



UT70N03

Preliminary

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

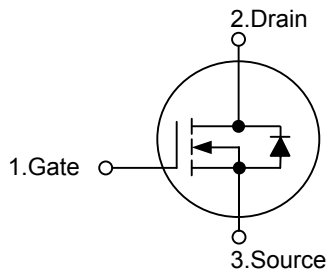
■ DESCRIPTION

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

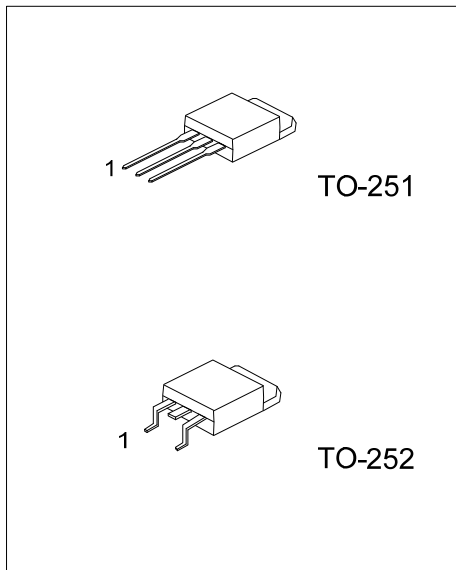
■ SYMBOL



■ 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

<p>UT70N03L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ 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}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=33\text{A}$			9	m Ω
		$V_{GS}=4.5\text{V}, I_D=20\text{A}$			18	
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}, I_D=33\text{A}$		35		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		1485		pF
Output Capacitance	C_{OSS}			245		pF
Reverse Transfer Capacitance	C_{RSS}			170		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=20\text{V}, V_{GS}=4.5\text{V}, I_D=33\text{A}$		16.5		nC
Gate Source Charge	Q_{GS}			5		nC
Gate Drain Charge	Q_{GD}			10.3		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=10\text{V}, V_{DS}=15\text{V}, I_D=33\text{A}, R_D=0.45\Omega, R_G=3.3\Omega$		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}	$I_S=60\text{A}, V_{GS}=0\text{V}$			1.3	V
Maximum Body-Diode Continuous Current	I_S	$V_D=V_G=0\text{V}, V_S=1.3\text{V}$			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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