

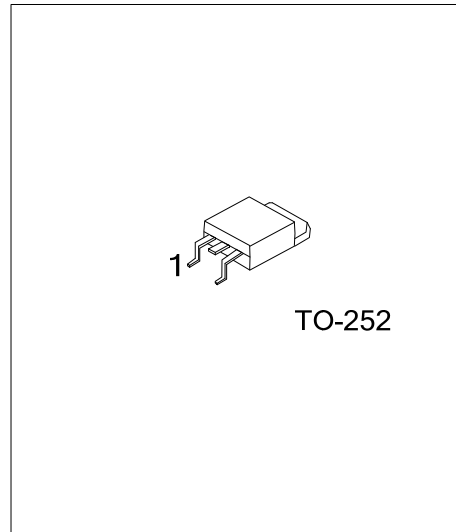


18T10

Preliminary

Power MOSFET

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



■ DESCRIPTION

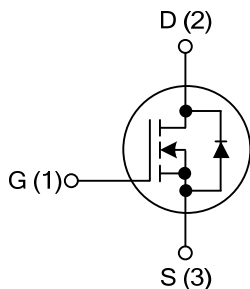
The UTC **18T10** is an N-channel enhancement mode Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge, etc.

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>
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■ 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	I_D	9	A
	$V_{GS} @ 10V$		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

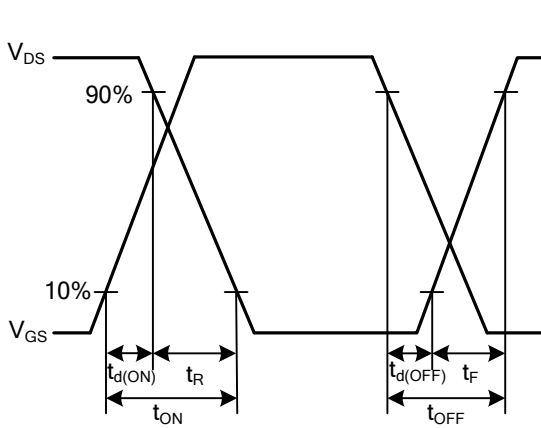
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	4.5	$^\circ\text{C/W}$

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

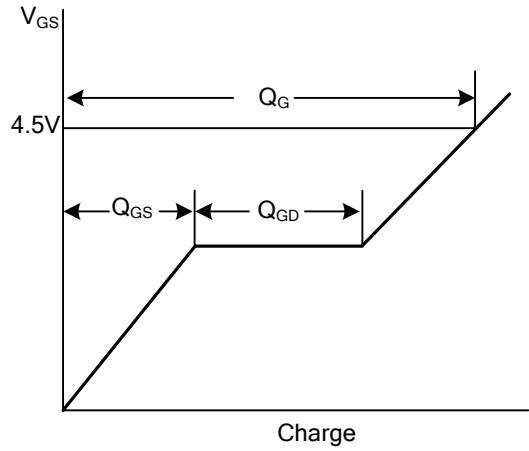
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=80\text{V}, V_{GS}=0\text{V}$			25	μA
			$V_{DS}=80\text{V}, V_{GS}=0\text{V}, T_J=125^\circ\text{C}$			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

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