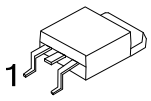
9A, 100V N-CHANNEL ENHANCEMENT MODE POWER MOSFET



TO-252

■ DESCRIPTION

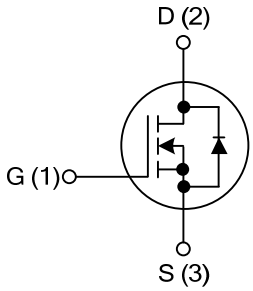
The UTC **18T10** is an N-channel enhancement mode Power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge, etc.

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

■ FEATURES

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

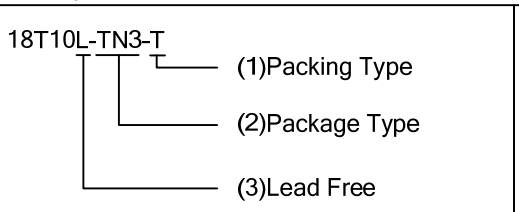
■ SYMBOL



■ 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



(1) T: Tube, R: Tape Reel

(2) TN3: TO-252

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

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°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°C	I_D	9	A
	V_{GS} @ 10V	T_C=100°C		5.6	A
	Pulsed (Note 1)		I_{DM}	30	A
Total Power Dissipation	T_C=25°C		P_D	27.8	W
	T_A=25°C			1.3	W
Junction Temperature			T_J	150	°C
Storage Temperature Range			T_{STG}	-55~+150	°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

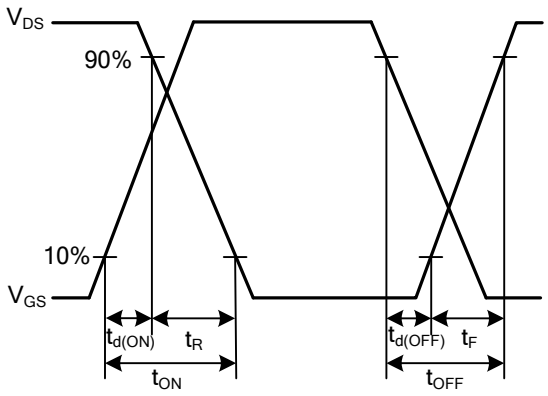
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	°C/W
Junction to Case	θ_{JC}	4.5	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

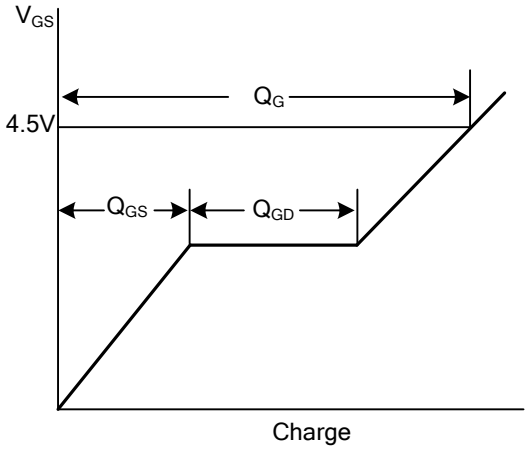
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=80V, V_{GS}=0V			25	μA
			V_{DS}=80V, V_{GS}=0V, T_J=125°C			250	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1		3	V
Static Drain-Source On-State Resistance (Note 3)		$R_{DS(ON)}$	V_{GS}=10V, I_D=5A			160	mΩ
			V_{GS}=4.5V, I_D=1A			440	mΩ
Forward Transconductance		g_{FS}	V_{DS}=10V, I_D=5A		5		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		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}=4.5V, V_{DS}=80V, I_D=5A		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}=30V, I_D=0.5A, R_G=25Ω, V_{GS}=10V		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=5A, V_{GS}=0V			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