



UT70N03

Preliminary

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

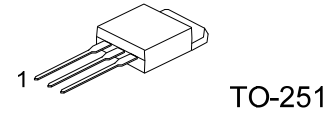
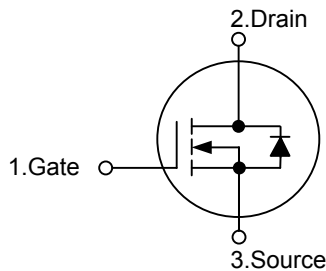
DESCRIPTION

The **UT70N03** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

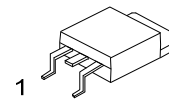
FEATURES

- * $R_{DS(ON)} < 9m\Omega$ @ $V_{GS}=10V$, $I_D=33A$
- * $R_{DS(ON)} < 18m\Omega$ @ $V_{GS}=4.5V$, $I_D=20A$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



TO-251



TO-252

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT70N03L-TM3-T	UT70N03G-TM3-T	TO-251	G	D	S	Tube
UT70N03L-TN3-T	UT70N03G-TN3-T	TO-252	G	D	S	Tube
UT70N03L-TN3-R	UT70N03G-TN3-R	TO-252	G	D	S	Tape Reel

UT70N03L-TN3-R

(1)Packing Type

(2)Package Type

(3)Lead Free

(1) R: Tape Reel, T: Tube

(2) TN3: TO-252

(3) G: Halogen Free, L: Lead Free

■ 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}	± 20	V
Continuous Drain Current	I_D	60	A
Pulsed Drain Current	I_{DM}	195	A
Power Dissipation	P_D	53	W
Linear Derating Factor		0.36	W/ $^{\circ}\text{C}$
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	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	θ_{JA}	110	$^{\circ}\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.8	$^{\circ}\text{C}/\text{W}$

■ 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 _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1		3	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =33A			9	mΩ
		V _{GS} =4.5V, I _D =20A			18	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =33A		35		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		1485		pF
Output Capacitance	C _{OSS}			245		pF
Reverse Transfer Capacitance	C _{RSS}			170		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =20V, V _{GS} =4.5V, I _D =33A		16.5		nC
Gate Source Charge	Q _{GS}			5		nC
Gate Drain Charge	Q _{GD}			10.3		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =33A, R _D =0.45Ω, R _G =3.3Ω		8.2		ns
Turn-ON Rise Time	t _R			105		ns
Turn-OFF Delay Time	t _{D(OFF)}			21.4		ns
Turn-OFF Fall-Time	t _F			8.5		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage (Note 2)	V _{SD}	I _S =60A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S	V _D =V _G =0V, V _S =1.3V			60	A
Pulsed Source Current (Body Diode)	I _{SM}	(Note 1)			195	A

Note :1. Pulse width limited by safe operating area.

2. Pulse width < 300us, duty cycle < 2%.

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