



UTT4815

Preliminary

Power MOSFET

8 Amps, -30 Volts P-CHANNEL POWER MOSFET

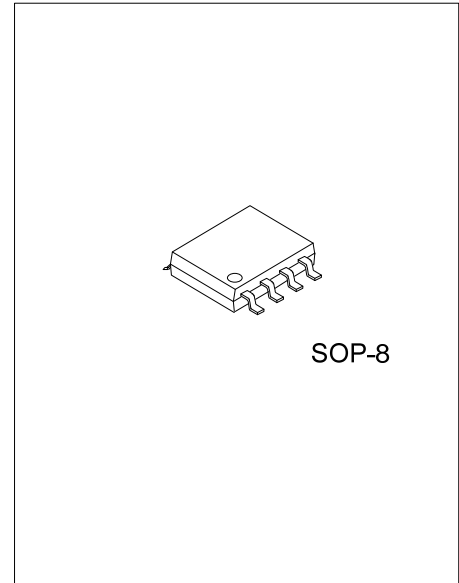
DESCRIPTION

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

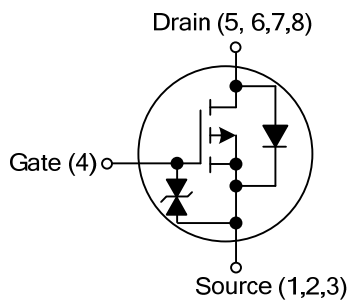
The UTC **UTT4815** is ESD protected and universally applied in PWM or used as a load switch.

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



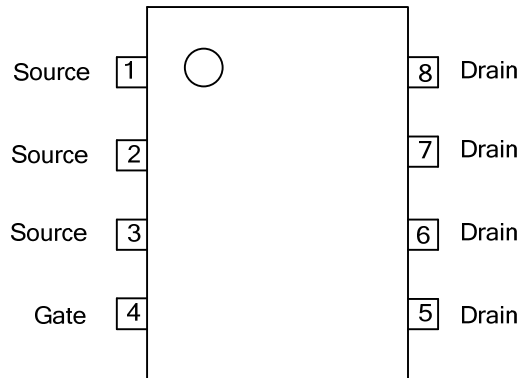
ORDERING INFORMATION

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

<p>UTT4815L-S08-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free, L: Lead Free</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}	± 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)			P_D	$T_A = 25^\circ\text{C}$	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 1in² 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)	θ_{JA}	110	$^\circ\text{C/W}$

Note: 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² 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 ($T_J = 25^\circ\text{C}$, 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
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
Gate- Source Leakage Current	Forward	$V_{GS} = +25\text{ V}, V_{DS} = 0\text{ V}$			+1	μA
	Reverse	$V_{GS} = -25\text{ V}, V_{DS} = 0\text{ V}$			-1	
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1	-2.8	-3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -20\text{ V}, I_D = -8\text{ A}$		14.1	18	$\text{m}\Omega$
		$V_{GS} = -20\text{ V}, I_D = -8\text{ A}, T_J = 125^\circ\text{C}$		19	24	$\text{m}\Omega$
		$V_{GS} = -10\text{ V}, I_D = -8\text{ A}$		16.2	20	$\text{m}\Omega$
		$V_{GS} = -4.5\text{ V}, I_D = -5\text{ A}$		37		$\text{m}\Omega$
On State Drain Current	$I_{D(ON)}$	$V_{GS} = -10\text{ V}, V_{DS} = -5\text{ V}$	-40			A
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS} = -15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		2330	2900	pF
Output Capacitance	C_{OSS}		480			
Reverse Transfer Capacitance	C_{RSS}		320			
Gate Resistance	R_g	$V_{DS} = 0\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		6.8	10	Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, I_D = -8\text{ A}$ (Note 1,2)		41	52	nC
Gate Source Charge	Q_{GS}		10			
Gate Drain Charge	Q_{GD}		12			
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, R_L = 1.8\Omega, R_{GEN} = 3\Omega$ (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}	$I_S = -1\text{ A}, V_{GS} = 0\text{ V}$			-1	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				-2.6	A
Body Diode Reverse Recovery Time	t_{RR}	$I_F = -8\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$		28	35	ns
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F = -8\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$ (Note 1)		20.5		nC

Note: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature

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