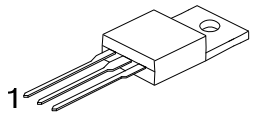
60A, 50V N-CHANNEL ENHANCEMENT MODE POWER MOSFET TRANSISTOR



TO-220

■ DESCRIPTION

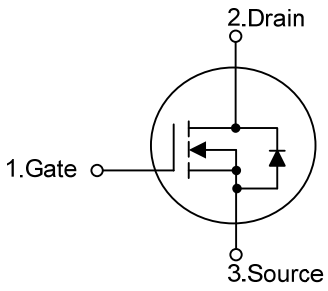
The UTC **UTT60N05** is an N-channel enhancement power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

The UTC **UTT60N05** is suitable for motor control, AC-DC or DC-DC converters and audio amplifiers, etc.

■ FEATURES

* $R_{DS(ON)}$=14mΩ @ V_{GS}=10V,I_D=20A
* High Switching Speed
* High Current Capacity
* Low Gate Charge(typical 39nC)

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT60N05L-TA3-T	UTT60N05G-TA3-T	TO-220	G	D	S	Tube

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

UTT60N05L-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

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	50	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	60	A
	Pulsed	I_{DM}	120	A
Avalanche Energy	Single Pulsed	E_{AS}	600	mJ
	Repetitive	E_{AR}	150	mJ
Power Dissipation		P_D	125	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	1	°C/W

■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	50			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=50V, V_{GS}=0V			1	μA
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	2		4	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		14	18	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		2000		pF
Output Capacitance		C_{OSS}			400		pF
Reverse Transfer Capacitance		C_{RSS}			115		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DS}=30V, I_D=60A, I_G=3.33mA		39	60	nC
Gate to Source Charge		Q_{GS}			12		nC
Gate to Drain Charge		Q_{GD}			10		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=30V, I_D=15A, R_G=4.7Ω, V_{GS}=10V		12	30	ns
Rise Time		t_R			11	30	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			25	50	ns
Fall-Time		t_F			15	30	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S		60			A
Maximum Body-Diode Pulsed Current		I_{SM}		120			A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=60A, V_{GS}=0V			1.6	V