



## UT108N03

Power MOSFET

### 30V, 108A N-CHANNEL POWER MOSFET

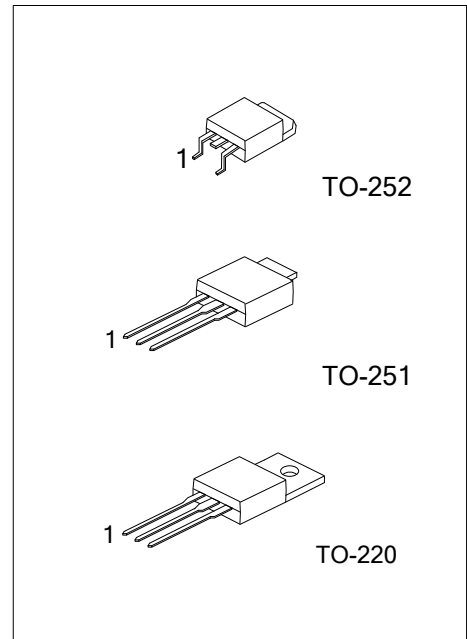
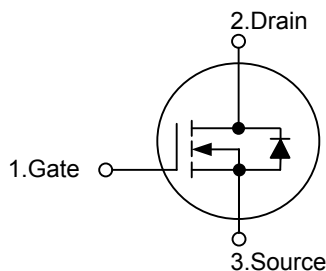
#### DESCRIPTION

As advanced N-channel level power MOSFET, the **UT108N03** is produced using UTC's advanced trench technology, which has been specially tailored to minimize the on-resistance and maintain low gate charge for superior switching performance.

#### FEATURES

- \*  $R_{DS(ON)} = 5.3m\Omega @ V_{GS} = 10V$
- \* Low Capacitance
- \* Optimized Gate Charge
- \* Fast Switching Capability
- \* Avalanche Energy Specified

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT108N03L-TA3-T	UT108N03G-TA3-T	TO-220	G	D	S	Tube
UT108N03L-TM3-T	UT108N03G-TM3-T	TO-251	G	D	S	Tube
UT108N03L-TN3-R	UT108N03G-TN3-R	TO-252	G	D	S	Tape Reel
UT108N03L-TN3-T	UT108N03G-TN3-T	TO-252	G	D	S	Tube

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

UT108N03L-TA3-T	(1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel, T: Tube (2) TA3: TO-220, TM3: TO-251, TN3: TO-252 (3) G: Halogen Free, L: Lead Free
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■ ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	108	A
Pulsed Drain Current (Note 2)	$I_{DM}$	432	A
Avalanche Energy (Note 3)	$E_{AS}$	580	mJ
Power Dissipation	TO-220	107	W
	TO-251/TO-252	60	
Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Strong 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.  $t_p \leq 10\mu\text{s}$ , pulsed,  $T_A = 25^\circ\text{C}$

3.  $V_{GS} = 10\text{V}$ ,  $T_J = 25^\circ\text{C}$ ,  $I_D = 35\text{A}$ ,  $V_S \leq 25\text{V}$ ,  $t_p = 0.25\text{ms}$ ,  $R_{GS} = 50\Omega$

## ■ THERMAL DATA

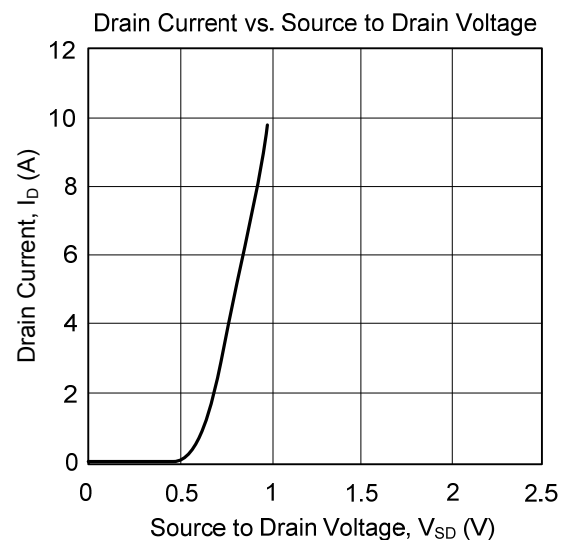
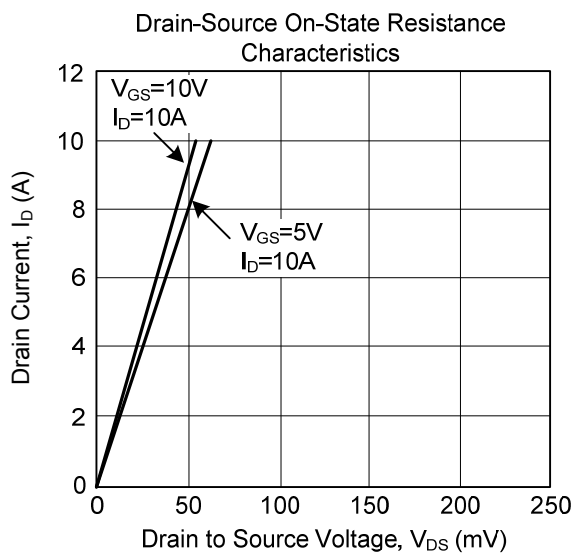
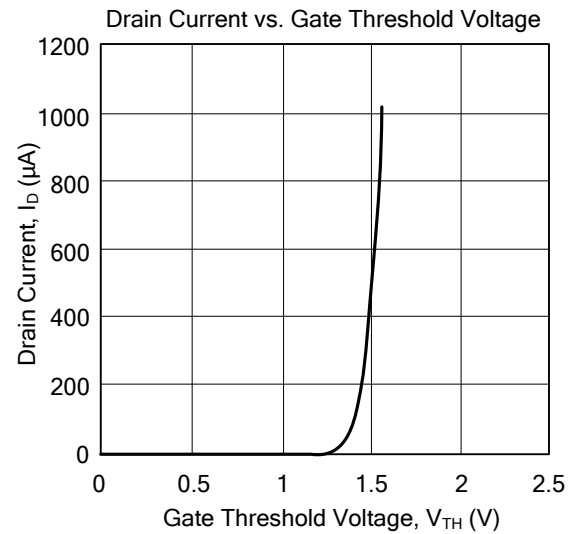
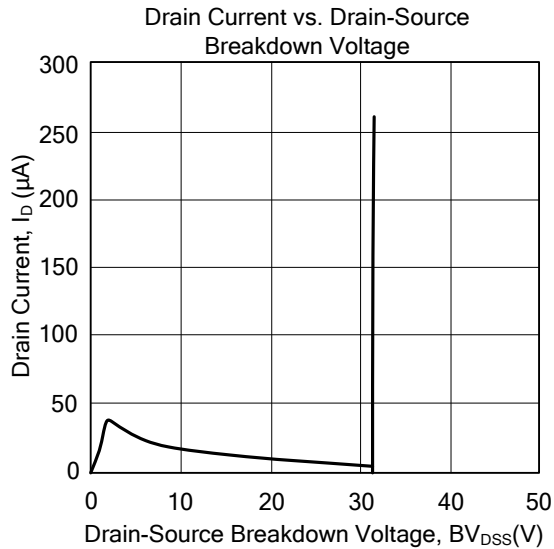
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	62.5	$^\circ\text{C}/\text{W}$
	TO-251/TO-252	100	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220	1.4	$^\circ\text{C}/\text{W}$
	TO-251/TO-252	2.5	$^\circ\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V		0.05	1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V		0.02	100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =1mA	1		3	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =25A		4.2	5.3	mΩ
		V <sub>GS</sub> =5V, I <sub>D</sub> =25A			6.6	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		3200		pF
Output Capacitance	C <sub>OSS</sub>			580		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			400		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q <sub>G</sub>	V <sub>DD</sub> =15V, V <sub>GS</sub> =5V, I <sub>D</sub> =40A		56		nC
Gate Source Charge	Q <sub>GS</sub>			16		nC
Gate Drain Charge	Q <sub>GD</sub>			14		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =15V, R <sub>G</sub> =10Ω, V <sub>GS</sub> =5V, R <sub>D</sub> =0.6Ω		24		ns
Turn-ON Rise Time	t <sub>R</sub>			102		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			53		ns
Turn-OFF Fall-Time	t <sub>F</sub>			54		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =108A, V <sub>GS</sub> =0 V			1.25	V
Maximum Pulsed Drain-Source Diode Forward Current	I <sub>SM</sub>	(Note)			432	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =20A, dI <sub>S</sub> /dt=-100A/μs,		34		ns
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>	V <sub>GS</sub> =0V		27		nC

Note:  $t_p \leq 10\mu\text{s}$ , pulsed

### TYPICAL CHARACTERISTICS



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