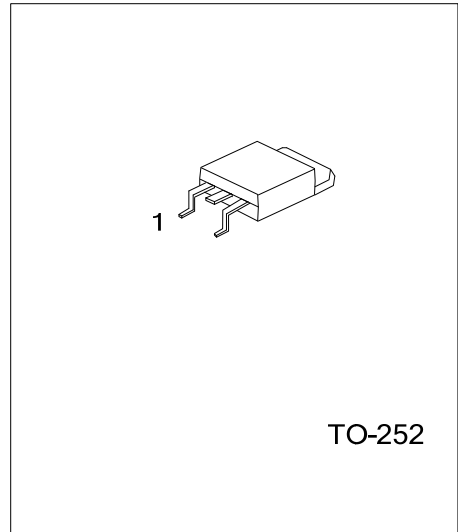




**55A, 30V N-CHANNEL
ENHANCEMENT MODE POWER
MOSFET**



■ DESCRIPTION

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

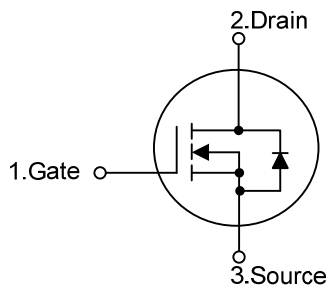
This UTC **UT3006** is suitable for DC/DC converters, etc.

■ FEATURES

* $R_{DS(ON)} < 9m\Omega @ V_{GS}=10V, I_D=30A$

* High Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3006L-TN3-R	UT3006G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UT3006L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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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}	± 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
Power Dissipation ($T_C=25^\circ\text{C}$)		P_D	50	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.

■ THERMAL CHARACTERISTICS

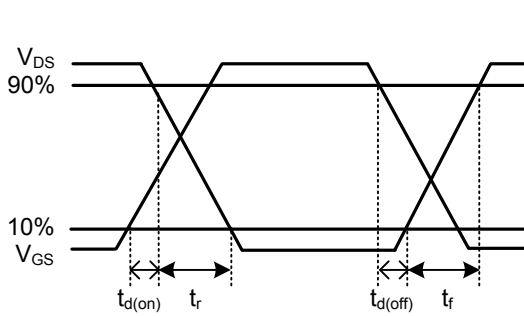
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	3	$^\circ\text{C/W}$

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

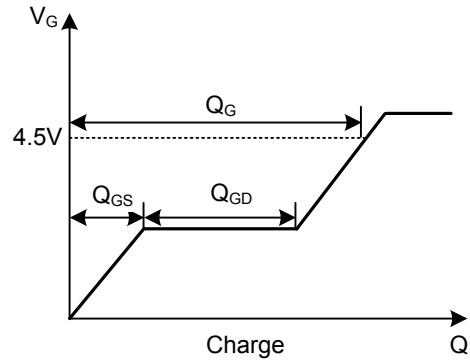
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			10	μA
Gate- Source Leakage Current	Forward	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=+20\text{V}$		+100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1		3	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
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=30\text{A}$		42		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		700	1120	pF
Output Capacitance	C_{OSS}			215		pF
Reverse Transfer Capacitance	C_{RSS}			155		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note)	Q_G	$V_{GS}=4.5\text{V}$, $V_{DS}=24\text{V}$, $I_D=30\text{A}$		13	21	nC
Gate to Source Charge	Q_{GS}			2.5		nC
Gate to Drain Charge	Q_{GD}			9.5		nC
Gate Resistance	R_G	$f=1.0\text{MHz}$		1.9		Ω
Turn-ON Delay Time (Note)	$t_{D(ON)}$	$V_{DS}=15\text{V}$, $I_D=30\text{A}$, $R_G=3.3\Omega$, $V_{GS}=10\text{V}$, $R_D=0.5\Omega$		8		ns
Rise Time	t_R			85		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20.5		ns
Fall-Time	t_F			10		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage (Note)	V_{SD}	$I_S=30\text{A}$, $V_{GS}=0\text{V}$			1.2	V
Body Diode Reverse Recovery Time (Note)	t_{rr}	$I_S=10\text{A}$, $V_{GS}=0\text{V}$, $di/dt=100\text{A}/\mu\text{s}$		23		ns
Body Diode Reverse Recovery Charge	Q_{RR}			14		μC

Note: Pulse test.

■ TEST CIRCUITS AND WAVEFORMS



Switching Time Waveform



Gate Charge Waveform

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