



## UTT6N10

Power MOSFET

### 6.0A, 100V N-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **UTT6N10** is an N-channel enhancement mode Power FET, it uses UTC's advanced technology to provide customers a minimum on-state resistance, high switching speed and ultra low gate charge.

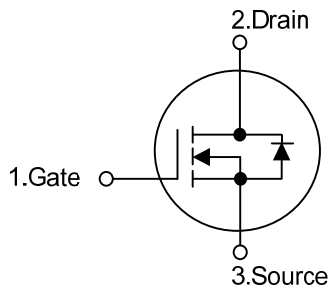
The UTC **UTT6N10** is usually used in DC-DC Conversion.

#### FEATURES

\*  $R_{DS(on)} < 200m\Omega @ V_{GS} = 10V, I_D = 3A$

\* High Switching Speed

#### SYMBOL



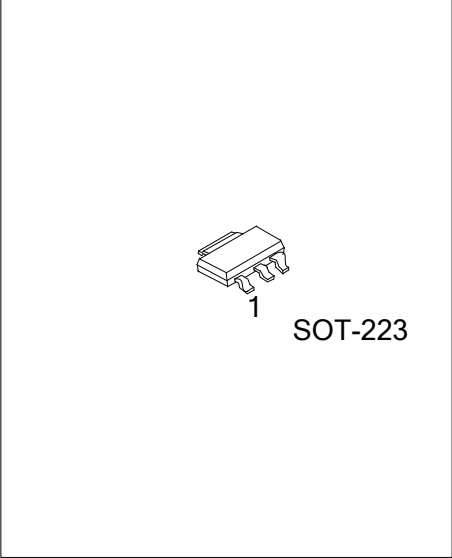
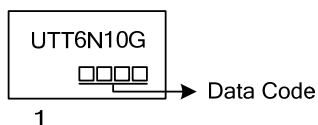
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UTT6N10G-AA3-R	SOT-223	G	D	S	Tape Reel

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

UTT6N10G-AA3-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AA3: SOT-223 (3) G: Halogen Free and Lead Free
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#### MARKING



■ 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		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	6	A
	Pulsed	$I_{DM}$	24	A
Power Dissipation	$T_A=25^{\circ}\text{C}$ (Note 1)	$P_D$	0.8	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 (Note 1)		$\theta_{JA}$	150	$^{\circ}\text{C}/\text{W}$
Junction to Case		$\theta_{JC}$	12	$^{\circ}\text{C}/\text{W}$

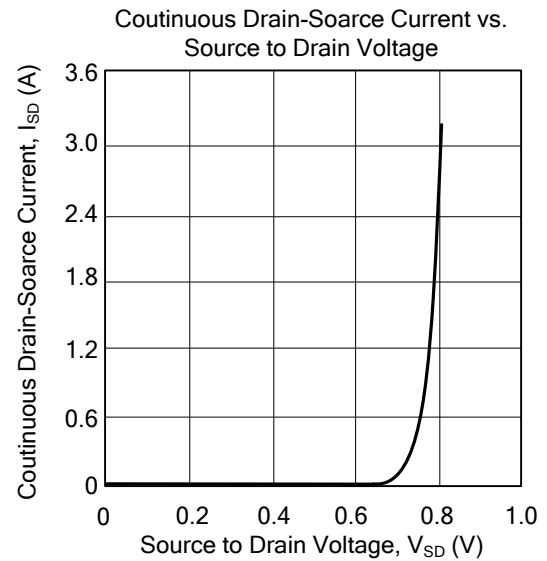
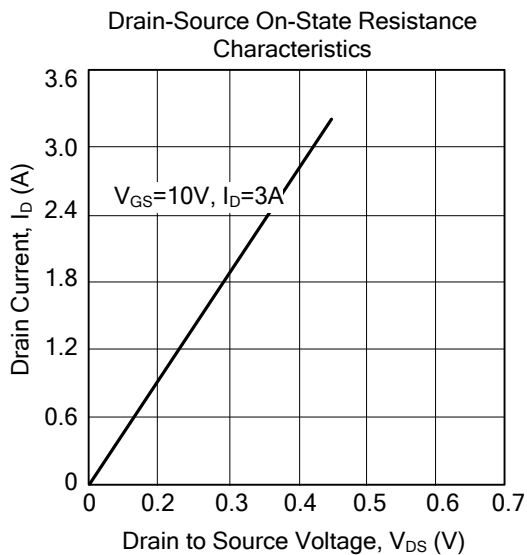
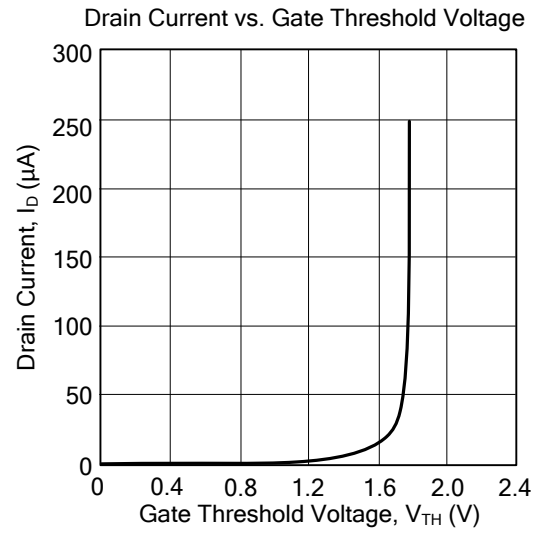
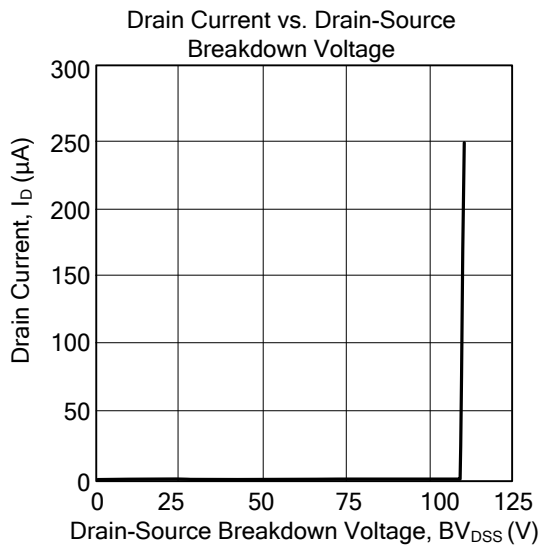
■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ , unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=80\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
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
<b>ON CHARACTERISTICS (Note 2)</b>							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=3\text{A}$		145	200	$\text{m}\Omega$
			$V_{GS}=4.5\text{V}$ , $I_D=1\text{A}$		155	225	$\text{m}\Omega$
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		700	900	pF
Output Capacitance		$C_{OSS}$			42	60	pF
Reverse Transfer Capacitance		$C_{RSS}$			10	15	pF
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge		$Q_G$	$V_{GS}=10\text{V}$ , $V_{DD}=50\text{V}$ , $I_D=1.3\text{A}$ $I_G=100\mu\text{A}$		23		nC
Gate to Source Charge		$Q_{GS}$			36		nC
Gate to Drain Charge		$Q_{GD}$			5		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=30\text{V}$ , $I_D=0.5\text{A}$ , $V_{GS}=10\text{V}$ , $R_{GEN}=25\Omega$		32		ns
Rise Time		$t_R$			28		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			220		ns
Fall-Time		$t_F$			41		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Maximum Body-Diode Continuous Current		$I_S$				6	A
Source Current Pulsed		$I_{SM}$				24	A
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_S=3.2\text{A}$ , $V_{GS}=0\text{V}$ (Note 2)		0.86	1.3	V

Notes: 1.  $\theta_{JA}$  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.

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

## TYPICAL CHARACTERISTICS



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