</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, R <sub>L</sub> =1.8Ω, R <sub>GEN</sub> =3Ω(Note 1,2)		13		ns
Turn-ON Rise Time		t <sub>R</sub>			12		
Turn-OFF Delay Time		t <sub>D(OFF)</sub>			51		
Turn-OFF Fall-Time		t <sub>F</sub>			30.5		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Drain-Source Diode Forward Voltage		V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V			-1	V
Maximum Continuous Drain-Source Diode Forward Current		I <sub>S</sub>				-2.6	A
Body Diode Reverse Recovery Time		t <sub>RR</sub>	I <sub>F</sub> =-8 A, dI/dt=100A/μs		28	35	ns
Body Diode Reverse Recovery Charge		Q <sub>RR</sub>	I <sub>F</sub> =-8A, dI/dt=100A/μs(Note 1)		20.5		nC

Note: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%

2. Essentially independent of operating temperature

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