

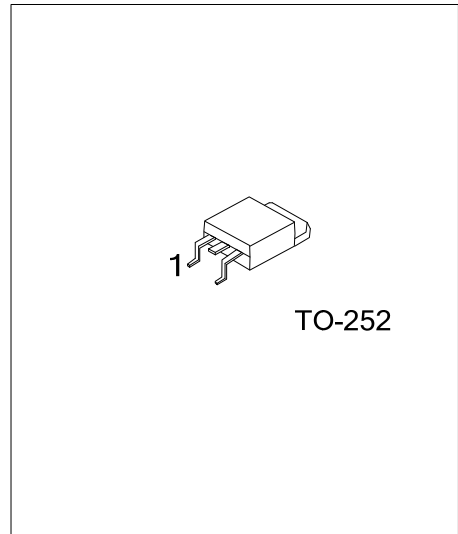


18T10

Preliminary

Power MOSFET

**9A, 100V N-CHANNEL
ENHANCEMENT MODE
POWER MOSFET**



■ DESCRIPTION

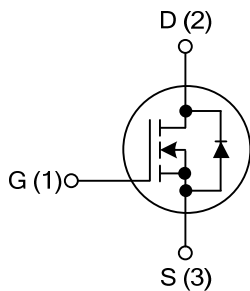
The UTC **18T10** is an N-channel enhancement mode Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge, etc.

The UTC **18T10** is suitable for low voltage applications such as DC/DC converters, etc.

■ FEATURES

- * $R_{DS(ON)} < 0.16\Omega @ V_{GS}=10V$
- * High switching speed
- * Low gate charge

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
18T10L-TN3-T	18T10G-TN3-T	TO-252	G	D	S	Tube
18T10L-TN3-R	18T10G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>18T10L-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) TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free</p>
--	--

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous $T_C=25^\circ\text{C}$	I_D	9	A
	$V_{GS} @ 10\text{V}$ $T_C=100^\circ\text{C}$		5.6	A
	Pulsed (Note 1)	I_{DM}	30	A
Total Power Dissipation	$T_C=25^\circ\text{C}$	P_D	27.8	W
	$T_A=25^\circ\text{C}$		1.3	W
Junction Temperature		T_J	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 CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	4.5	$^\circ\text{C/W}$

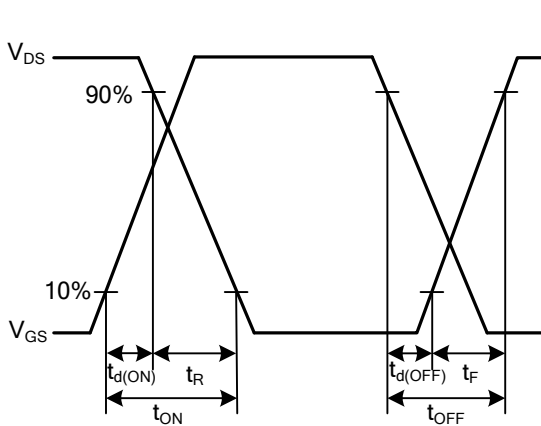
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=80\text{V}$, $V_{GS}=0\text{V}$			25	μA
			$V_{DS}=80\text{V}$, $V_{GS}=0\text{V}$, $T_J=125^\circ\text{C}$			250	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$			+100	nA
	Reverse		$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$			-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-State Resistance (Note 3)		$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=5\text{A}$			160	m Ω
			$V_{GS}=4.5\text{V}$, $I_D=1\text{A}$			440	m Ω
Forward Transconductance		g_{FS}	$V_{DS}=10\text{V}$, $I_D=5\text{A}$		5		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		400	640	pF
Output Capacitance		C_{OSS}			55		pF
Reverse Transfer Capacitance		C_{RSS}			35		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 3)		Q_G	$V_{GS}=4.5\text{V}$, $V_{DS}=80\text{V}$, $I_D=5\text{A}$		23	50	nC
Gate to Source Charge		Q_{GS}			5.25		nC
Gate to Drain ("Miller") Charge		Q_{GD}			5.5		nC
Turn-ON Delay Time (Note 3)		$t_{D(ON)}$	$V_{DS}=30\text{V}$, $I_D=0.5\text{A}$, $R_G=25\Omega$, $V_{GS}=10\text{V}$		33		ns
Rise Time		t_R			28		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			160		ns
Fall-Time		t_F			45		ns
SOURCE- DRAIN DIODE							
Forward On Voltage (Note 3)		V_{SD}	$I_S=5\text{A}$, $V_{GS}=0\text{V}$			1.3	V

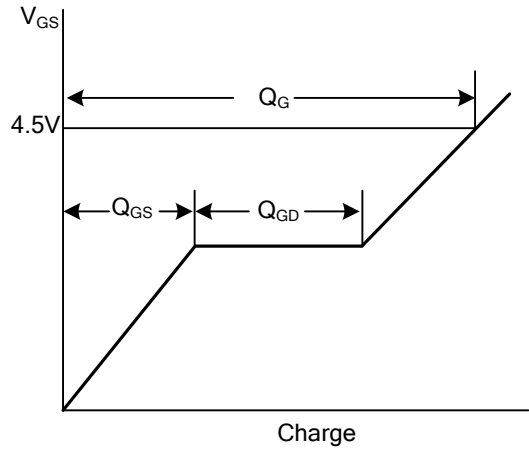
Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse test.

■ TEST CIRCUITS AND WAVEFORMS



Resistive Switching Waveforms



Gate Charge Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.