



UT4406

Power MOSFET

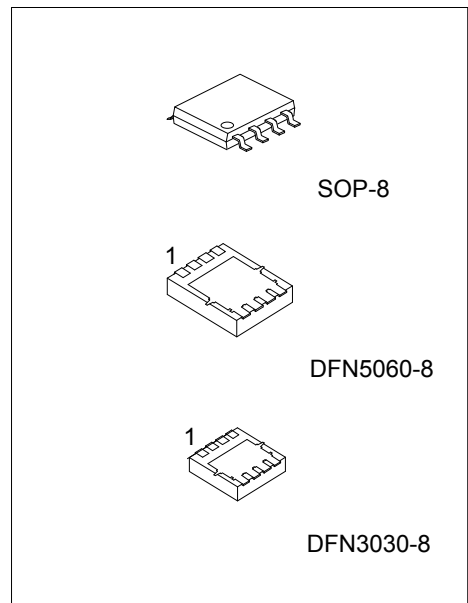
N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

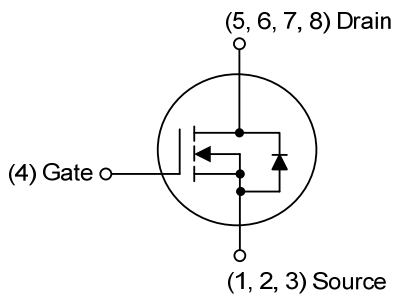
The **UT4406** can provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V by using UTC's advanced trench technology which makes an excellent high side switch for notebook CPU core DC-DC conversion.

FEATURES

- * $R_{DS(ON)} \leq 14.8m\Omega @ V_{GS}=10V, I_D=12A$
- $R_{DS(ON)} \leq 17.5m\Omega @ V_{GS}=4.5V, I_D=10A$
- $R_{DS(ON)} \leq 26.8m\Omega @ V_{GS}=2.5V, I_D=8.0A$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified



SYMBOL



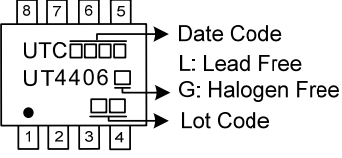
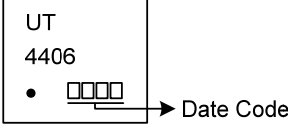
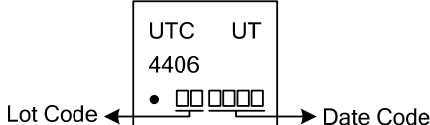
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
UT4406L-S08-R	UT4406G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT4406L-K08-3030-R	UT4406G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel
UT4406L-K08-5060-R	UT4406G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT4406G-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, K08-5060: DFN5060-8, K08-3030: DFN3030-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

Package	
SOP-8	 <p> UTC□□□□ → Date Code L: Lead Free UT4406□ → G: Halogen Free • □□□ → Lot Code </p>
DFN3030-8	 <p> UT 4406 • □□□ → Date Code </p>
DFN5060-8	 <p> UTC UT 4406 • □□ □□□ → Date Code Lot Code ← □□□□ </p>

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■ 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}	± 12	
Continuous Drain Current	I_D	12	A
Pulsed Drain Current	I_{DM}	24	A
Avalanche Current (Note 2)	I_{AV}	25	A
Repetitive Avalanche Energy, $L=0.1\text{mH}$ (Note 2)	E_{AV}	49	mJ
Power Dissipation	SOP-8	1.92	W
	DFN3030-8	2	W
	DFN5060-8	2.2	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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. Repetitive Rating : Pulse width limited by maximum junction temperature.

■ THERMAL DATA

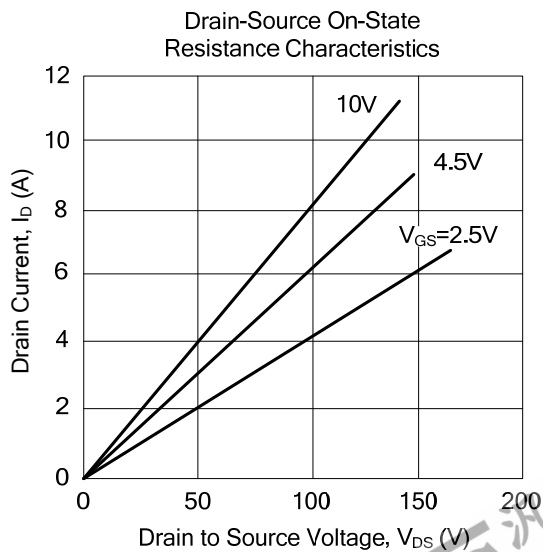
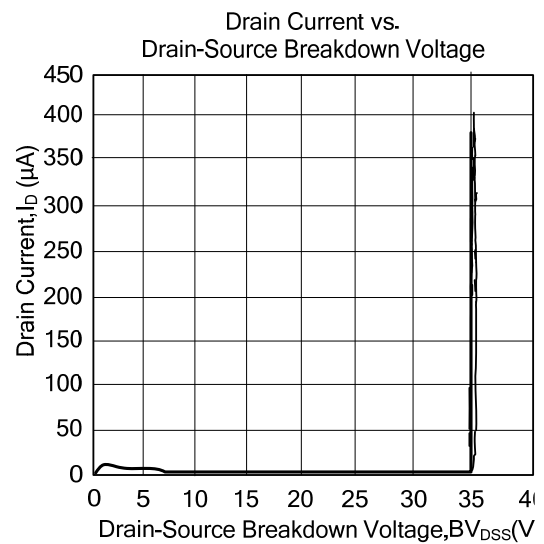
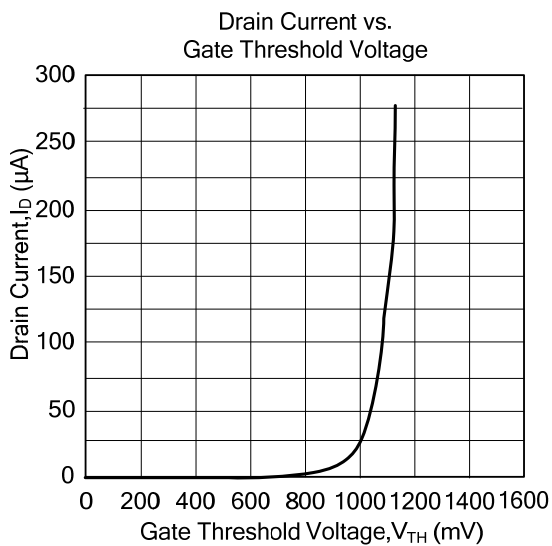
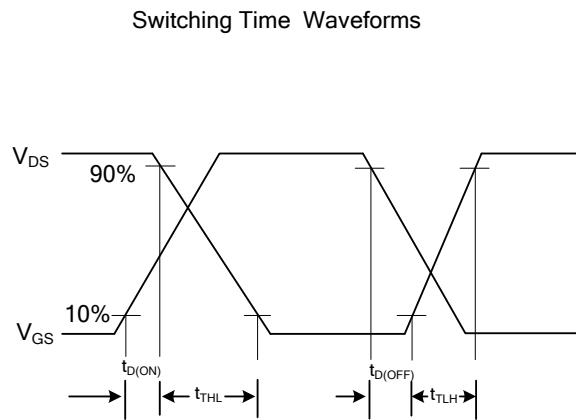
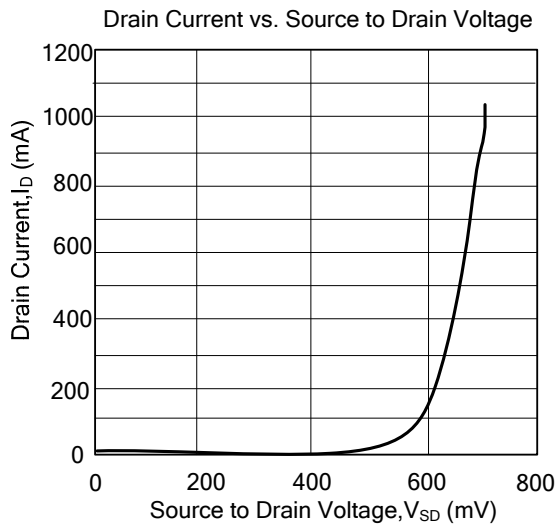
PARAMETER	SYMBOL	RATINGS	UNIT	
Junction-to-Ambient	θ_{JA}	SOP-8	65	$^\circ\text{C/W}$
		DFN3030-8	60	$^\circ\text{C/W}$
		DFN5060-8	55	$^\circ\text{C/W}$
Junction-to-Case	θ_{JC}	SOP-8	16	$^\circ\text{C/W}$
		DFN3030-8	12	$^\circ\text{C/W}$
		DFN5060-8	4	$^\circ\text{C/W}$

Note: Surface Mounted on 1" x 1" FR4 board.

■ 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	1.0	1.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =12A			14.8	mΩ
		V _{GS} =4.5V, I _D =10A			17.5	
		V _{GS} =2.5V, I _D =8A			26.8	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V, f=1MHz		1800		pF
Output Capacitance	C _{OSS}			190		pF
Reverse Transfer Capacitance	C _{RSS}			165		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =4.5V, I _D =11.5A		24		nC
Gate Source Charge	Q _{GS}			3.6		nC
Gate Drain Charge	Q _{GD}			6.4		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =15V, R _L =1.2Ω, R _G =3Ω		15		ns
Turn-ON Rise Time	t _R			18		ns
Turn-OFF Delay Time	t _{D(OFF)}			62		ns
Turn-OFF Fall-Time	t _F			18		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				12	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				24	A
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V		0.83	1.0	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =10A, di/dt=100A/μs		86		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =10A, di/dt=100A/μs		71		nC

TYPICAL CHARACTERISTICS



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