



UTT100P03

Preliminary

Power MOSFET

100A, 30V P-CHANNEL POWER MOSFET

DESCRIPTION

The UTC **UTT100P03** 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.

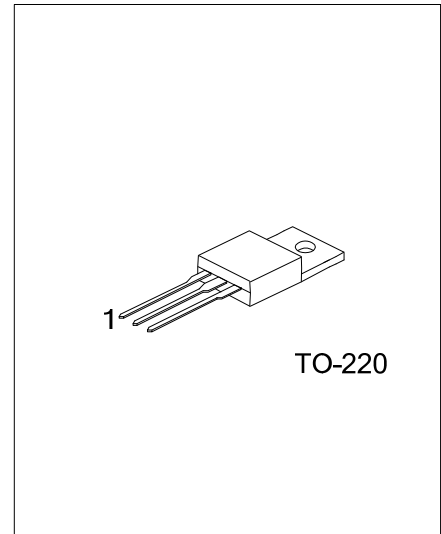
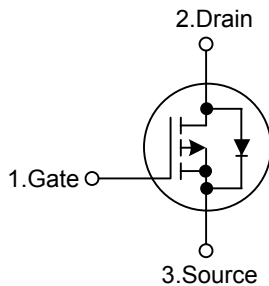
The UTC **UTT100P03** is suitable for low voltage and high speed switching applications

FEATURES

* $R_{DS(ON)}=3.3m\Omega @ V_{GS}=-10V, I_D=-80A$

* High Switching Speed

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT100P03L-TA3-T	UTT100P03G-TA3-T	TO-220	G	D	S	Tube

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

UTT100P03L-TA3-T 	(1) Packing Type (2) Package Type (3) Lead Free	(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free, L: Lead Free
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■ ABSOLUTE MAXIMUM RATINGS ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	-30	V	
Gate-Source Voltage		V_{GSS}	-16/+5	V	
Drain Current	Continuous (Note 2)	I_D	$T_C=25^\circ\text{C}, V_{GS}=-10\text{V}$	-100	A
			$T_C=100^\circ\text{C}, V_{GS}=-10\text{V}$	-100 (Note 3)	A
	Pulsed (Note 3)	I_{DM}	$T_C=25^\circ\text{C}$	-400	A
Single Pulsed Avalanche Energy		$I_D=-80\text{A}$	E_{AS}	450	mJ
Power Dissipation		$T_C=25^\circ\text{C}$	P_D	200	W
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. Current is limited by bondwire; with a $\theta_{JC} = 0.65^\circ\text{C/W}$ the chip is able to carry $I_D=-195\text{A}$ at 25°C .

3. Defined by design. Not subject to production test.

■ THERMAL DATA (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	0.65	$^\circ\text{C/W}$

■ 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}	$I_D=-250\mu\text{A}, V_{GS}=0\text{V}$	-30			V	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-30\text{V}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$		-0.1	-1	μA	
		$V_{DS}=-30\text{V}, V_{GS}=0\text{V}, T_C=125^\circ\text{C}$ (Note 1)		-10	-100	μA	
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+16\text{V}, V_{DS}=0\text{V}$		+10	+100	nA
	Reverse		$V_{GS}=-16\text{V}, V_{DS}=0\text{V}$		-10	-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-475\mu\text{A}$	-1	-1.5	-2.1	V	
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-50\text{A}$		4.8	7.6	m Ω	
		$V_{GS}=-10, I_D=-80\text{A}$		3.3	4.3	m Ω	
DYNAMIC PARAMETERS (Note 1)							
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$		7150	9300	pF	
Output Capacitance	C_{OSS}			2150	2800	pF	
Reverse Transfer Capacitance	C_{RSS}			1650	2500	pF	
SWITCHING PARAMETERS (Note 1)							
Total Gate Charge	Q_G	$V_{DD}=-24\text{V}, V_{GS}=0\sim 10\text{V}, I_D=-80\text{A}$		150	200	nC	
Gate to Source Charge	Q_{GS}			25	33	nC	
Gate to Drain Charge	Q_{GD}			55	82.5	nC	
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-15\text{V}, V_{GS}=-10\text{V}, I_D=-50\text{A}, R_G=6\Omega$		30		ns	
Rise Time	t_R			45		ns	
Turn-OFF Delay Time	$t_{D(OFF)}$			200		ns	
Fall-Time	t_F			180		ns	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current	I_S	$T_A = 25^\circ\text{C}$ (Note 1)			-100	A	
Maximum Body-Diode Pulsed Current	I_{SM}	$T_A = 25^\circ\text{C}$ (Note 1)			-400	A	
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=-80\text{A}, V_{GS}=0\text{V}$	-0.6	-1	-1.2	V	
Body Diode Reverse Recovery Time	t_{rr}	$V_R=-15\text{V}, I_F=-50\text{A},$		50		ns	
Body Diode Reverse Recovery Charge	Q_{RR}	$dI_F/dt=100\text{A}/\mu\text{s}$ (Note 1)		55		nC	

Notes: 1. Defined by design. Not subject to production test.

2. Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical in still air.

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