



UT12N10

Preliminary

Power MOSFET

12 Amps, 100 Volts
N-CHANNEL POWER MOSFET

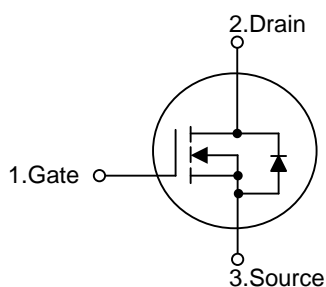
■ DESCRIPTION

The UTC **UT12N10** is an N-channel mode Power FET using UTC's advanced technology to provide customers with minimum on-state resistance by extremely high dense cell design. Moreover, it's good at handling high power and current.

■ FEATURES

- * 100V, 12A, $R_{DS(ON)} = 180m\Omega$ @ $V_{GS} = 10V$.
- * Be good at handling high power and current.
- * Very high dense cell design for super low $R_{DS(ON)}$.
- * Lead free product is acquired.

■ SYMBOL

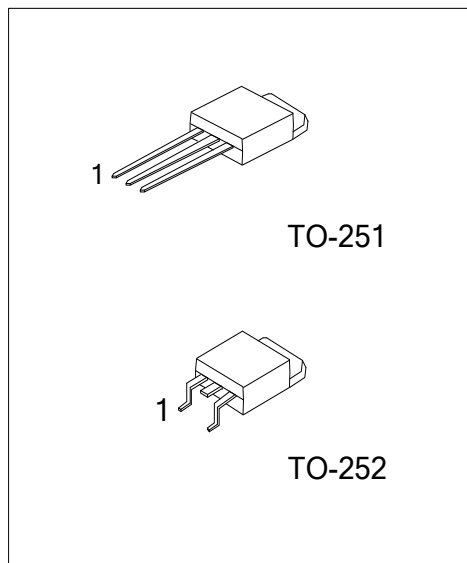


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT12N10L-TM3-T	UT12N10G-TM3-T	TO-251	G	D	S	Tube
UT12N10L-TN3-T	UT12N10G-TN3-T	TO-252	G	D	S	Tube
UT12N10L-TN3-R	UT12N10G-TN3-R	TO-252	G	D	S	Tape Reel

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

UT12N10L-TN3-T	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) TM3: TO-251, TN3: TO-252
	(3)Lead Free	(3) L: Lead Free, G: Halogen Free



■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	12	A
	Pulsed (Note 1)	I_{DM}	44	A
Power Dissipation		P_D	43	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.

Note:1 Repetitive Rating: Pulse width limited by maximum junction temperature

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 2)		θ_{JA}	50	$^{\circ}\text{C/W}$
Junction to Case		θ_{JC}	3.5	$^{\circ}\text{C/W}$

Note: θ_{JA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins.

θ_{JC} is guaranteed by design while θ_{JA} is determined by the user's board design.

Note:2 When mounted on a 1 in² pad of 2 oz copper

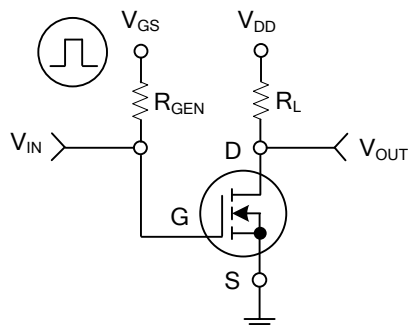
■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

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} =100V, V _{GS} =0V			1	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 (Note 1)							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2		4	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =6A		150	180	mΩ
Forward Transconductance		g _{FS}	V _{DS} =10V, I _D =6A		5		S
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		430		pF
Output Capacitance		C _{OSS}			90		pF
Reverse Transfer Capacitance		C _{RSS}			20		pF
SWITCHING PARAMETERS (Note 2)							
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =80V, I _D =12A		8	16	nC
Gate to Source Charge		Q _{GS}			1.5		nC
Gate to Drain Charge		Q _{GD}			2		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =80V, I _D =12A, V _{GS} =10V, R _G =9.1Ω		12	24	ns
Rise Time		t _R			7	14	ns
Turn-OFF Delay Time		t _{D(OFF)}			18	35	ns
Fall-Time		t _F			3	6	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				12	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =12A, V _{GS} =0V			1.2	V

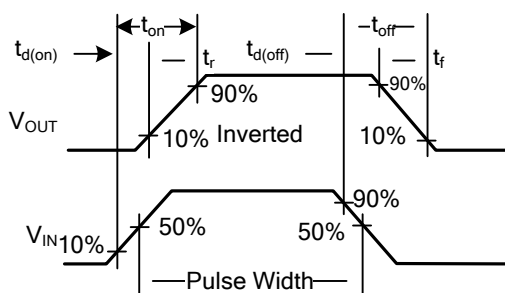
Note: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

2. Guaranteed by design, not subject to production testing.

■ TEST CIRCUITS AND WAVEFORMS



Switching Test Circuit



Switching Waveforms

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