



UTT18P06

Preliminary

Power MOSFET

18.3A, 60V P-CHANNEL POWER MOSFET

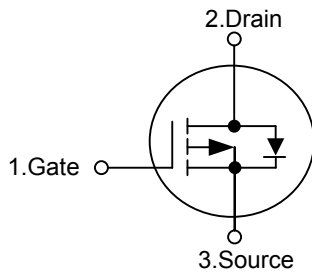
DESCRIPTION

The UTC **UTT18P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

FEATURES

- * $R_{DS(ON)}=48m\Omega$ $V_{GS}=-10V$, $I_D=-18.3A$
- * High Switching Speed

SYMBOL

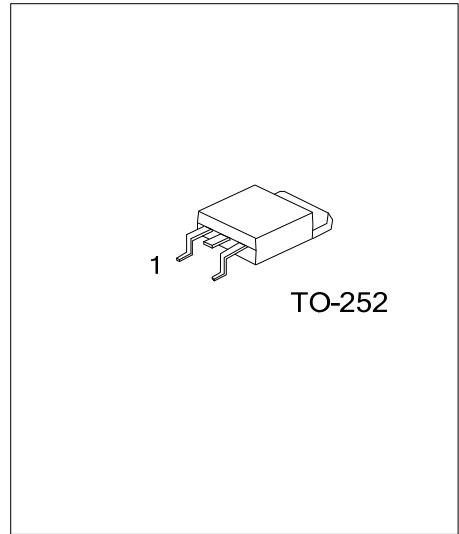


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT18P06L-TN3-R	UTT18P06G-TN3-R	TO-252	G	D	S	Tape Reel
UTT18P06L-TN3-T	UTT18P06G-TN3-T	TO-252	G	D	S	Tube

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

UTT18P06L-TN3-R 	(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free
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■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous $T_C=25^{\circ}\text{C}$	I_D	-18.3	A
	Pulsed	I_{DM}	-73.2	A
Single Pulsed Avalanche Current (L=0.1mH)		I_{AS}	-18.3	A
Single Pulsed Avalanche Energy (L=0.1mH) (Note 1)		E_{AS}	24.2	mJ
Power Dissipation (Note 2)		P_D	38.5	W
			2.3	W
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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	Steady state	θ_{JA}	55	$^{\circ}\text{C/W}$
Junction to Case		θ_{JC}	3.25	$^{\circ}\text{C/W}$

Notes: 1. Duty cycle $\leq 1\%$.
2. See SOA curve for voltage derating.

■ 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}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-60			V	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-60\text{V}$, $V_{GS}=0\text{V}$			-1	μA	
Gate-Source Leakage Current		I_{GSS}			+100	nA	
					$V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$	-100	nA
		$V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$					
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	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-18.3\text{A}$ (Note 1)		0.048	0.060	Ω	
On State Drain Current (Note 1)	$I_{D(ON)}$	$V_{GS}=-10\text{V}$, $V_{DS}=-5\text{V}$	-30			A	
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=-25\text{V}$, $f=1.0\text{MHz}$ (Note 2)		1140	1710	pF	
Output Capacitance	C_{OSS}				130		pF
Reverse Transfer Capacitance	C_{RSS}				90		pF

■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{GS}=-10V, V_{DS}=-30V,$ $I_D=-18.3A$ (Note 3)		26	40	nC
Gate to Source Charge	Q_{GS}			4.5		nC
Gate to Drain Charge	Q_{GD}			7.0		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-30V, I_D=-1A, R_G=2.5\Omega$ (Note 3)		40		ns
Rise Time	t_R			58		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			150		ns
Fall-Time	t_F			60		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_C=25^\circ C$) (Note 2)						
Maximum Body-Diode Continuous Current	I_S				-18.3	A
Maximum Body-Diode Pulsed Current	I_{SM}				-73.2	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_F=-18.3A, V_{GS}=0V$ (Note 1)		-1.0	-1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=-18.3A, di_F/dt=100A/\mu s$		14	61	ns

- Notes: 1. Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.
 2. Guaranteed by design, not subject to production testing.
 3. Independent of operating temperature.

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