



P-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

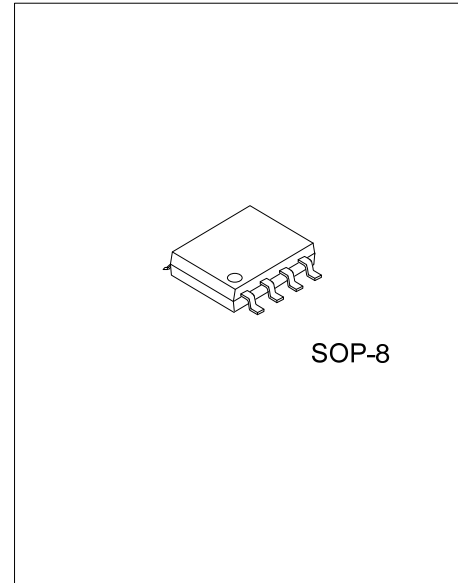
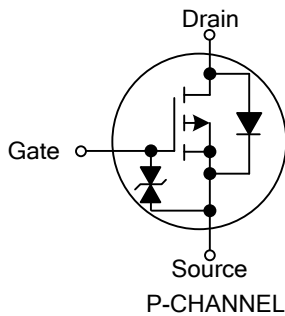
The UTC **UTT4425** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremal low gate charge with a 25V gate rating.

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

FEATURES

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

SYMBOL



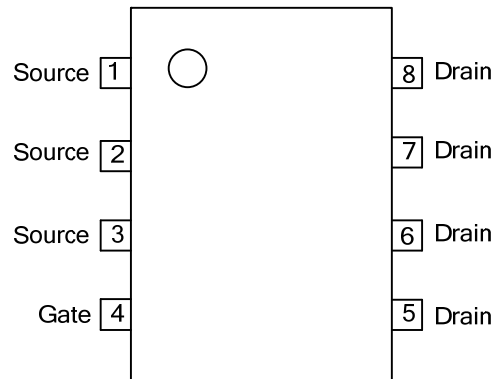
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UTT4425L-S08-R	UTT4425G-S08-R	SOP-8	Tape Reel

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

UTT4425L-S08-R (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (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}	± 25		
Drain Current	Continuous (Note 2)	I_D	$T_A = 25^\circ\text{C}$	-14	A
			$T_A = 70^\circ\text{C}$	-11	
	Pulsed (Note 3)		I_{DM}	-50	
Power Dissipation (Note 2)		P_D	$T_A = 25^\circ\text{C}$	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	$^\circ\text{C/W}$

- 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.

■ 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 = -250 μA	-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}				μA		
	Reverse						V _{GS} = +20V, V _{DS} = 0V	+1
	Forward						V _{GS} = -20V, V _{DS} = 0V	-1
	Reverse						V _{GS} = +25V, V _{DS} = 0V	+10
						-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		

Note: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%
 2. Essentially independent of operating temperature

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