

**UTT4407**

Preliminary

Power MOSFET**P-CHANNEL ENHANCEMENT
MODE POWER MOSFET****DESCRIPTION**

The UTC **UTT4407** 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

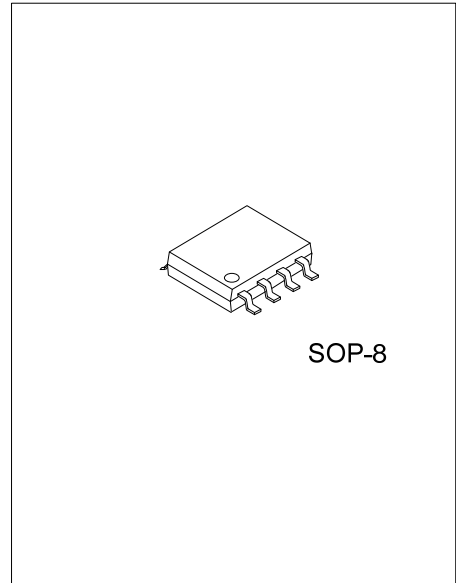
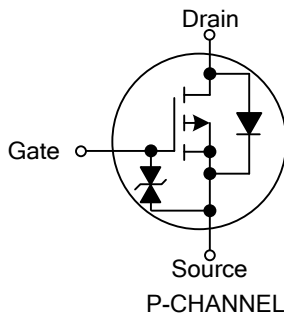
The UTC **UTT4407** is universally applied in PWM or used as a load switch.

FEATURES

* $V_{DS(V)} = -30V$

* $I_D = -12A(V_{GS} = -20V)$

* $R_{DS(ON)} < 13m\Omega @ V_{GS} = -20V,$
 $R_{DS(ON)} < 14m\Omega @ V_{GS} = -10V$

SYMBOL

SOP-8

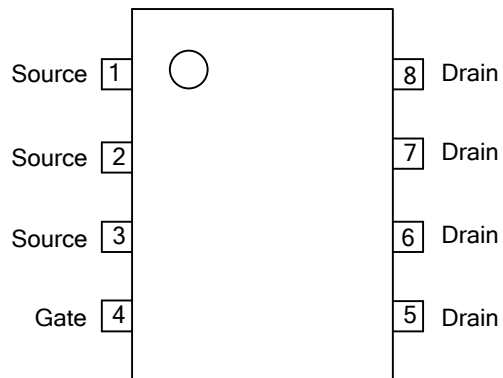
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UTT4407L-S08-R	UTT4407G-S08-R	SOP-8	Tape Reel
UTT4407L-S08-T	UTT4407G-S08-T	SOP-8	Tube

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

UTT4407L-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 ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DS}	-30	V
Gate-Source Voltage			V_{GS}	± 25	
Drain Current	Continuous(Note 2)	$T_A = 25^\circ\text{C}$	I_D	-12	A
		$T_A = 70^\circ\text{C}$		-10	
	Pulsed (Note 3)		I_{DM}	-60	
Power Dissipation (Note 2)		$T_A = 25^\circ\text{C}$	P_D	3	W
		$T_A = 70^\circ\text{C}$		2.1	
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. Device mounted on 1in² FR-4 board with 2oz. Copper, $t = 10\text{sec}$.

3. Repetitive rating, pulse width limited by junction temperature.

■ THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

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

Note: Device mounted on 1in² FR-4 board with 2oz. Copper, $t = 10\text{sec}$.

■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise noted)

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
			$V_{DS}=-24\text{V}, V_{GS}=0\text{ V}, T_J=55^{\circ}\text{C}$			-5	
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+25\text{V}, V_{DS}=0\text{V}$			+100	μA
	Reverse		$V_{GS}=-25\text{V}, V_{DS}=0\text{V}$			-100	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\text{ }\mu\text{A}$	-1.7	-2.5	-3	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-10\text{A}$		11	14	m Ω
			$V_{GS}=-10\text{V}, I_D=-10\text{A}, T_J=125^{\circ}\text{C}$		15	19	m Ω
			$V_{GS}=-20\text{V}, I_D=-10\text{A}$		10	13	m Ω
			$V_{GS}=-4.5\text{V}, I_D=-10\text{A}$		24		m Ω
DYNAMIC PARAMETERS							
Input Capacitance	C_{ISS}	$V_{DS}=-15\text{ V}, V_{GS}=0\text{V}, f=1\text{MHz}$		2076	2500	pF	
Output Capacitance	C_{OSS}			503			
Reverse Transfer Capacitance	C_{RSS}			302			
Gate Resistance	R_g	$V_{DS}=0\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		2	3	Ω	
SWITCHING PARAMETERS							
Total Gate Charge	Q_G	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-12\text{A}$		37.2	45	nC	
Gate Source Charge	Q_{GS}			7			
Gate Drain Charge	Q_{GD}			10.4			
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, R_L=1.25\Omega, R_{GEN}=3\Omega$		12.4		ns	
Turn-ON Rise Time	t_R			8.2			
Turn-OFF Delay Time	$t_{D(OFF)}$			25.6			
Turn-OFF Fall-Time	t_F			12			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V_{SD}	$I_S=-1\text{A}, V_{GS}=0\text{V}$		-0.72	-1	V
Maximum Continuous Drain-Source Diode Forward Current		I_S				-4.2	A
Body Diode Reverse Recovery Time		t_{RR}	$I_F=-12\text{ A}, dI/dt=100\text{A}/\mu\text{s}$		33	40	ns
Body Diode Reverse Recovery Charge		Q_{RR}	$I_F=-12\text{A}, dI/dt=100\text{A}/\mu\text{s}$		23		nC

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