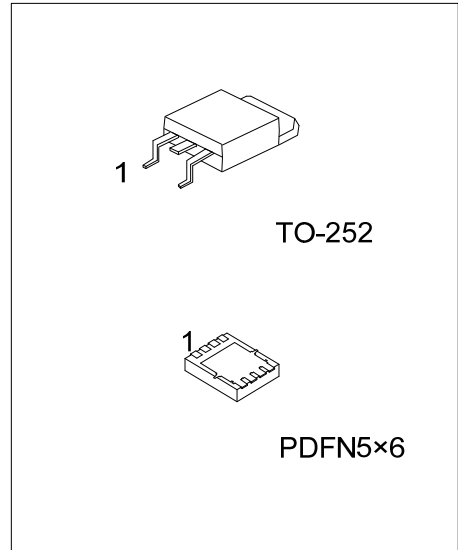




**UT3006**

**Power MOSFET**

**55A, 30V N-CHANNEL  
ENHANCEMENT MODE  
POWER MOSFET**



■ **DESCRIPTION**

The UTC **UT3006** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect  $R_{DS(ON)}$ , cost-effectiveness and high switching speed.

This UTC **UT3006** is suitable for DC/DC converters, etc.

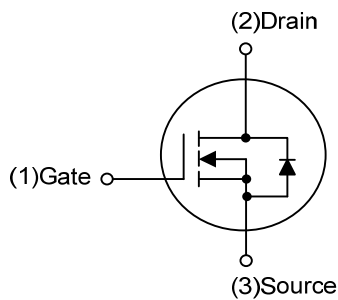
■ **FEATURES**

\*  $R_{DS(ON)} \leq 9.0 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=30\text{A}$

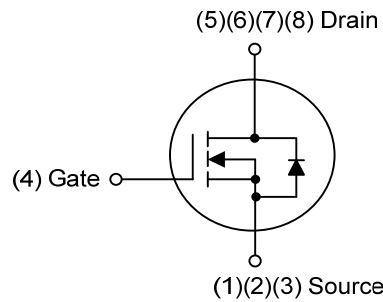
$R_{DS(ON)} \leq 16 \text{ m}\Omega @ V_{GS}=4.5\text{V}, I_D=20\text{A}$

\* High Switching Speed

■ **SYMBOL**



TO-252



PDFN5x6

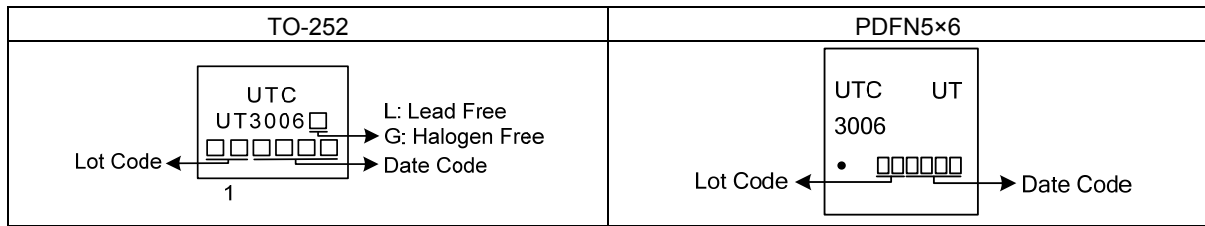
■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT3006L-TN3-R	UT3006G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT3006L-P5060-R	UT3006G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT3006G-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252, P5060: PDFN5x6</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
--------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------

■ MARKING



■ 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		$V_{GSS}$	$\pm 20$	V	
Drain Current	Continuous	$I_D$	$T_C=25^{\circ}\text{C}$	55	A
	$V_{GS}@10\text{V}$		$T_C=100^{\circ}\text{C}$	39	A
	Pulsed (Note 2)		$I_{DM}$	160	A
Avalanche Energy	Single Pulsed (Note 3)		$E_{AS}$	88	mJ
Power Dissipation ( $T_C=25^{\circ}\text{C}$ )		$P_D$	TO-252	54	W
			PDFN5x6	28	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. Pulse test.

3.  $L=0.1\text{mH}$ ,  $I_{AS}=42\text{A}$ ,  $V_{DD}=30\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	$\theta_{JA}$	50	$^{\circ}\text{C/W}$
	PDFN5x6		65	$^{\circ}\text{C/W}$
Junction to Case	TO-252	$\theta_{JC}$	2.3	$^{\circ}\text{C/W}$
	PDFN5x6		4.4	$^{\circ}\text{C/W}$

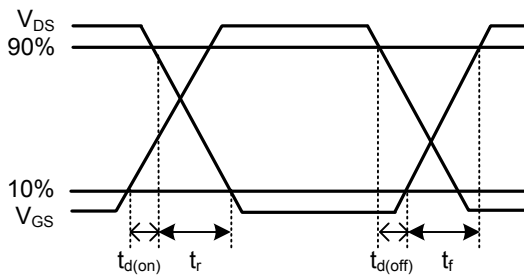
Note: Device mounted on FR-4 substrate  $P_c$  board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS ( $T_J=25^{\circ}\text{C}$ , unless otherwise specified)

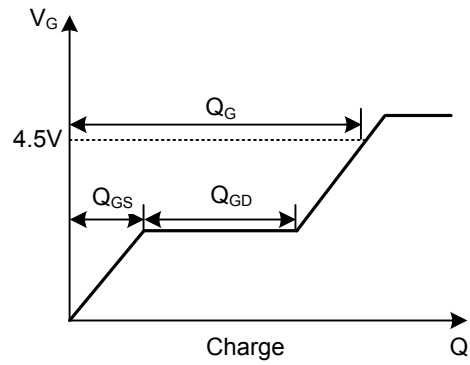
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate- Source Leakage Current	Forward	$I_{GSS}$			+100	nA
					Reverse	-100
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=30\text{A}$			9	m $\Omega$
		$V_{GS}=4.5\text{V}$ , $I_D=20\text{A}$			16	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		2200		pF
Output Capacitance	$C_{OSS}$			420		pF
Reverse Transfer Capacitance	$C_{RSS}$			365		pF
Gate Resistance	$R_G$	$f=1.0\text{MHz}$		1.9		$\Omega$
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note)	$Q_G$	$V_{GS}=4.5\text{V}$ , $V_{DS}=24\text{V}$ , $I_D=30\text{A}$		32		nC
Gate to Source Charge	$Q_{GS}$			8		nC
Gate to Drain Charge	$Q_{GD}$			18		nC
Turn-ON Delay Time (Note)	$t_{D(ON)}$	$V_{DS}=15\text{V}$ , $I_D=30\text{A}$ , $R_G=3.3\Omega$ , $V_{GS}=10\text{V}$ , $R_D=0.5\Omega$		14		ns
Rise Time	$t_R$			19		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			42		ns
Fall-Time	$t_F$			35		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				55	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				160	A
Drain-Source Diode Forward Voltage (Note)	$V_{SD}$	$I_S=30\text{A}$ , $V_{GS}=0\text{V}$			1.2	V

Note: Pulse test.

## ■ TEST CIRCUITS AND WAVEFORMS

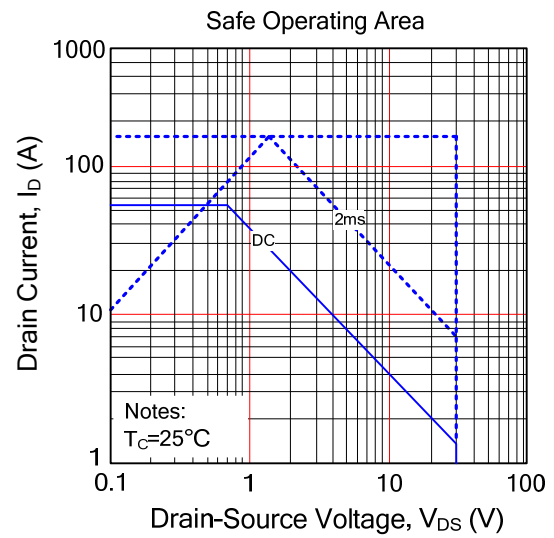
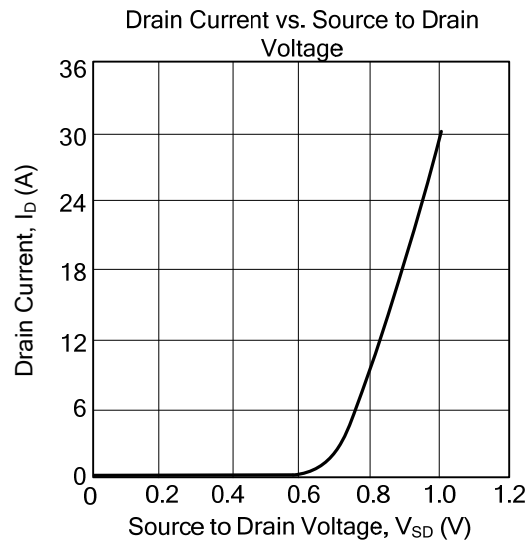


Switching Time Waveform



Gate Charge Waveform

■ TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.