

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

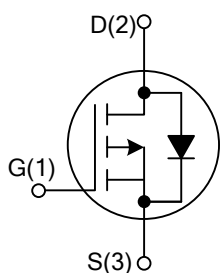
The UTC **UT3310** is a P-channel enhancement mode Power MOSFET. The UTC **UT3310** uses advanced technology to provide customers with fast switching, low on-resistance and cost-effectiveness.

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

FEATURES

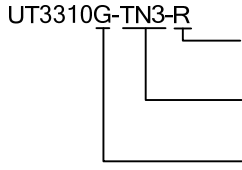
- * Gate Drive Capability: 2.5V
- * Simple Drive Requirement

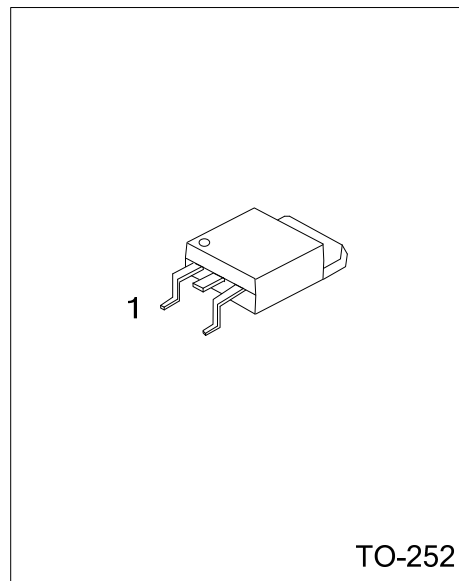
SYMBOL



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

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

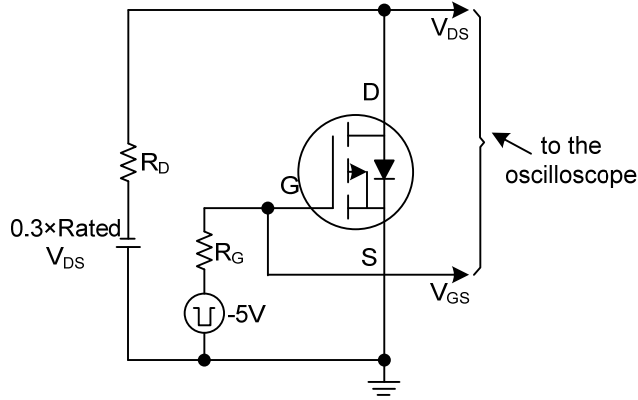
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = -250\mu\text{A}$	-20			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D = -1\text{mA}$		-0.1		V/ $^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 12\text{V}$			± 100	nA
ON CHARACTERISTICS						
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 Ω
		$V_{GS} = -2.5\text{V}$, $I_D = -2.0\text{A}$			250	m Ω
DYNAMIC PARAMETERS						
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
SWITCHING PARAMETERS						
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
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
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.

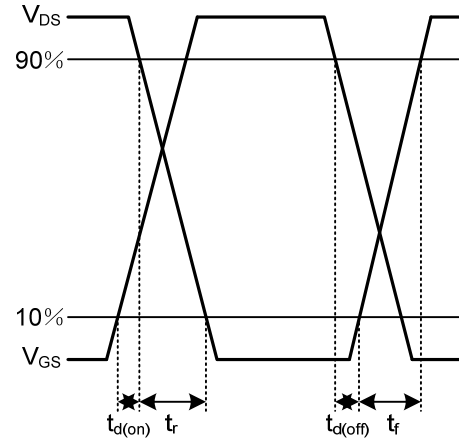
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

■ TYPICAL CHARACTERISTICS

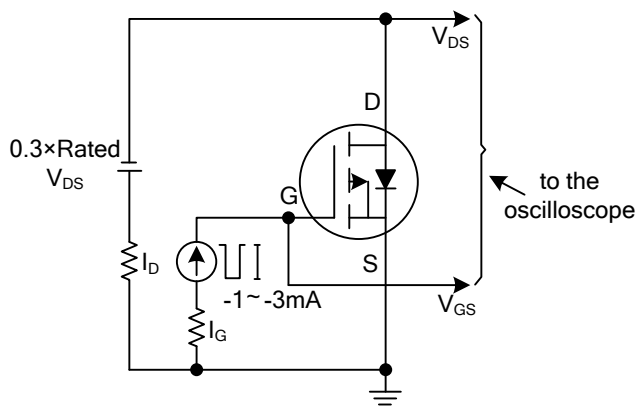
Switching Time Circuit



Switching Time Waveform



Gate Charge Circuit



Gate Charge Waveform

