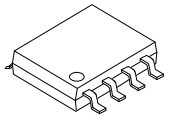
UTT4815 **Preliminary** ***Power MOSFET***

8 Amps, -30 Volts
P-CHANNEL POWER MOSFET



SOP-8

■ DESCRIPTION

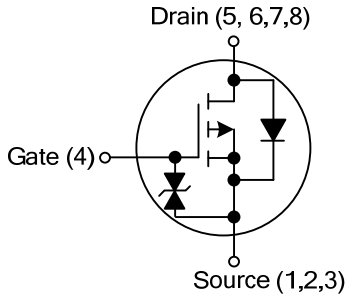
The UTC **UTT4815** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremely gate charge with a 25V gate rating

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)
* $R_{DS(ON)}$ < 18mΩ @(V_{GS} = -20V)
  $R_{DS(ON)}$ < 20mΩ @(V_{GS} = -10V)

■ SYMBOL



■ ORDERING INFORMATION

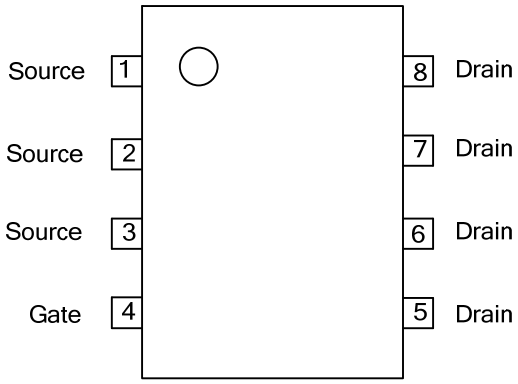
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT4815L-S08-R	UTT4815G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT4815L-S08-T	UTT4815G-S08-T	SOP-8	S	S	S	G	D	D	D	D	Tube

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

UTT4815L-S08-R

(1)Packing Type	(1) R: Tape Reel, T: Tube
(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°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±25	
Drain Current	Continuous (Note 2)	T_A = 25°C	I_D	-8	A
		T_A = 70°C		-6.9	
	Pulsed (Note 3)		I_{DM}	-40	
Power Dissipation (Note 2)		T_A = 25°C	P_D	2	W
		T_A = 70°C		1.44	
Junction Temperature			T_J	150	°C
Storage Temperature			T_{STG}	-55~+ 150	°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^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.
3. Repetitive rating, pulse width limited by junction temperature.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	θ_{JA}	110	°C/W

Note: 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS} =0 V, I_D =-250μA	-30			V
Drain-Source Leakage Current		I_{DSS}	V_{DS} =-24V, V_{GS} =0 V			-1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=+25V, V_{DS}=0V			+1	μA
	Reverse		V_{GS}=-25V, V_{DS}=0V			-1	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =-250 μA	-1	-2.8	-3	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS} =-20V, I_D =-8A		14.1	18	mΩ
			V_{GS} =-20V, I_D =-8A, T_J =125°C		19	24	mΩ
			V_{GS} =-10V, I_D =-8A		16.2	20	mΩ
			V_{GS} =-4.5V, I_D =-5A		37		mΩ
On State Drain Current		$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-40			A
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS} =-15 V, V_{GS} =0V, f=1MHz		2330	2900	pF
Output Capacitance		C_{OSS}			480		
Reverse Transfer Capacitance		C_{RSS}			320		
Gate Resistance		R_g	V_{DS} =0V, V_{GS} =0V, f=1MHz		6.8	10	Ω
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS} =-15V, V_{GS} =-10V, I_D=-8A (Note 1,2)		41	52	nC
Gate Source Charge		Q_{GS}			10		
Gate Drain Charge		Q_{GD}			12		
Turn-ON Delay Time		$t_{D(ON)}$	V_{DS} =-15V, V_{GS} =-10V, R_L=1.8Ω, R_{GEN}=3Ω(Note 1,2)		13		ns
Turn-ON Rise Time		t_R			12		
Turn-OFF Delay Time		$t_{D(OFF)}$			51		
Turn-OFF Fall-Time		t_F			30.5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V_{SD}	I_S=-1A, V_{GS}=0V			-1	V
Maximum Continuous Drain-Source Diode Forward Current		I_S				-2.6	A
Body Diode Reverse Recovery Time		t_{RR}	I_F=-8 A, dI/dt=100A/μs		28	35	ns
Body Diode Reverse Recovery Charge		Q_{RR}	I_F=-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