



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

DESCRIPTION

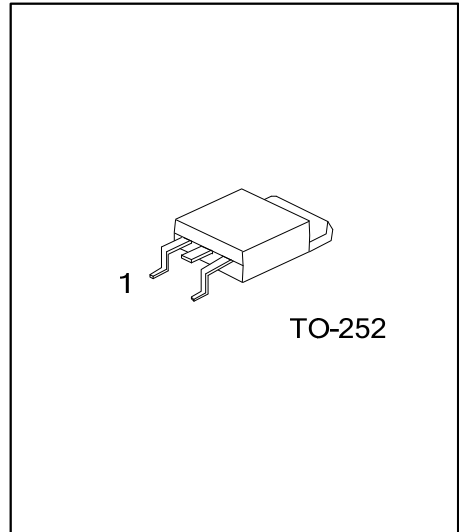
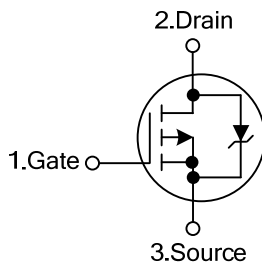
The UTC **UTT25P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance, and it can also withstand high energy in the avalanche.

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

FEATURES

- * $V_{DS} = -60V$
- * $I_D = -27.5A$
- * $R_{DS(ON)} = 0.065\Omega @ V_{GS} = -10V, I_D = -12.5A;$
 $R_{DS(ON)} = 0.070\Omega @ V_{GS} = -10V, I_D = -25A$
- * High Switching Speed

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT25P06L-TN3-R	UTT25P06G-TN3-R	TO-252	G	D	S	Tape Reel

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

UTT25P06L-TN3-R 	(1) R: Tape Reel (2) TN3: TO-252 (3) G: Halogen Free, L: Lead Free
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■ **ABSOLUTE MAXIMUM RATINGS** ($T_J=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	Continuous	± 15	V
	Non-Repetitive ($t_P \leq 10\text{ms}$)	± 20	V
Drain Current	Continuous @ $T_A=25^\circ\text{C}$	27.5	A
	Pulsed ($t_P \leq 10\mu\text{s}$)	80	A
Power Dissipation	P_D	120	W
Avalanche Energy ($V_{DD}=25\text{V}$, $V_{GS}=10\text{V}$, $I_{L(PK)}=20\text{A}$, $L=3\text{mH}$, $R_G=25\Omega$)	E_{AS}	600	mJ
Junction Temperature	T_J	+175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+175	$^\circ\text{C}$

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. When surface mounted to an FR4 board using 1" pad size (Cu Area 1.127 in²).

3. When surface mounted to an FR4 board using the minimum recommended pad size (Cu Area 0.412 in²).

■ **THERMAL CHARACTERISTICS**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	46.8 (Note 2)	$^\circ\text{C/W}$
		63.2 (Note 3)	
Junction to Case	θ_{JC}	1.25	$^\circ\text{C/W}$

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 (Note 1)	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-60			V
		Positive Temperature Coefficient		64		$\text{mV}/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{GS}=0\text{V}$, $V_{DS}=-60\text{V}$, $T_J=25^\circ\text{C}$			-10	μA
		$V_{GS}=0\text{V}$, $V_{DS}=-60\text{V}$, $T_J=150^\circ\text{C}$			-100	
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse					
					-100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-2.0	-2.8	-4.0	V
		Negative Threshold Temperature Coefficient		6.2		$\text{mV}/^\circ\text{C}$
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-12.5\text{A}$		0.065	0.075	Ω
		$V_{GS}=-10\text{V}$, $I_D=-25\text{A}$		0.070	0.082	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=-25\text{V}$, $f=1.0\text{MHz}$		1200	1680	pF
Output Capacitance	C_{OSS}			345	480	pF
Reverse Transfer Capacitance	C_{RSS}			90	180	pF
SWITCHING PARAMETERS (Note 1, 2)						
Total Gate Charge	Q_G	$V_{GS}=-10\text{V}$, $V_{DS}=-48\text{V}$, $I_D=-25\text{A}$		33	50	nC
Gate to Source Charge	Q_{GS}			6.5		nC
Gate to Drain Charge	Q_{GD}			15		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-30\text{V}$, $I_D=-25\text{A}$, $V_{GS}=-10\text{V}$, $R_G=9.1\Omega$		14	24	ns
Rise Time	t_R			72	118	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			43	68	ns
Fall-Time	t_F			190	320	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 3)						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-25\text{A}$, $V_{GS}=0\text{V}$		-1.8	-2.5	V
		$I_S=-25\text{A}$, $V_{GS}=0\text{V}$, $T_J=150^\circ\text{C}$		-1.4		
Body Diode Reverse Recovery Time	t_{RR}	$I_S=-25\text{A}$, $V_{GS}=0\text{V}$, $di_S/dt=100\text{A}/\mu\text{s}$		70		ns
Body Diode Reverse Recovery Charge	Q_{RR}			0.2		μC

Notes: 1. Indicates Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

2. Switching characteristics are independent of operating junction temperatures.

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