



# UTT95N03-H

## POWER MOSFET

### 95A 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

#### DESCRIPTION

The UTC **UTT95N03-H** is a N-channel enhancement mode power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and fast switching, etc.

The UTC **UTT95N03-H** is suitable for low voltage applications such as DC/DC converters.

#### FEATURES

\* For TO-252

$$R_{DS(ON)} \leq 4.0 \text{ m}\Omega @ V_{GS}=10V, I_D=40A$$

$$R_{DS(ON)} \leq 6.0 \text{ m}\Omega @ V_{GS}=4.5V, I_D=30A$$

For PDFN5x6

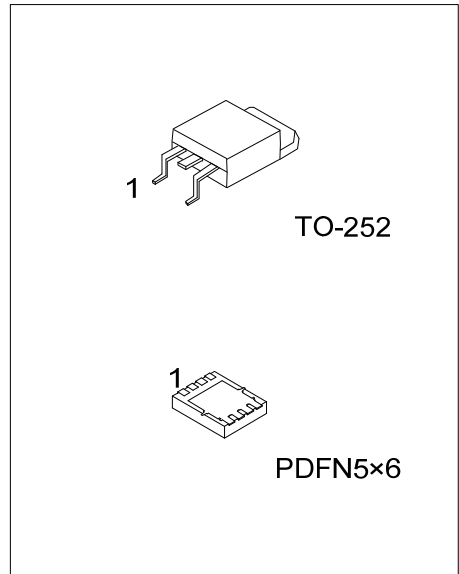
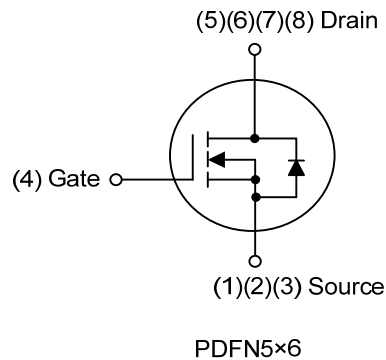
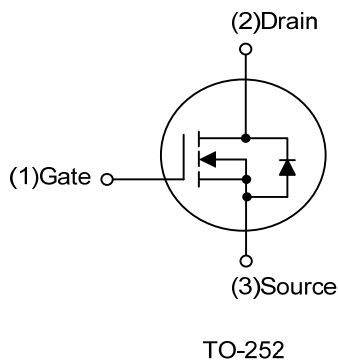
$$R_{DS(ON)} \leq 5.5 \text{ m}\Omega @ V_{GS}=10V, I_D=40A$$

$$R_{DS(ON)} \leq 7.0 \text{ m}\Omega @ V_{GS}=4.5V, I_D=30A$$

\* Fast switching characteristic

\* Low on-resistance

#### SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT95N03L-TN3-R	UTT95N03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT95N03L-P5060-R	UTT95N03G-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT95N03G-TN3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) TN3: TO-252, P5060: PDFN5×6 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-252	PDFN5×6
<p>UTC UTT95N03 □□□□□□ L: Lead Free G: Halogen Free Date Code Lot Code ←</p> <p>1</p>	<p>UTC UTT 95N03 • □□□□□□ Date Code Lot Code ←</p>

### ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Continuous Drain Current $V_{GS}$ @ 10V ( $T_C=25^\circ\text{C}$ ) (Note 4)	TO-252	$I_D$	95	A
	PDFN5x6		29	A
Pulsed Drain Current (Note 1)	TO-252	$I_{DM}$	300	A
	PDFN5x6		92	A
Total Power Dissipation	$T_C=25^\circ\text{C}$	$P_D$	50	W
	$T_A=25^\circ\text{C}$		2	W
Junction Temperature		$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	$\theta_{JA}$	62.5	$^\circ\text{C/W}$
	PDFN5x6		40.3	$^\circ\text{C/W}$
Junction to Case	TO-252	$\theta_{JC}$	2.5	$^\circ\text{C/W}$
	PDFN5x6		6	$^\circ\text{C/W}$

Note: Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board.

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

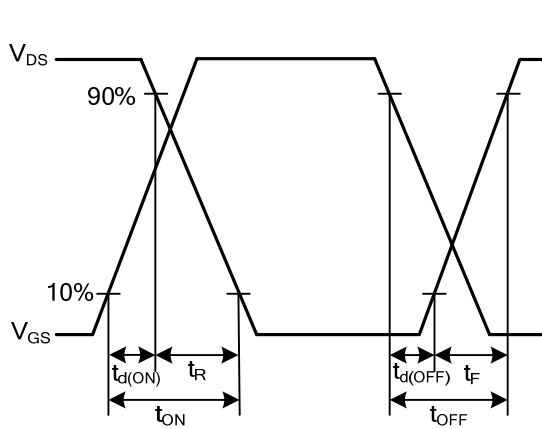
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			10	μA
Gate-Source Leakage Current	Forward	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA
	Reverse	V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance (Note 2)	TO-252	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =40A		4.0	mΩ
			V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A		6.0	mΩ
	PDFN5×6		V <sub>GS</sub> =10V, I <sub>D</sub> =40A		5.5	mΩ
			V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A		7.0	mΩ
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1.0MHz		2700		pF
Output Capacitance	C <sub>OSS</sub>			460		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			330		pF
Gate Resistance	R <sub>G</sub>	f=1.0MHz		1.2		Ω
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note 2)	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =24V, I <sub>D</sub> =62A I <sub>G</sub> =1mA		57		nC
Gate to Source Charge	Q <sub>GS</sub>			16		nC
Gate to Drain ("Miller") Charge	Q <sub>GD</sub>			11		nC
Turn-ON Delay Time (Note 2)	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =1.0A, R <sub>G</sub> =25Ω		40		ns
Rise Time	t <sub>R</sub>			120		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			800		ns
Fall-Time	t <sub>F</sub>			430		ns
<b>SOURCE-DRAIN BODY DIODE CHARACTERISTICS</b>						
Forward On Voltage (Note 2)	V <sub>SD</sub>	I <sub>S</sub> =40A, V <sub>GS</sub> =0V			1.2	V
Reverse Recovery Time (Note 2)	t <sub>rr</sub>	I <sub>S</sub> =10A, V <sub>GS</sub> =0V,		35		ns
Reverse Recovery Charge	Q <sub>rr</sub>	dI/dt=100A/μs		35		nC

Notes: 1. Pulse width limited by max. junction temperature.

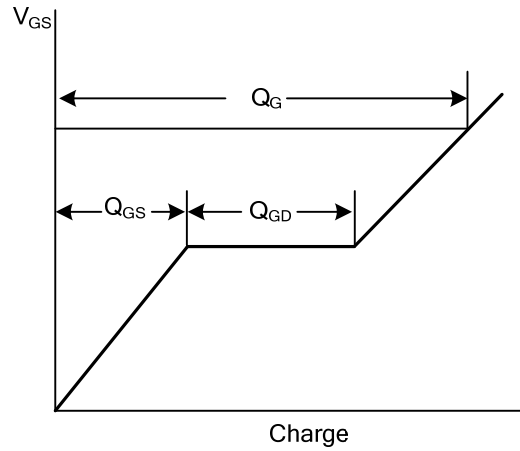
2. Pulse test.

3. Package limitation current is 75A.

■ TEST CIRCUITS AND WAVEFORMS

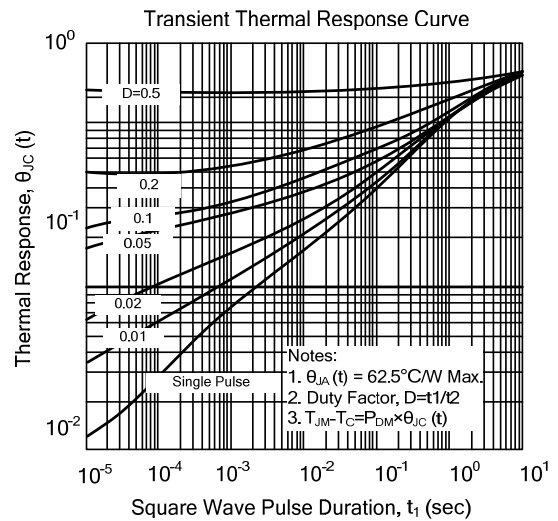
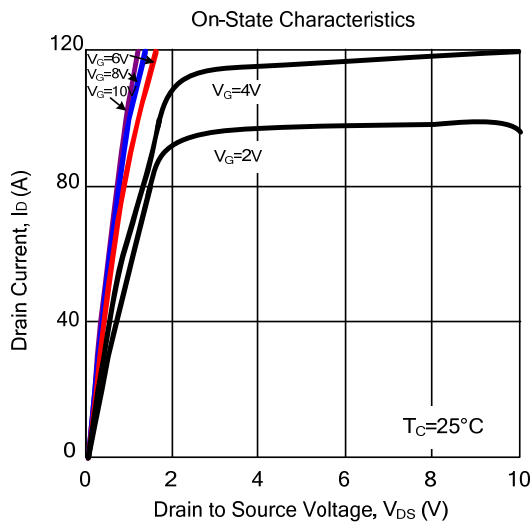
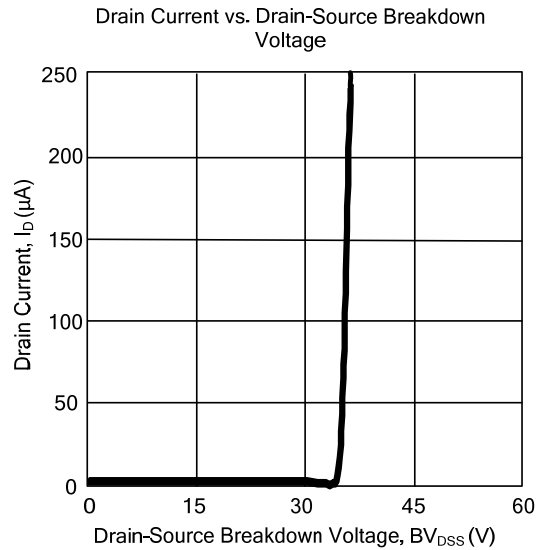
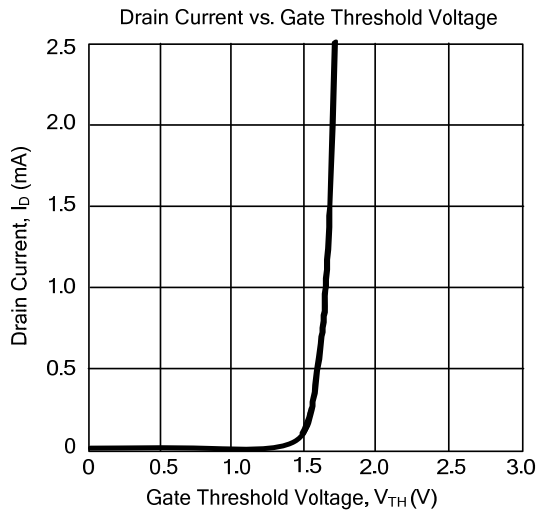
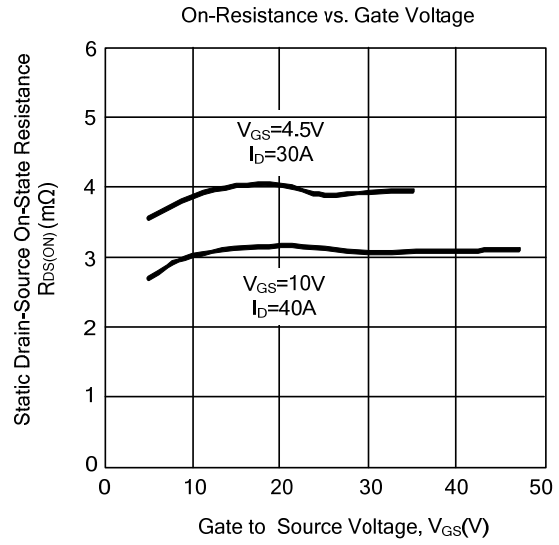
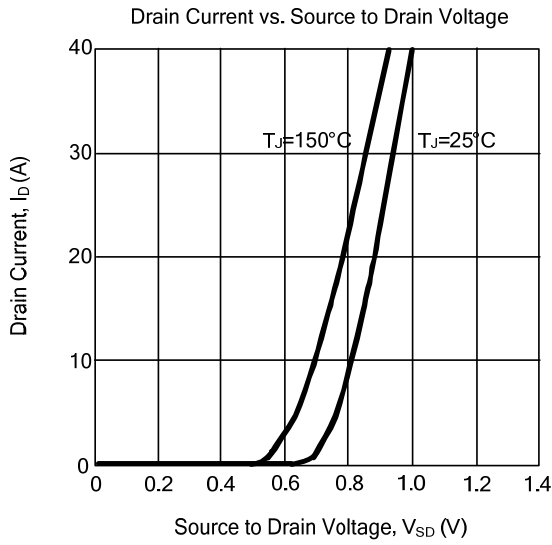


Switching Time Waveform

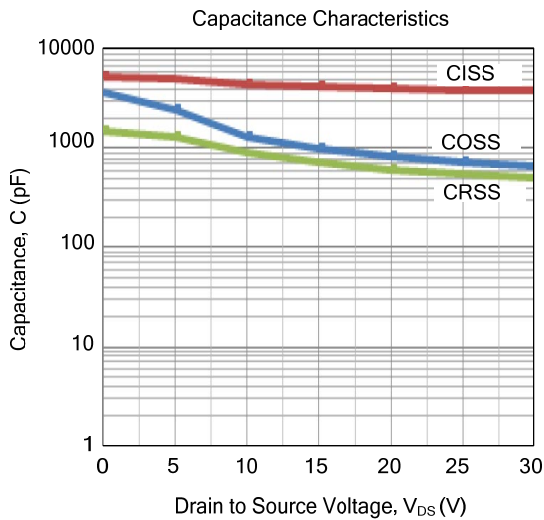
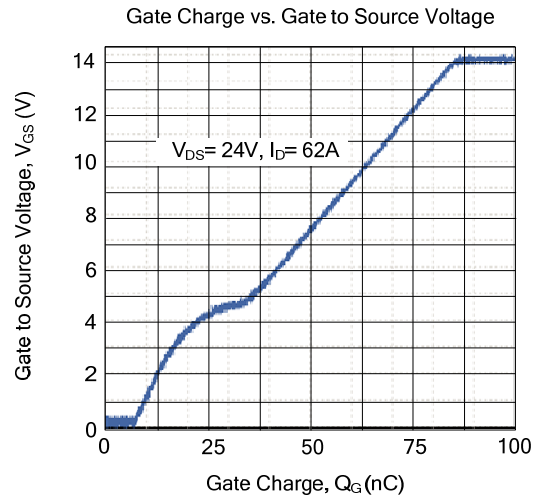
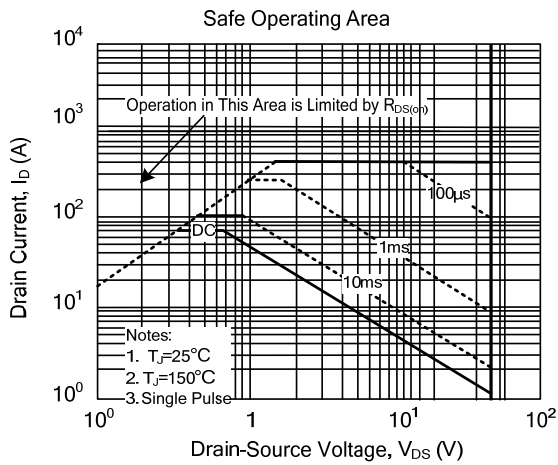


Gate Charge Waveform

## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS (Cont.)



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