



P-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

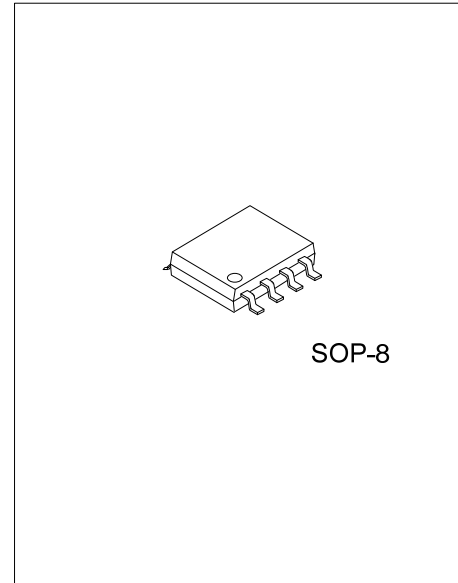
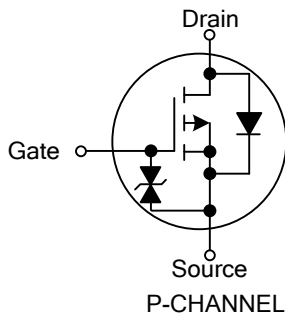
The UTC **UTT4425** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremal low gate charge with a 25V gate rating.

The UTC **UTT4425** is ESD protected and it is universally applied in PWM or used as a load switch.

FEATURES

- * $V_{DS(V)} = -30V$
- * $I_D = -14A$ ($V_{GS} = -20V$)
- * $R_{DS(ON)} < 10m\Omega$ @ $V_{GS} = -20V, I_D = -14A$
- $R_{DS(ON)} < 11m\Omega$ @ $V_{GS} = -10V, I_D = -14A$

SYMBOL



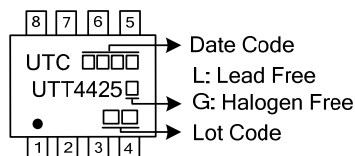
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
UTT4425L-S08-R	UTT4425G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT4425G-S08-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ 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	-14	A
		$T_A = 70^\circ\text{C}$		-11	
	Pulsed (Note 3)		I_{DM}	-50	
Power Dissipation (Note 2)		$T_A = 25^\circ\text{C}$	P_D	3.1	W
		$T_A = 70^\circ\text{C}$		2	
Junction Temperature			T_J	+150	$^\circ\text{C}$
Storage Temperature			T_{STG}	-55 ~ +150	$^\circ\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 2)	θ_{JA}	75	$^\circ\text{C}/\text{W}$

- Notes: 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.

■ ELECTRICAL CHARACTERISTICS (T_J = 25°C)

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} = -30V, V _{GS} = 0 V			-100	nA
			V _{DS} = -30V, V _{GS} = 0V, T _J = 55°C			-500	
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} = +20V, V _{DS} = 0V			+1	μA
	Reverse		V _{GS} = -20V, V _{DS} = 0V			-1	
	Forward		V _{GS} = +25V, V _{DS} = 0V			+10	
	Reverse		V _{GS} = -25V, V _{DS} = 0V			-10	
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D = -250 μA	-2	-2.5	-3.5	V
Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} = -20V, I _D = -14A		7.7	10	mΩ
			V _{GS} = -20V, I _D = -14A, T _J = 125°C		11	13.5	mΩ
			V _{GS} = -10V, I _D = -14A		8.8	11	mΩ
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{DS} = -20 V, V _{GS} = 0V, f = 1MHz			3800		pF
Output Capacitance	C _{OSS}				560		
Reverse Transfer Capacitance	C _{RSS}				350		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz			7.5		Ω
SWITCHING PARAMETERS							
Total Gate Charge	Q _G	V _{DS} = -20V, V _{GS} = -10V, I _D = -14A (Note 1 ,2)			63		nC
Gate Source Charge	Q _{GS}				14.1		
Gate Drain Charge	Q _{GD}				16.1		
Turn-ON Delay Time	t _{D(ON)}	V _{DS} = -20V, V _{GS} = -10V, R _L = 1.35Ω, R _{GEN} = 3Ω (Note 1 ,2)			12.4		ns
Turn-ON Rise Time	t _R				9.2		
Turn-OFF Delay Time	t _{D(OFF)}				97.5		
Turn-OFF Fall-Time	t _F				45.5		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V _{SD}	I _S = -1A, V _{GS} = 0V		-0.71	-1	V
Maximum Continuous Drain-Source Diode Forward Current		I _S				-4.2	A
Body Diode Reverse Recovery Time		t _{RR}	I _F = -14A, dI/dt = 100A/μs		35		ns
Body Diode Reverse Recovery Charge		Q _{RR}	I _F = -14A, dI/dt = 100A/μs (Note 1)		35		nC

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

2. Essentially independent of operating temperature.

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