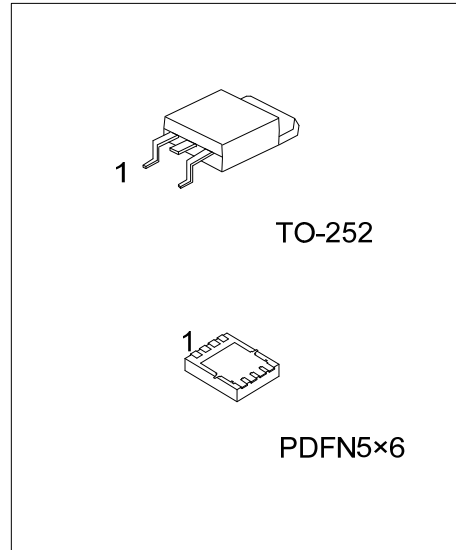




UT3006

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.

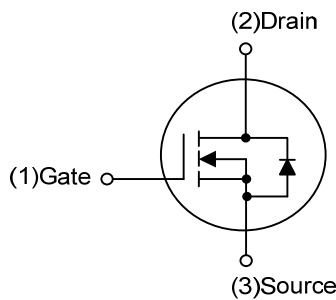
■ **FEATURES**

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

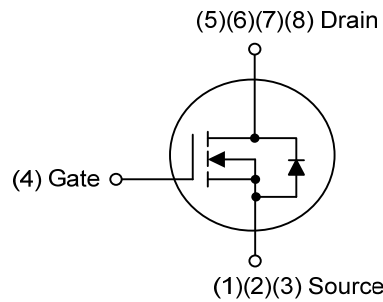
$R_{DS(ON)} \leq 16 \text{ m}\Omega @ V_{GS}=4.5\text{V}, I_D=20\text{A}$

* High Switching Speed

■ **SYMBOL**



TO-252



PDFN5x6

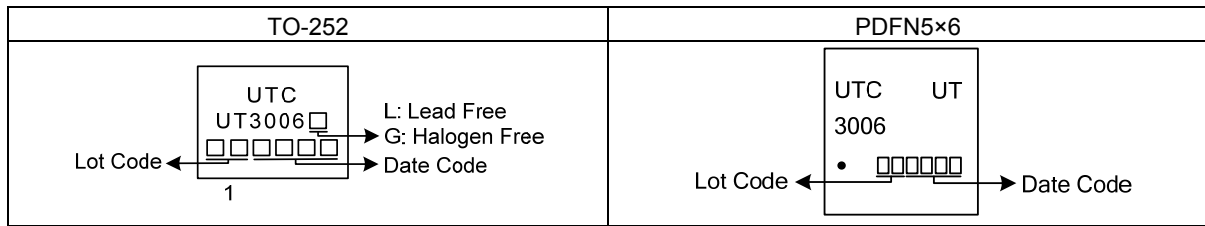
■ **ORDERING INFORMATION**

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>
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■ 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}	± 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	θ_{JA}	50	$^{\circ}\text{C/W}$
	PDFN5x6		65	$^{\circ}\text{C/W}$
Junction to Case	TO-252	θ_{JC}	2.3	$^{\circ}\text{C/W}$
	PDFN5x6		4.4	$^{\circ}\text{C/W}$

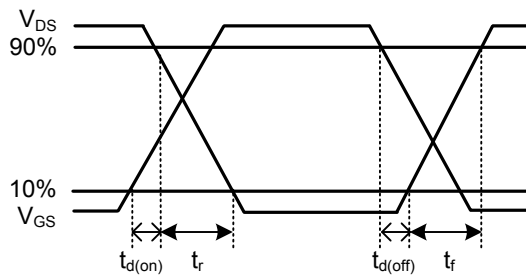
Note: Device mounted on FR-4 substrate P_c board, 2oz copper, with 1inch square copper plate.

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

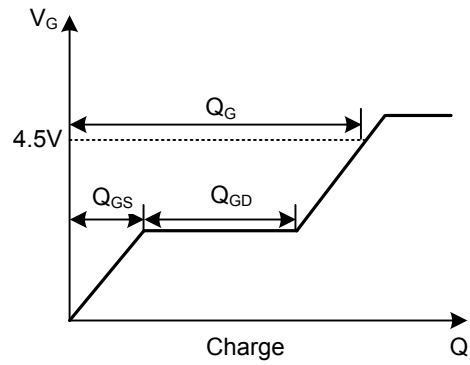
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			10	μA
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
					Reverse	-100
ON CHARACTERISTICS						
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 Ω
		$V_{GS}=4.5\text{V}$, $I_D=20\text{A}$			16	m Ω
DYNAMIC PARAMETERS						
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		Ω
SWITCHING PARAMETERS						
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
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
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

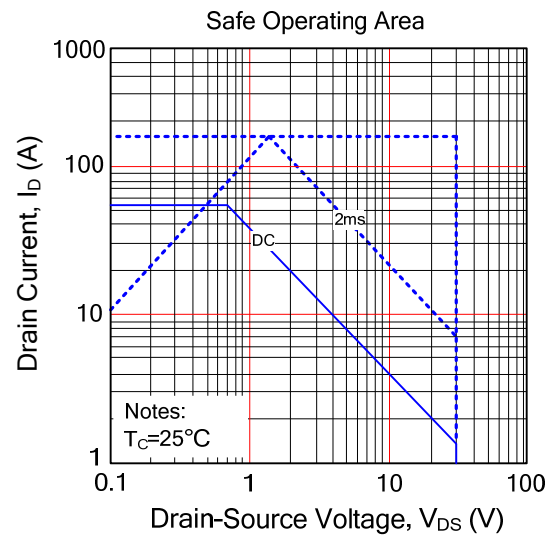
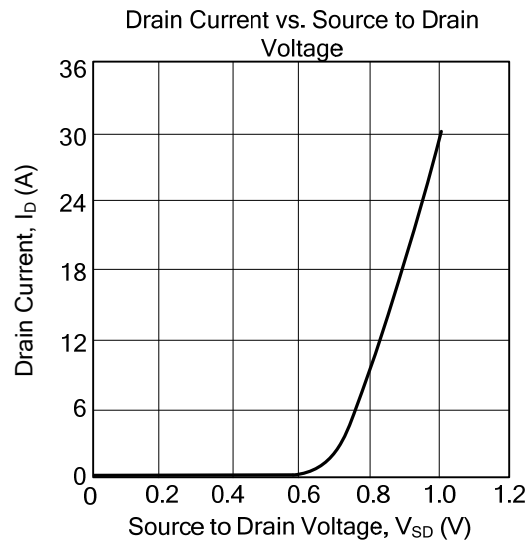


Switching Time Waveform



Gate Charge Waveform

■ TYPICAL CHARACTERISTICS



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