

**UTT65P04**

Preliminary

Power MOSFET**65A, 40V P-CHANNEL
POWER MOSFET**

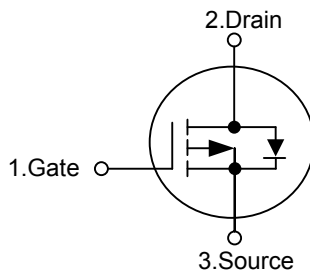
■ DESCRIPTION

The UTC **UTT65P04** 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.

■ FEATURES

- * $R_{DS(ON)} = 0.012\Omega$ @ $V_{GS} = -10V$, $I_D = -30A$
- * High Switching Speed

■ SYMBOL

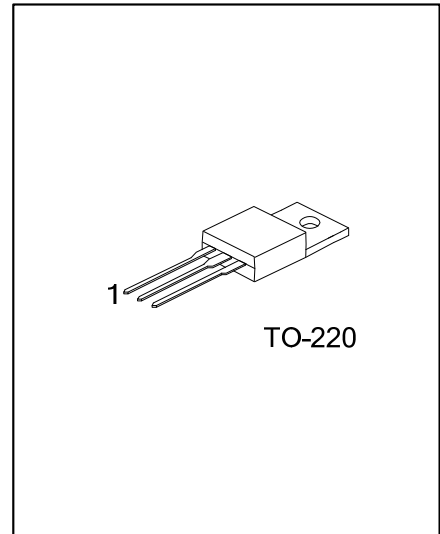


■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT65P04L-TA3-T	UTT65P04G-TA3-T	TO-220	G	D	S	Tube

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

UTT65P04L-TA3-T	
(1)Packing Type	(1) T: Tube
(2)Package Type	(2) TA3: TO-220
(3)Lead Free	(3) G: Halogen Free, L: Lead Free



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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	-40	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous ($T_J=175^{\circ}\text{C}$)	$T_C=25^{\circ}\text{C}$	I_D	-65	A
		$T_C=125^{\circ}\text{C}$		-37	A
		Pulsed		I_{DM}	-240
Avalanche Current			I_{AR}	-60	A
Repetitive Avalanche Energy (Note 2)			E_{AR}	180	mJ
Power Dissipation	$T_C=25^{\circ}\text{C}$		P_D	120 (Note 4)	W
Junction Temperature			T_J	-55~+175	°C
Storage Temperature			T_{STG}	-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. Duty cycle $\leq$ 1%.

3. When mounted on 1" square PCB (FR-4 material).

4. See SOA curve for voltage derating.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	1.25	$^{\circ}\text{C/W}$

■ 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 =-250μA, V _{GS} =0V	-40			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1	μA
			V _{DS} =-40V, V _{GS} =0V, T _J =125°C			-50	
			V _{DS} =-40V, V _{GS} =0V, T _J =175°C			-250	
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1		-3	V
Static Drain-Source On-State Resistance (Note 4)		R _{DS(ON)}	V _{GS} =-10V, I _D =-30A		0.012	0.015	Ω
			V _{GS} =-10V, I _D =-30A, T _J =125°C			0.024	
			V _{GS} =-10V, I _D =-30A, T _J =175°C			0.030	
			V _{GS} =-4.5V, I _D =-20A		0.018	0.023	
Forward Transconductance (Note 1)		g _{FS}	V _{DS} =-15V, I _D =-50A	20			S
On State Drain Current (Note 1)		I _{D(ON)}	V _{GS} =-10V, V _{DS} =-5V	-120			A
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		5400		pF
Output Capacitance		C _{OSS}			640		pF
Reverse Transfer Capacitance		C _{RSS}			300		pF
SWITCHING PARAMETERS (Note 2, 3)							
Total Gate Charge		Q _G	V _{GS} =-10V, V _{DS} =-20V, I _D =-65A		85	130	nC
Gate to Source Charge		Q _{GS}			25		nC
Gate to Drain Charge		Q _{GD}			15		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =-20V, I _D =-65A, V _{GEN} =-10V, R _L =0.3Ω, R _G =2.5Ω		15	25	ns
Rise Time		t _R			380	580	ns
Turn-OFF Delay Time		t _{D(OFF)}			75	115	ns
Fall-Time		t _F			140	210	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C =25°C) (Note 2)							
Maximum Body-Diode Continuous Current		I _S				-65	A
Maximum Body-Diode Pulsed Current		I _{SM}				-240	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _F =-65A, V _{GS} =0V		-1.2	-1.5	V
Body Diode Reverse Recovery Time		t _{RR}	I _F =-65A, di/dt=100A/μs		40	80	ns
Peak Reverse Recovery Current		I _{RM(REC)}			2.0	4	A
Body Diode Reverse Recovery Charge		Q _{RR}			0.04	0.1	μC

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

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