



P-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

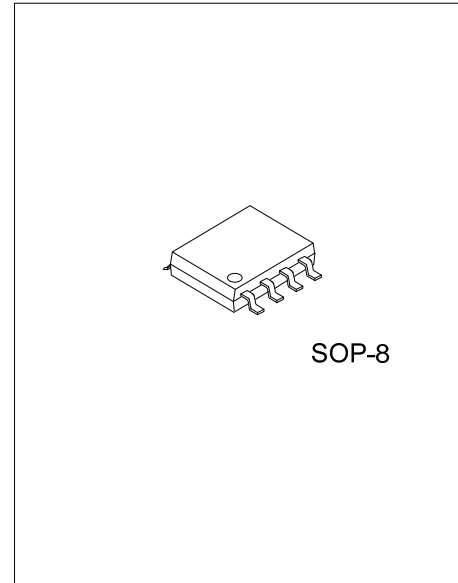
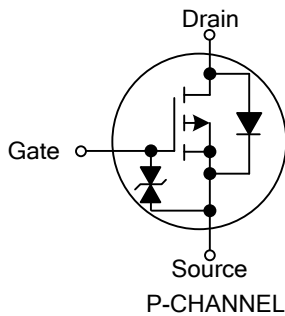
The UTC **UTT4425** is a P-channel enhancement mode power MOSFET using UTC's advanced trench technology to provide customers with a minimum on-state resistance and extremal low gate charge with a 25V gate rating.

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



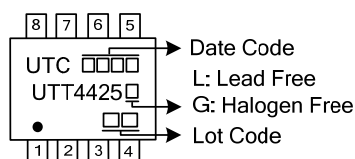
ORDERING INFORMATION

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

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

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 ($T_J = 25^\circ\text{C}$)

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}	$V_{DS} = -30\text{V}, V_{GS} = 0\text{ V}$			-100	nA
			$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}, T_J = 55^\circ\text{C}$			-500	
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{GS} = +20\text{V}, V_{DS} = 0\text{V}$			+1	μA
	Reverse		$V_{GS} = -20\text{V}, V_{DS} = 0\text{V}$			-1	
	Forward		$V_{GS} = +25\text{V}, V_{DS} = 0\text{V}$			+10	
	Reverse		$V_{GS} = -25\text{V}, V_{DS} = 0\text{V}$			-10	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-2	-2.5	-3.5	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS} = -20\text{V}, I_D = -14\text{A}$		7.7	10	m Ω
			$V_{GS} = -20\text{V}, I_D = -14\text{A}, T_J = 125^\circ\text{C}$		11	13.5	m Ω
			$V_{GS} = -10\text{V}, I_D = -14\text{A}$		8.8	11	m Ω
DYNAMIC PARAMETERS							
Input Capacitance	C_{ISS}	$V_{DS} = -20\text{ V}, V_{GS} = 0\text{V},$ $f = 1\text{MHz}$			3800		pF
Output Capacitance	C_{OSS}				560		
Reverse Transfer Capacitance	C_{RSS}				350		
Gate Resistance	R_g	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$			7.5		Ω
SWITCHING PARAMETERS							
Total Gate Charge	Q_G	$V_{DS} = -20\text{V}, V_{GS} = -10\text{V},$ $I_D = -14\text{A}$ (Note 1, 2)			63		nC
Gate Source Charge	Q_{GS}				14.1		
Gate Drain Charge	Q_{GD}				16.1		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS} = -20\text{V}, V_{GS} = -10\text{V},$ $R_L = 1.35\Omega, R_{GEN} = 3\Omega$ (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}	$I_S = -1\text{A}, V_{GS} = 0\text{V}$			-0.71	-1	V
Maximum Continuous Drain-Source Diode Forward Current	I_S					-4.2	A
Body Diode Reverse Recovery Time	t_{RR}	$I_F = -14\text{A}, dI/dt = 100\text{A}/\mu\text{s}$			35		ns
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F = -14\text{A}, dI/dt = 100\text{A}/\mu\text{s}$ (Note 1)			35		nC

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

2. Essentially independent of operating temperature.

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