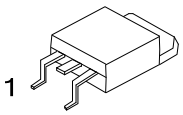
UT3310

Power MOSFET

P-CHANNEL ENHANCEMENT MODE POWER MOSFET



TO-252

DFN3030-8

■ DESCRIPTION

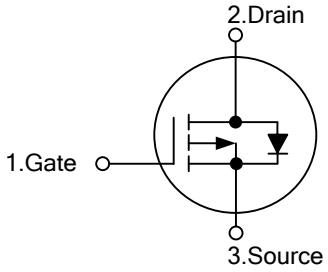
The UTC **UT3310** is a P-channel enhancement mode Power MOSFET. The UTC **UT3310** uses advanced technology to provide customers with fast switching, low on-resistance and cost-effectiveness.

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

■ FEATURES

* Gate Drive Capability: 2.5V
* Simple Drive Requirement

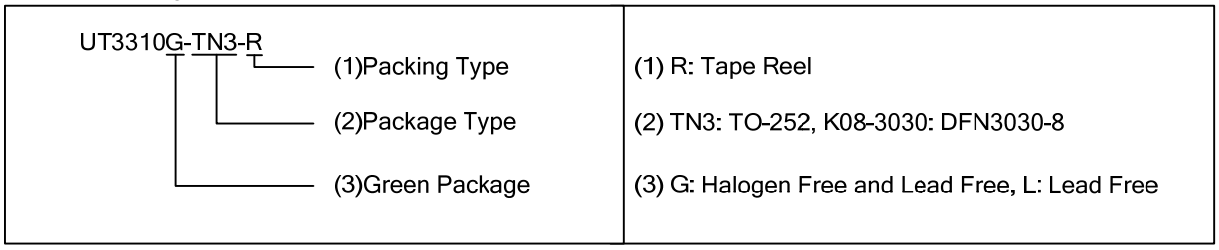
■ SYMBOL



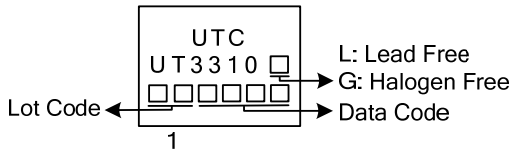
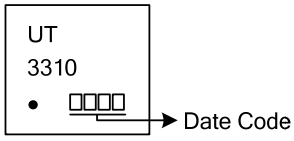
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT3310L-TN3-R	UT3310G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT3310L-K08-3030-R	UT3310G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel

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



■ MARKING

TO-252	DFN3030-8
	

■ 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°C, V_{GS}=10V)		I_D	-10	A
Pulsed Drain Current		I_{DM}	-24	A
Total Power Dissipation (T_A =25°C)	TO-252	P_D	1.13	W
	DFN3030-8		3.2	W
Linear Derating Factor			0.01	W/°C
Junction Temperature		T_J	150	°C
Ambient Operating Temperature		T_{OPR}	-55 ~ +150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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	TO-252	θ_{JA}	110	°C/W
	DFN3030-8		39	°C/W
Junction to Case	TO-252	θ_{JC}	5.0	°C/W
	DFN3030-8		6	°C/W

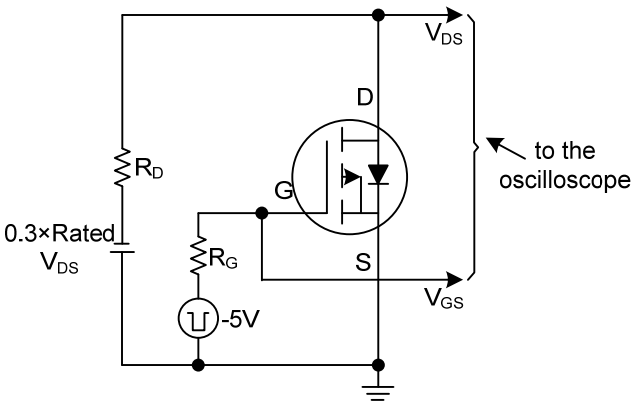
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-20			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=-1mA		-0.1		V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V ,V_{GS}=±12V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=-250μA	-0.5			V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.8A			150	mΩ
		V_{GS}=-2.5V, I_D=-2.0A			250	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-6V,V_{GS}=0V,f =1.0MHz		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}=-6V, V_{GS}=-5V, I_D=-2.8A		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}=-6V,V_{GS}=-5V, I_D=-1A R_G=6Ω, R_D=6Ω		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=0V , V_S=-1.2V			-10	A
Pulsed Source Current (Body Diode)	I_{SM}	(Note1)			-24	A
Drain-Source Diode Forward Voltage	V_{SD}	I_S =-10A, V_{GS}=0V (Note2)			-1.2	V

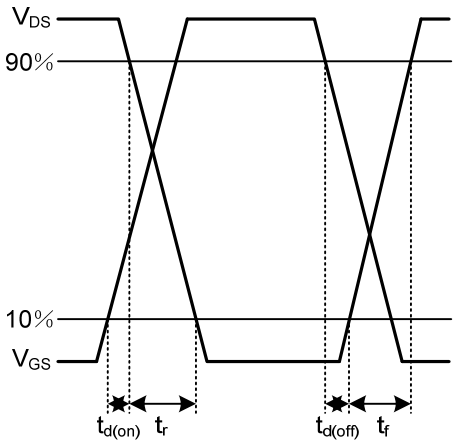
Notes:1. Pulse width limited by safe operating area.
2. Pulse width ≤300us , duty cycle ≤2%.

■ TYPICAL CHARACTERISTICS

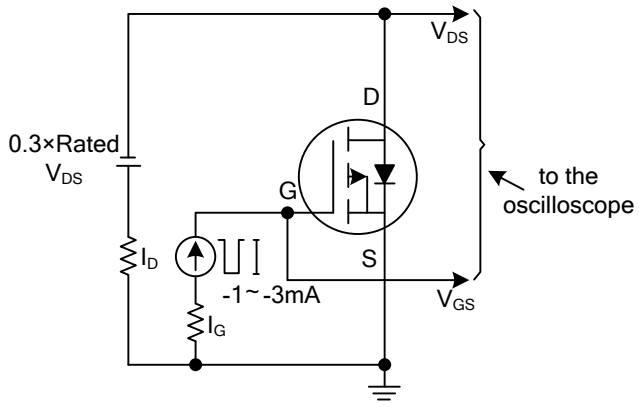
Switching Time Circuit



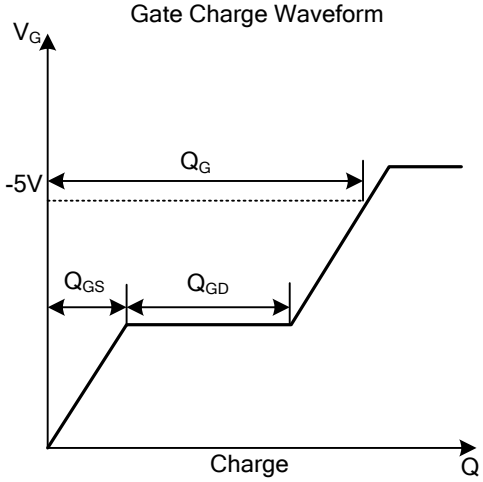
Switching Time Waveform



Gate Charge Circuit

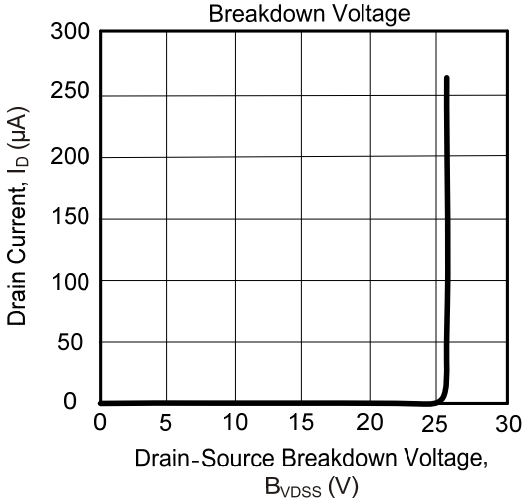


Gate Charge Waveform

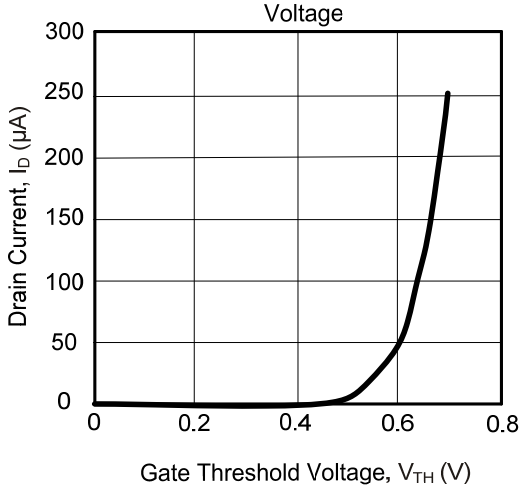


■ TYPICAL CHARACTERISTICS

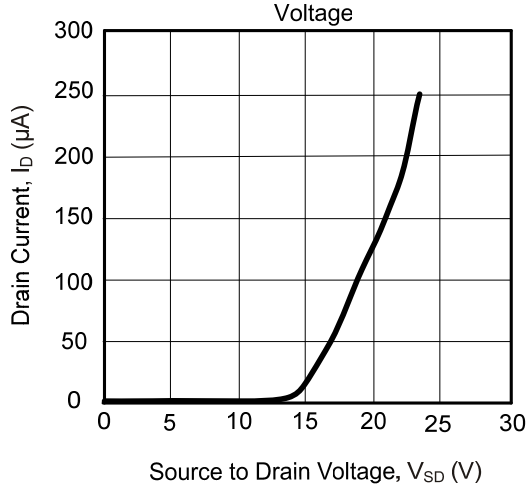
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain Current vs. Source to Drain Voltage



Drain-Source On-State Resistance Characteristics