



## UTT120P06

Preliminary

Power MOSFET

### 120A, 60V P-CHANNEL POWER MOSFET

#### DESCRIPTION

The UTC **UTT120P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

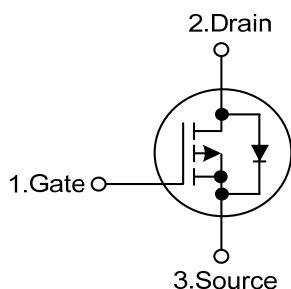
The UTC **UTT120P06** is suitable for low voltage and high speed switching applications

#### FEATURES

\*  $R_{DS(ON)} \leq 6.9m\Omega$  @  $V_{GS} = -10V$

\* High Switching Speed

#### SYMBOL



#### ORDERING INFORMATION

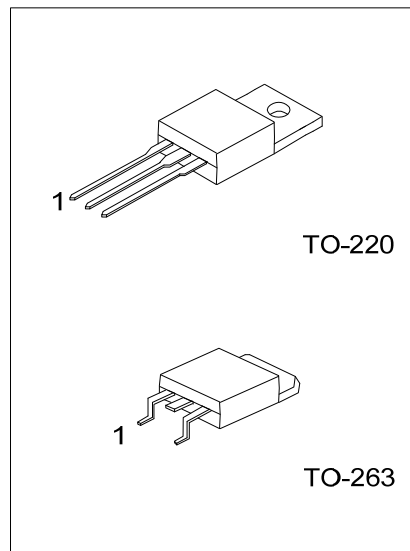
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT120P06L-TA3-T	UTT120P06G-TA3-T	TO-220	G	D	S	Tube
UTT120P06L-TQ2-T	UTT120P06G-TQ2-T	TO-263	G	D	S	Tube
UTT120P06L-TQ2-R	UTT120P06G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UTT120P06L-TA3-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) TA3: TO-220, TQ2: TO-263</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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#### MARKING INFORMATION

PACKAGE	MARKING
TO-220 TO-263	<p>UTC UTT120P06</p> <p>Lot Code</p> <p>1</p> <p>L: Lead Free G: Halogen Free Data Code</p>



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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			$V_{DSS}$	-60	V
Gate-Source Voltage			$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$T_C=25^{\circ}\text{C}$	$I_D$	-120	A
		$T_C=125^{\circ}\text{C}$		-95	A
	Pulsed		$I_{DM}$	-480	A
Single Pulsed Avalanche Energy		$L=0.1\text{mH}$	$E_{AS}$	281 (Note 2)	mJ
Power Dissipation		TO-220	$P_D$	192	W
		TO-263		178	
Junction Temperature			$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature			$T_{STG}$	-55~+150	$^{\circ}\text{C}$

Notes: 1. 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.

2. Duty cycle  $\leq 1\%$

■ THERMAL DATA

PARAMETER			SYMBOL	RATINGS	UNIT
Junction to Ambient			$\theta_{JA}$	62	$^{\circ}\text{C/W}$
Junction to Case	TO-220	$\theta_{JC}$		0.65	$^{\circ}\text{C/W}$
	TO-263			0.70	

■ 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 <sub>DSS</sub>	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V	-60			V
Drain-Source Leakage Current		I <sub>DSS</sub>	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V			-1	μA
			V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V, T <sub>C</sub> =125°C			-50	μA
Gate-Source Leakage Current	Forward	I <sub>GSS</sub>	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+100	nA
	Reverse		V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1		-3	V
Static Drain-Source On-State Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-30A		5.5	6.9	mΩ
			V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-30A		7.0	8.8	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-25V, f=1.0MHz		11400		pF
Output Capacitance		C <sub>OSS</sub>			1200		pF
Reverse Transfer Capacitance		C <sub>RSS</sub>			900		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q <sub>G</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-110A		230	345	nC
Gate to Source Charge		Q <sub>GS</sub>			50		nC
Gate to Drain Charge		Q <sub>GD</sub>			60		nC
Turn-ON Delay Time		t <sub>D(ON)</sub>	V <sub>DD</sub> =-30V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-110A, R <sub>G</sub> =2.5Ω, R <sub>L</sub> =0.27Ω		20		ns
Rise Time		t <sub>R</sub>			160	240	ns
Turn-OFF Delay Time		t <sub>D(OFF)</sub>			200		ns
Fall-Time		t <sub>F</sub>			240	360	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I <sub>S</sub>				-120	A
Maximum Body-Diode Pulsed Current		I <sub>SM</sub>				-480	A
Drain-Source Diode Forward Voltage		V <sub>SD</sub>	I <sub>S</sub> =-120A, V <sub>GS</sub> =0V		-1.0	-1.5	V
Body Diode Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> =-85A, dI <sub>F</sub> /dt=100A/μs		65	100	ns
Body Diode Reverse Recovery Charge		Q <sub>RR</sub>			0.14	0.32	nC

Notes: 1. Pulse test, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$

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