



### P-CHANNEL ENHANCEMENT MODE POWER MOSFET

#### DESCRIPTION

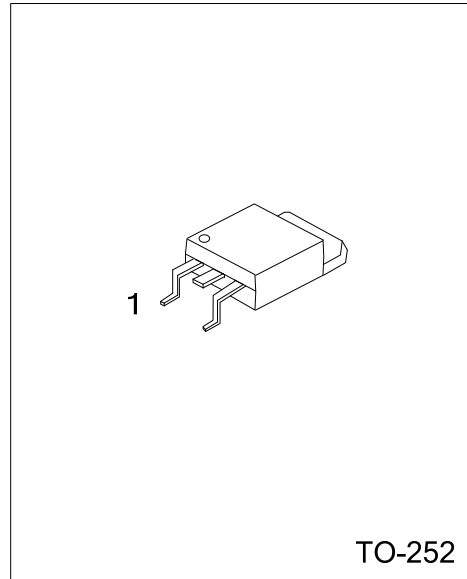
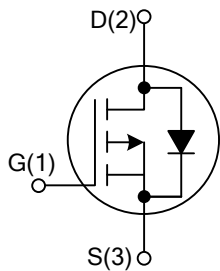
The UTC **UT3310** is a P-channel enhancement mode Power MOSFET. The UTC **UT3310** uses advanced technology to provide customers with fast switching, low on-resistance and cost-effectiveness.

The UTC **UT3310** is generally applied in low voltage and battery power applications.

#### FEATURES

- \* Gate Drive Capability: 2.5V
- \* Simple Drive Requirement

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT3310G-TN3-R	TO-252	G	D	S	Tape Reel

<p>UT3310G-TN3-R</p>	<p>(1) R: Tape &amp; Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain to Source Voltage	$V_{DSS}$	-20	V
Gate to Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current ( $T_A = 25^\circ\text{C}$ , $V_{GS} = 10\text{V}$ )	$I_D$	-10	A
Pulsed Drain Current	$I_{DM}$	-24	A
Total Power Dissipation ( $T_A = 25^\circ\text{C}$ )	$P_D$	25	W
Linear Derating Factor		0.01	W/ $^\circ\text{C}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Ambient Operating Temperature	$T_{OPR}$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

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	$\theta_{JA}$	110	$^\circ\text{C}/\text{W}$
Junction to Case	$\theta_{JC}$	5.0	$^\circ\text{C}/\text{W}$

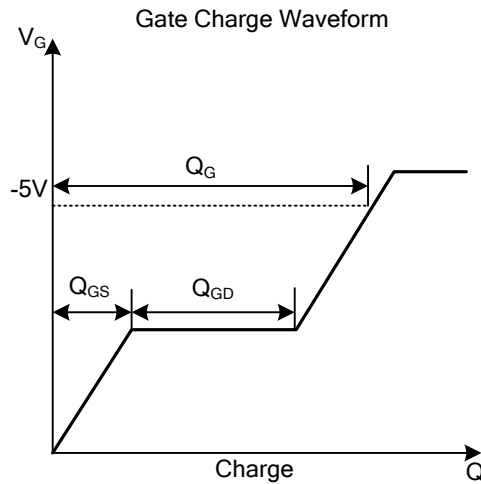
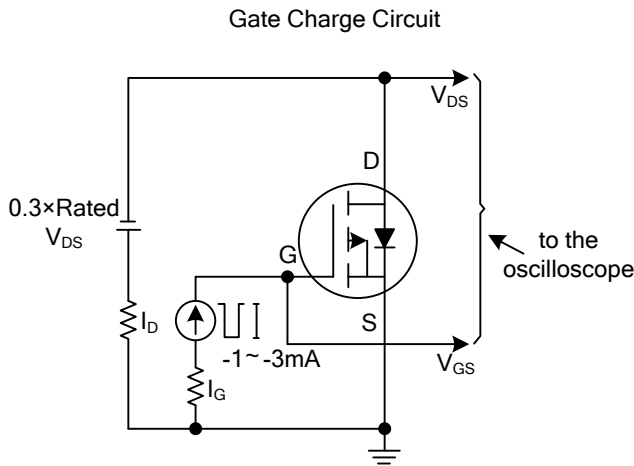
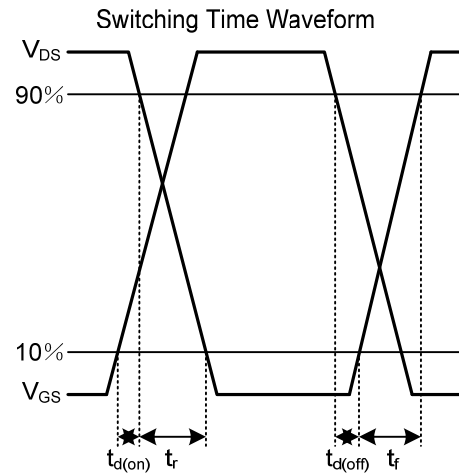
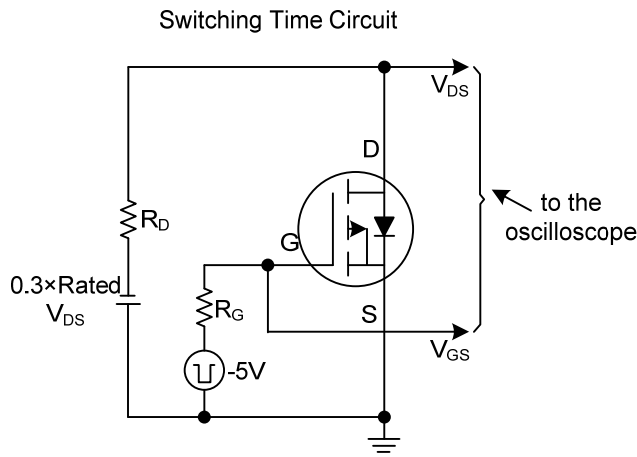
### ■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{V}$ , $I_D = -250\mu\text{A}$	-20			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D = -1\text{mA}$		-0.1		V/ $^\circ\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = -20\text{V}$ , $V_{GS} = 0\text{V}$			-1	$\mu\text{A}$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 12\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}$ , $I_D = -250\mu\text{A}$	-0.5			V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -4.5\text{V}$ , $I_D = -2.8\text{A}$			150	m $\Omega$
		$V_{GS} = -2.5\text{V}$ , $I_D = -2.0\text{A}$			250	m $\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = -6\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1.0\text{MHz}$		300		pF
Output Capacitance	$C_{OSS}$			180		pF
Reverse Transfer Capacitance	$C_{RSS}$			60		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge (Note2)	$Q_G$	$V_{DS} = -6\text{V}$ , $V_{GS} = -5\text{V}$ , $I_D = -2.8\text{A}$		6		nC
Gate-Source Charge	$Q_{GS}$			1.5		nC
Gate-Drain Charge	$Q_{GD}$			0.6		nC
Turn-ON Delay Time (Note2)	$t_{D(ON)}$	$V_{DS} = -6\text{V}$ , $V_{GS} = -5\text{V}$ , $I_D = -1\text{A}$ $R_G = 6\Omega$ , $R_D = 6\Omega$		25		ns
Turn-ON Rise Time	$t_R$			60		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			70		ns
Turn-OFF Fall Time	$t_F$			60		ns
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Continuous Source Current ( Body Diode )	$I_S$	$V_D = V_G = 0\text{V}$ , $V_S = -1.2\text{V}$			-10	A
Pulsed Source Current ( Body Diode )	$I_{SM}$	(Note1)			-24	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S = -10\text{A}$ , $V_{GS} = 0\text{V}$ (Note2)			-1.2	V

Notes: 1. Pulse width limited by safe operating area.

2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

■ TYPICAL CHARACTERISTICS



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