



# UT85N03

*Power MOSFET*

## 85 Amps, 30 Volts N-CHANNEL POWER MOSFET

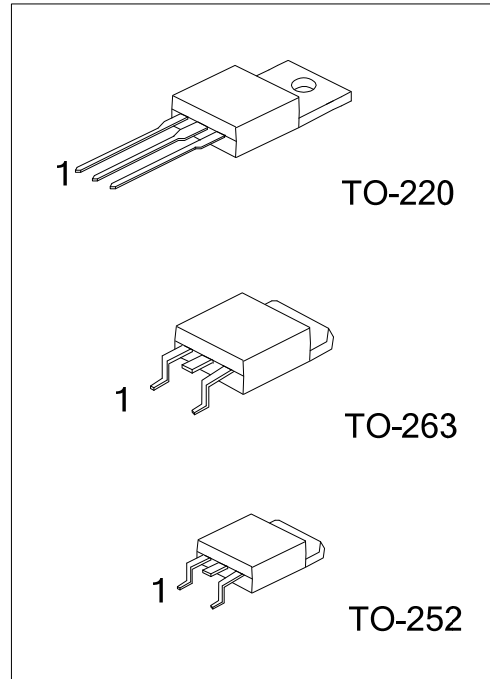
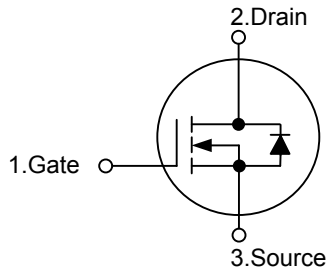
■ DESCRIPTION

The **UT85N03** uses advanced technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages. This device is suited for all low voltage applications.

■ FEATURES

- \*  $R_{DS(ON)} < 6 \text{ m}\Omega @ V_{GS} = 10\text{V}$
- \*  $R_{DS(ON)} < 10 \text{ m}\Omega @ V_{GS} = 4.5\text{V}$
- \* Low Reverse Transfer Capacitance (  $C_{RSS} = \text{Typical: } 380 \text{ pF}$  )
- \* Fast Switching Capability
- \* Avalanche Energy Specified
- \* Improved dv/dt Capability, High Ruggedness

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT85N03L-TA3-T	UT85N03G-TA3-T	TO-220	G	D	S	Tube
UT85N03L-TN3-T	UT85N03G-TN3-T	TO-252	G	D	S	Tube
UT85N03L-TN3-R	UT85N03G-TN3-R	TO-252	G	D	S	Tape Reel
UT85N03L-TQ2-T	UT85N03G-TQ2-T	TO-263	G	D	S	Tube
UT85N03L-TQ2-R	UT85N03G-TQ2-R	TO-263	G	D	S	Tape Reel

<p>UT85N03L-TN3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TN3: TO-252, TQ2: TO-263</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub>=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	30	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Drain Current		I <sub>D</sub>	85	A
Pulsed Drain Current		I <sub>DM</sub>	350	A
Total Power Dissipation	TO-220/TO-263	P <sub>D</sub>	83	W
	TO-252		56	
Junction Temperature		T <sub>J</sub>	+75	°C
Strong Temperature		T <sub>STG</sub>	-55 ~ +175	°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-220/TO-263	θ <sub>JA</sub>	62.5	°C/W
	TO-252		110	
Junction to Case	TO-220/TO-263	θ <sub>JC</sub>	1.8	°C/W
	TO-252		2.7	

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
Breakdown Voltage Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	I <sub>D</sub> =1mA, Reference to 25°C		0.018		V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±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		3	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =45A			6	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A			10	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =30A		32		S
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		2700	4200	pF
Output Capacitance	C <sub>OSS</sub>			550		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			380		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note)	Q <sub>G</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A		240	300	nC
Gate Source Charge	Q <sub>GS</sub>			35		nC
Gate Drain Charge	Q <sub>GD</sub>			78		nC
Turn-ON Delay Time (Note)	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>D</sub> =0.5Ω, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =30A		52		ns
Turn-ON Rise Time	t <sub>R</sub>			100		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			460		ns
Turn-OFF Fall-Time	t <sub>F</sub>			280		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =45A, V <sub>GS</sub> =0V			1.3	V
Body Diode Reverse Recovery Time	t <sub>RR</sub>	I <sub>S</sub> =30A, V <sub>GS</sub> =0V, di <sub>S</sub> /dt=100A/μs		28		ns
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>			10		nC

Note: Pulse width ≤ 300μs, Duty cycle ≤ 2%

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