



## UTT50N05

Preliminary

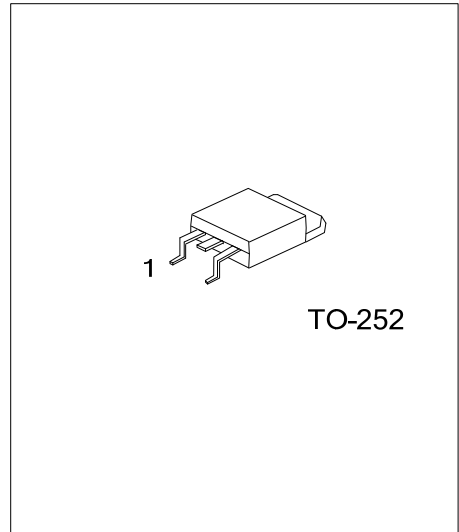
Power MOSFET

### 50A, 50V N-CHANNEL ENHANCEMENT MODE POWER MOSFET TRANSISTOR

#### DESCRIPTION

The UTC **UTT50N05** is an N-channel enhancement power MOSFET using UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , high switching speed, high current capacity and low gate charge.

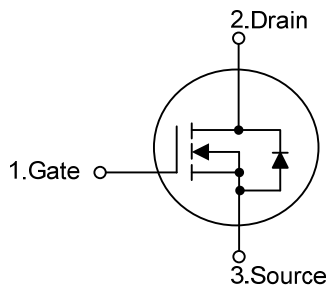
The UTC **UTT50N05** is suitable for motor control, AC-DC or DC-DC converters and audio amplifiers, etc.



#### FEATURES

- \*  $R_{DS(ON)}=18m\Omega @ V_{GS}=10V, I_D=20A$
- \* High Switching Speed
- \* High Current Capacity
- \* Low Gate Charge(typical 30nC)

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT50N05L-TN3-R	UTT50N05G-TN3-R	TO-252	G	D	S	Tape Reel

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

UTT50N05L-TN3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) TN3: TO-252
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	50	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	50	A
	Pulsed	$I_{DM}$	200	A
Avalanche Energy	Single Pulsed	$E_{AS}$	400	mJ
	Repetitive	$E_{AR}$	100	mJ
Power Dissipation		$P_D$	113	W
Junction Temperature		$T_J$	+150	$^{\circ}C$
Storage Temperature		$T_{STG}$	-55 ~ +150	$^{\circ}C$

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	$\theta_{JA}$	100	$^{\circ}C/W$
Junction to Case	$\theta_{JC}$	1.1	$^{\circ}C/W$

### ■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	50			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			10	$\mu A$
Gate- Source Leakage Current	Forward	$I_{GSS}$			+100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2		4	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		18	23	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$		900	1220	pF
Output Capacitance	$C_{OSS}$			430	550	pF
Reverse Transfer Capacitance	$C_{RSS}$			80	100	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10V, V_{DS}=30V, I_D=50A, I_G=3.33mA$		30	40	nC
Gate to Source Charge	$Q_{GS}$			9.6		nC
Gate to Drain Charge	$Q_{GD}$			10		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30V, I_D=15A, R_G=2.5\Omega, V_{GS}=10V$		40	60	ns
Rise Time	$t_R$			100	200	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			90	180	ns
Fall-Time	$t_F$			80	160	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$		50			A
Maximum Body-Diode Pulsed Current	$I_{SM}$		200			A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=50A, V_{GS}=0V$			1.5	V

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