



## UTT25P06

Power MOSFET

### -60V, -27.5A P-CHANNEL POWER MOSFET

#### DESCRIPTION

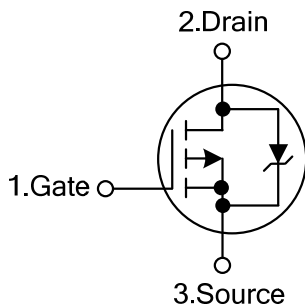
The UTC UTT25P06 is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance, and it can also withstand high energy in the avalanche.

This UTC UTT25P06 is suitable for power supplies, converters, PWM motor controls and bridge circuits, etc.

#### FEATURES

- \*  $V_{DS} = -60V$
- \*  $I_D = -27.5A$
- \*  $R_{DS(ON)} < 0.075\Omega @ V_{GS} = -10V, I_D = -12.5A;$
- \*  $R_{DS(ON)} < 0.082\Omega @ V_{GS} = -10V, I_D = -25A$
- \* High Switching Speed

#### SYMBOL

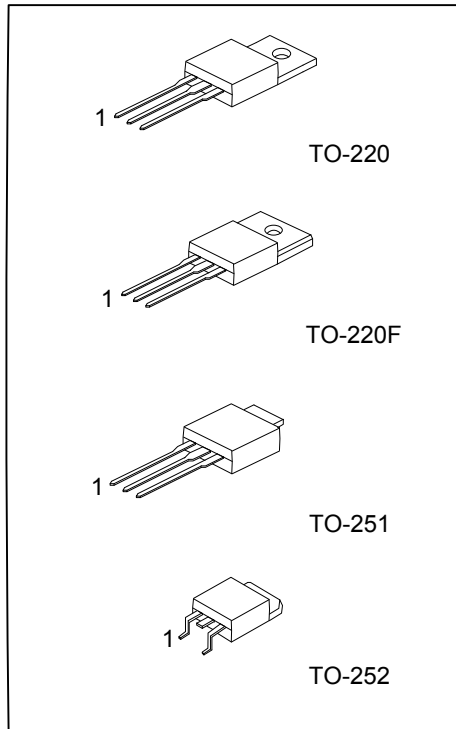


#### ORDERING INFORMATION

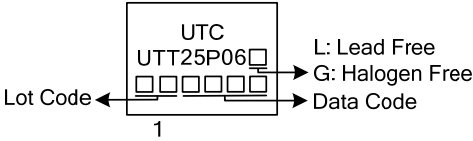
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT25P06L-TA3-T	UTT25P06G-TA3-T	TO-220	G	D	S	Tube
UTT25P06L-TF3-T	UTT25P06G-TF3-T	TO-220F	G	D	S	Tube
UTT25P06L-TM3-T	UTT25P06G-TM3-T	TO-251	G	D	S	Tube
UTT25P06L-TN3-R	UTT25P06G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UTT25P06L-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, TF3: TO-220F, TM3: TO-251, TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free</p>
--	--



MARKING



### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	-60	V
Gate-Source Voltage	Continuous	V <sub>GSS</sub>	±15	V
	Non-Repetitive (t <sub>p</sub> ≤10ms)	V <sub>GSM</sub>	±20	V
Drain Current	Continuous @ T <sub>A</sub> =25°C	I <sub>D</sub>	-27.5	A
	Pulsed (t <sub>p</sub> ≤10μs)	I <sub>DM</sub>	-80	A
Power Dissipation	@T <sub>A</sub> =25°C	TO-220/TO-220F	2	W
		TO-251/TO-252	1.25	W
Junction Temperature		T <sub>J</sub>	+175	°C
Storage Temperature		T <sub>STG</sub>	-55~+175	°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. When surface mounted to an FR4 board using 1" pad size (Cu Area 1.127 in<sup>2</sup>).

3. When surface mounted to an FR4 board using the minimum recommended pad size (Cu Area 0.412 in<sup>2</sup>).

### ■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F	θ <sub>JA</sub>	62.5	°C/W
	TO-251/TO-252		100	°C/W
Junction to Case	TO-220	θ <sub>JC</sub>	1.2	°C/W
	TO-220F		4.5	°C/W
	TO-251/TO-252		2.5	°C/W

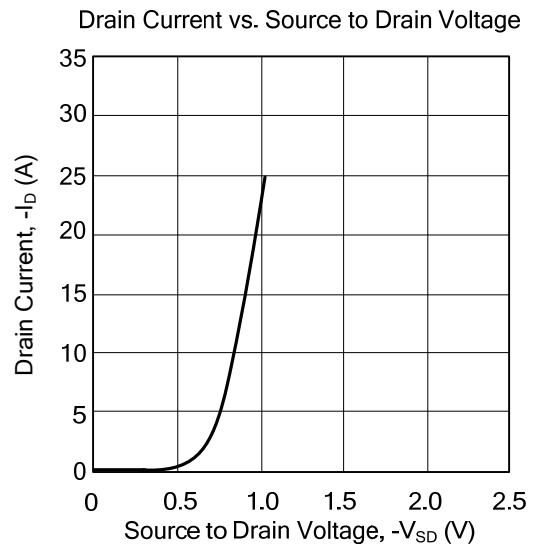
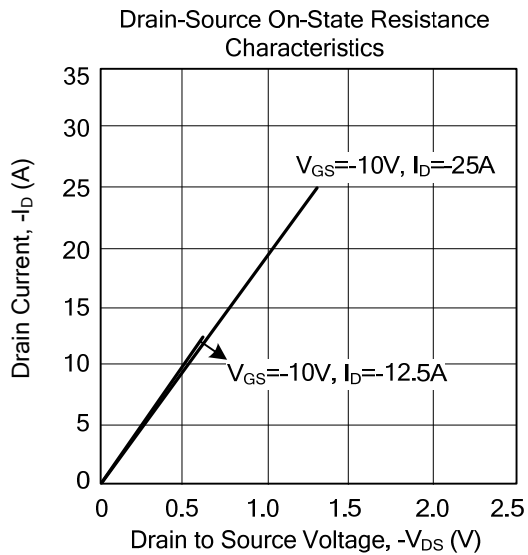
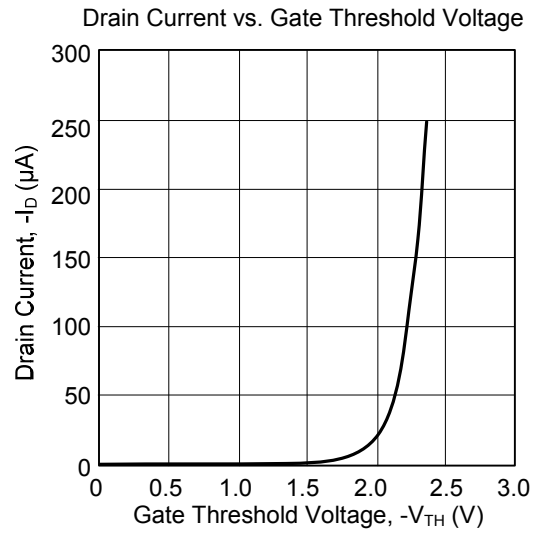
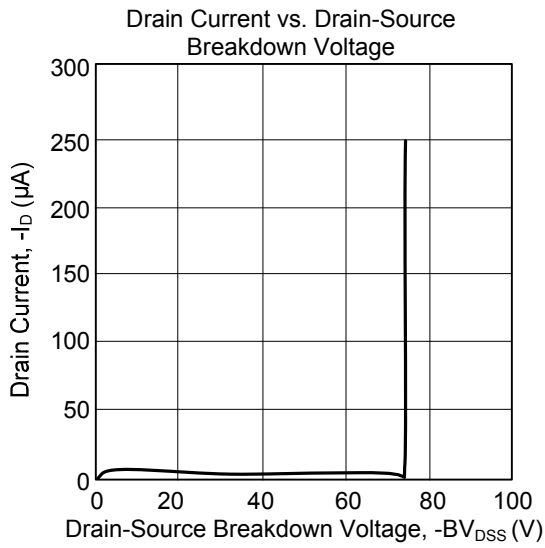
### ■ ELECTRICAL CHARACTERISTICS (T<sub>C</sub>=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage (Note 1)	BV <sub>DSS</sub>	I <sub>D</sub> =-250μA, V <sub>GS</sub> =0V	-60			V
		Positive Temperature Coefficient		64		mV/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-60V, T <sub>J</sub> =25°C			-10	μA
		V <sub>GS</sub> =0V, V <sub>DS</sub> =-60V, T <sub>J</sub> =150°C			-100	
Gate- Source Leakage Current	Forward	I <sub>GSS</sub>			+100	nA
	Reverse					
		V <sub>GS</sub> =-15V, V <sub>DS</sub> =0V			-100	nA
<b>ON CHARACTERISTICS (Note 1)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.2		-2.4	V
		Negative Threshold Temperature Coefficient		6.2		mV/°C
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-12.5A		0.05	0.075	Ω
		V <sub>GS</sub> =-10V, I <sub>D</sub> =-25A		0.055	0.082	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-25V, f=1.0MHz		1650	2200	pF
Output Capacitance	C <sub>OSS</sub>			140	250	pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			125	180	pF
<b>SWITCHING PARAMETERS (Note 1, 2)</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>GS</sub> =-10V, V <sub>DS</sub> =-48V, I <sub>D</sub> =-25A		155	200	nC
Gate to Source Charge	Q <sub>GS</sub>			26		nC
Gate to Drain Charge	Q <sub>GD</sub>			18		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> =-30V, I <sub>D</sub> =-1A, V <sub>GS</sub> =-10V, R <sub>G</sub> =9.1Ω		50	60	ns
Rise Time	t <sub>R</sub>			60	118	ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			320	480	ns
Fall-Time	t <sub>F</sub>			100	160	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 1)</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-25A, V <sub>GS</sub> =0V		-1.8	-2.5	V
		I <sub>S</sub> =-25 A, V <sub>GS</sub> =0V, T <sub>J</sub> =150°C		-1.4		
Body Diode Reverse Recovery Time	t <sub>RR</sub>	I <sub>S</sub> =-25A, V <sub>GS</sub> =0V, dI <sub>S</sub> /dt=100A/μs		70		ns
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>			0.2		μC

Notes: 1. Indicates Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

2. Switching characteristics are independent of operating junction temperatures.

■ TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.