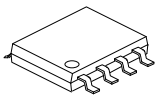
UT4406

Power MOSFET

N-CHANNEL ENHANCEMENT MODE



SOP-8

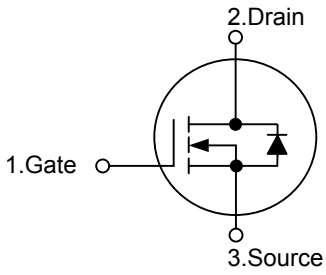
■ DESCRIPTION

The **UT4406** can provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V by using UTC's advanced trench technology which makes an excellent high side switch for notebook CPU core DC-DC conversion.

■ FEATURES

* $R_{DS(ON)}$ < 14.8mΩ @ V_{GS}=10V, I_D=12A
  $R_{DS(ON)}$ < 17.5mΩ @ V_{GS}=4.5V, I_D=10A
  $R_{DS(ON)}$ < 26.8mΩ @ V_{GS}=2.5V, I_D=8A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



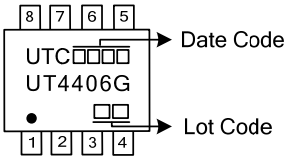
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UT4406G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UT4406G-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

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±12	
Continuous Drain Current		I_D	11.5	A
Pulsed Drain Current		I_{DM}	80	A
Avalanche Current (Note 2)		I_{AV}	25	A
Repetitive Avalanche Energy, L=0.1mH (Note 2)		E_{AV}	78	mJ
Power Dissipation	T_C=25°C	P_D	3	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

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. Pulse width limited by $T_{J(MAX)}$

■ THERMAL DATA

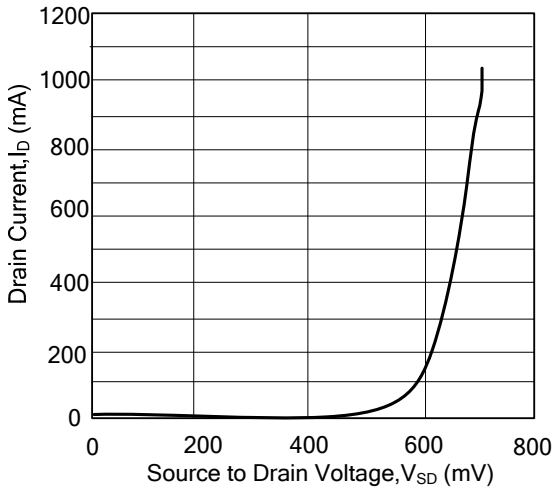
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		48	65	°C/W
Junction-to-Case	θ_{JC}		12	16	

■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

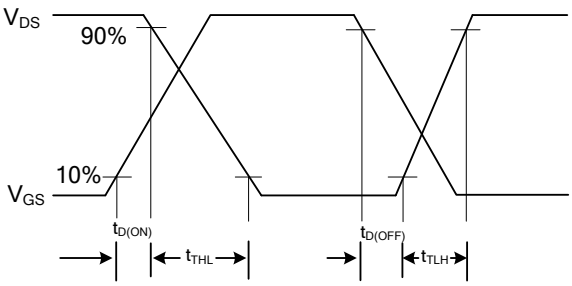
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.8	1	1.5	V
On State Drain Current	$I_{D(ON)}$	V_{DS}=5V, V_{GS}=4.5V	60			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=12A		11.5	14.8	mΩ
		V_{GS}=4.5V, I_D=10A		13.5	17.5	
		V_{GS}=2.5V, I_D=8A		19.5	26.8	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1MHz		1630		pF
Output Capacitance	C_{OSS}			201		pF
Reverse Transfer Capacitance	C_{RSS}			142		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V, V_{DS}=15V, R_L=1.2Ω, R_G=3Ω		4		ns
Turn-ON Rise Time	t_R			5		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			32		ns
Turn-OFF Fall-Time	t_F			5		ns
Total Gate Charge	Q_G	V_{DS}=15V, V_{GS}=4.5V, I_D=11.5A		18		nC
Gate Source Charge	Q_{GS}			2.5		nC
Gate Drain Charge	Q_{GD}			5.5		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V		0.83	1	V
Maximum Body-Diode Continuous Current	I_S				4.5	A
Body Diode Reverse Recovery Time	t_{RR}	I_F=10A, dI/dt=100A/μs		18.7		ns
Body Diode Reverse Recovery Charge	Q_{RR}	I_F=10A, dI/dt=100A/μs		19.8		nC

■ TYPICAL CHARACTERISTICS

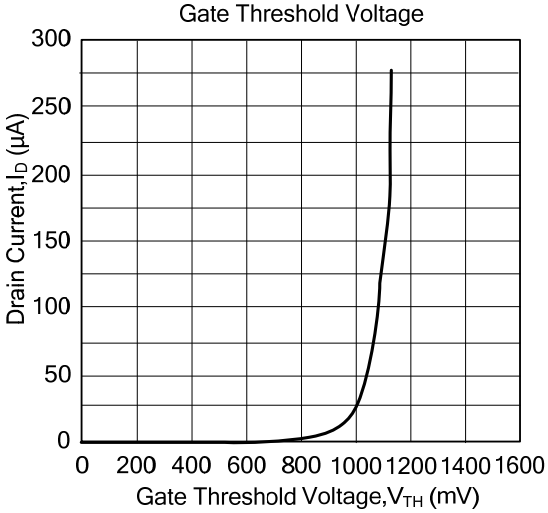
Drain Current vs. Source to Drain Voltage



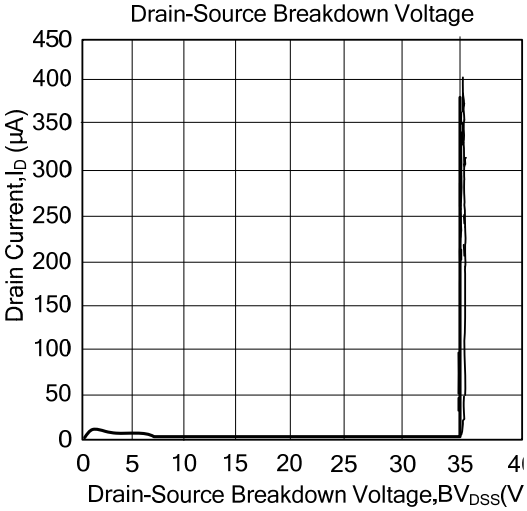
Switching Time Waveforms



Drain Current vs.
Gate Threshold Voltage



Drain Current vs.
Drain-Source Breakdown Voltage



Drain-Source On-State
Resistance Characteristics