



UTT60N03H-H

Preliminary

Power MOSFET

**60A, 30V N-CHANNEL
POWER MOSFET**

■ DESCRIPTION

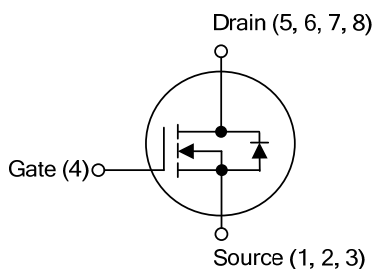
The UTC **UTT60N03H-H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed, low C_{RSS} and low gate charge.

The UTC **UTT60N03H-H** is suitable for high power density DC/DC and embedded DC/DC applications.

■ FEATURES

- * $R_{DS(ON)} < 5.5m\Omega @ V_{GS}=10V, I_D=10A$
- $R_{DS(ON)} < 8.5m\Omega @ V_{GS}=4.5, I_D=8A$
- * High switching speed
- * Low C_{RSS}
- Low gate change

■ SYMBOL



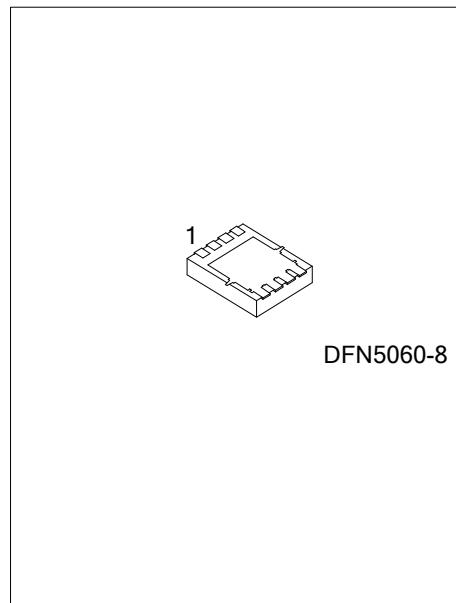
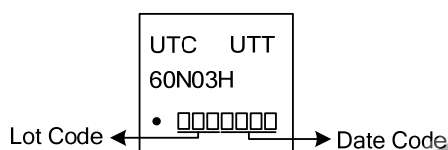
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
UTT60N03HL-K08-5060-R	UTT60N03HG-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>UTT60N03HG-K08-5060-R</p>	<p>(1) Packing Type (1) R: Tape Reel</p> <p>(2) Package Type (2) K08-5060: DFN5060-8</p> <p>(3) Green Package (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



DFN5060-8

■ 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}	+20, -16	V
Drain Current ($T_J=150^\circ\text{C}$)	Continuous $T_C=25^\circ\text{C}$	I_D	60 (Note 6)	A
	Pulsed ($t=300\mu\text{s}$)	I_{DM}	80	A
Continuous Source-Drain Diode Current	$T_C=25^\circ\text{C}$	I_S	14.1 (Note 6)	A
	$T_A=25^\circ\text{C}$		3.2 (Note 2, 3)	
Avalanche Current ($L=0.1\text{mH}$)		I_{AR}	15	A
Single Pulsed Avalanche Energy ($L=0.1\text{mH}$)		E_{AS}	11.25	mJ
Power Dissipation $T_C=25^\circ\text{C}$		P_D	31.2	W
Junction Temperature		T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ +150	$^\circ\text{C}$
Soldering Recommendations (Peak Temperature) (Note 4)			260	$^\circ\text{C}$

Note: 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.

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 2, 5)	$t \leq 10\text{s}$	θ_{JA}	34	$^\circ\text{C/W}$
Junction to Case (Drain)	Steady State	θ_{JC}	4	$^\circ\text{C/W}$

Notes: 1. Based on $T_C=25^\circ\text{C}$

2. Surface mounted on 1"x1" FR4 board.

3. $t=10\text{s}$

4. Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.

5. Maximum under steady state conditions is 70°C/W

6. Package limited

■ 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}	I _D =250μA, V _{GS} =0V	30			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D =250uA		20		mV/°C
V _{GS(TH)} Temperature Coefficient	ΔV _{GS(TH)} /T _J			-4.6		
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =55°C			10	μA
Gate-Source Leakage Current	Forward	V _{GS} =+20V, V _{DS} =0V V _{GS} =-16V, V _{DS} =0V			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.1		2.2	V
Static Drain-Source On-State Resistance (Note 1)	R _{DS(ON)}	V _{GS} =10V, I _D =10A			5.5	mΩ
		V _{GS} =4.5V, I _D =8A			8.5	
On State Drain Current	I _{D(ON)}	V _{DS} ≥5V, V _{GS} =10V	30			A
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1MHz		1450		pF
Output Capacitance	C _{OSS}			445		pF
Reverse Transfer Capacitance	C _{RSS}			38		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =15V, I _D =10A		19.4	29	nC
		V _{GS} =4.5V, V _{DS} =15V, I _D =10A		9.4	14	nC
Gate to Source Charge	Q _{GS}			4		
Gate to Drain Charge	Q _{GD}			1.8		nC
Gate Resistance	R _G	f=1MHz	0.4	1.65	3.3	Ω
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =15V, I _D ≈10A, R _L =1.5Ω, V _{GEN} =10V, R _G =1Ω		9	18	ns
Rise Time	t _R			8	16	ns
Turn-OFF Delay Time	t _{D(OFF)}			18	36	ns
Fall-Time	t _F			8	16	ns
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =15V, I _D ≈10A, R _L =1.5Ω, V _{GEN} =4.5V, R _G =1Ω		15	30	ns
Rise Time	t _R			12	24	ns
Turn-OFF Delay Time	t _{D(OFF)}			18	36	ns
Fall-Time	t _F			9	18	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S	T _C =25°C			14.1	A
Maximum Body-Diode Pulsed Current (Note 1)	I _{SM}				80	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =3A		0.76	1.1	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =10A, di/dt=100A/μs, T _J =25°C		24	48	ns
Body Diode Reverse Recovery Charge	Q _{rr}			14	28	nC
Reverse Recovery Fall Time	t _a			12		ns
Reverse Recovery Rise Time	t _b			12		ns

Notes: 1. Pulse test; pulse width ≤30μs, duty cycle ≤2%

2. Guaranteed by design, not subject to production testing

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