



**UTN6266**

Preliminary

**Power MOSFET**

**30A, 60V N-CHANNEL TRENCH MOSFET**

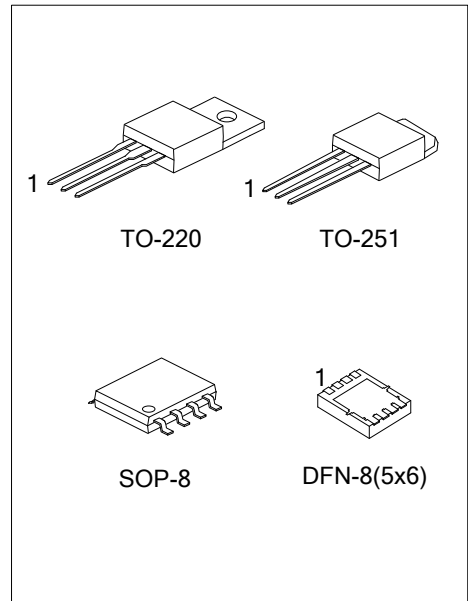
■ DESCRIPTION

The UTC **UTN6266** is an N-Channel trench mosfet, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

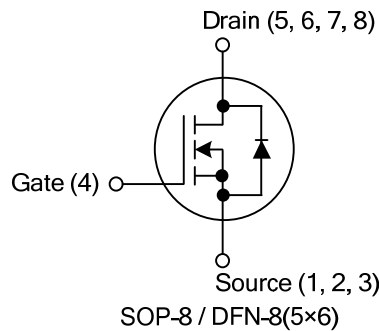
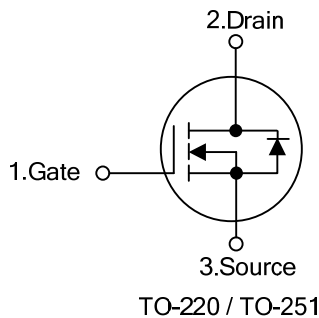
The UTC **UTN6266** is suitable for Synchronous Rectification in DC/DC and AC/DC Converters and industrial and Motor Drive applications.

■ FEATURES

- \*  $R_{DS(ON)} < 15m\Omega$  @  $V_{GS}=10V, I_D=20A$
- \*  $R_{DS(ON)} < 19m\Omega$  @  $V_{GS}=4.5V, I_D=18A$
- \* Low gate charge
- \* Low  $R_{DS(ON)}$
- \* High switching speed



■ SYMBOL



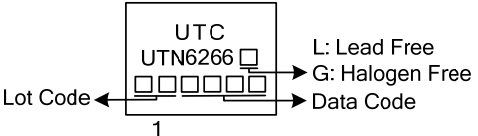
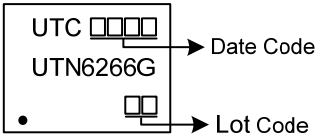
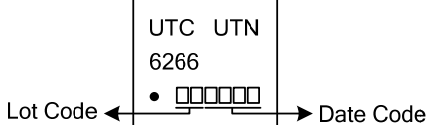
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTN6266L-TA3-R	UTN6266G-TA3-R	TO-220	G	D	S	-	-	-	-	-	Tape Reel
UTN6266L-TM3-R	UTN6266G-TM3-R	TO-251	G	D	S	-	-	-	-	-	Tube
-	UTN6266G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
-	UTN6266G-K08-5060-R	DFN-8(5x6)	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTN6266L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TM3: TO-251, S08: SOP-8, K08-5060: DFN-8(5x6)</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
--	---

### MARKING

Package	Marking
TO-220 / TO-251	
SOP-8	
DFN-8(5x6)	

■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$	30	A
	Pulsed	$I_{DM}$	90	A
Avalanche Current (Note 3)		$I_{AS}$	20	A
Avalanche Energy (Note 2, 3)		$E_{AS}$	280	mJ
Power Dissipation	TO-220	$P_D$	2	W
	TO-251		1.2	W
	SOP-8		1.5	W
	DFN-8(5×6)		1.92	W
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55~+150	$^\circ\text{C}$

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. Single pulse width by junction temperature  $T_{J(max)}=150^\circ\text{C}$ .

3.  $L = 1.4\text{mH}$ ,  $I_{AS} = 20\text{A}$ ,  $V_{DD} = 50\text{V}$ ,  $R_G = 25\ \Omega$ , Starting  $T_J = 25^\circ\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	$\theta_{JA}$	200	$^\circ\text{C/W}$
	TO-251		60	$^\circ\text{C/W}$
	SOP-8		85	$^\circ\text{C/W}$
	DFN-8(5×6)		65	$^\circ\text{C/W}$
Junction-to-Case	TO-220	$\theta_{JC}$	4.38	$^\circ\text{C/W}$
	TO-251		2.6	$^\circ\text{C/W}$
	SOP-8		24	$^\circ\text{C/W}$
	DFN-8(5×6)		12	$^\circ\text{C/W}$

Notes: 1. The  $\theta_{JA}$  is the sum of the thermal impedance from junction to case  $\theta_{JC}$  and case to ambient.

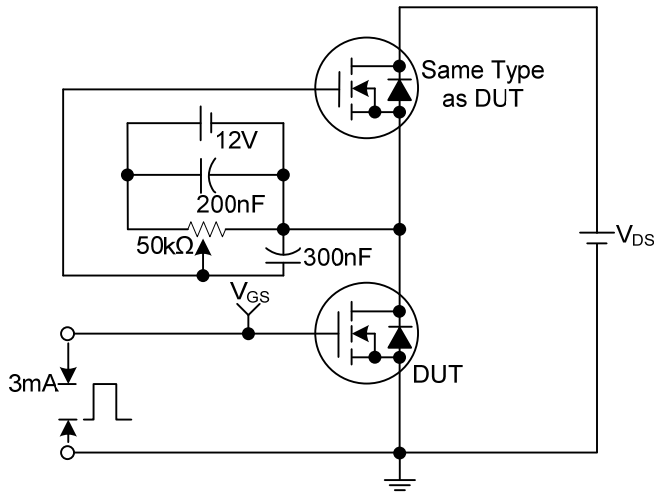
2. The value of  $\theta_{JA}$  is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper.

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

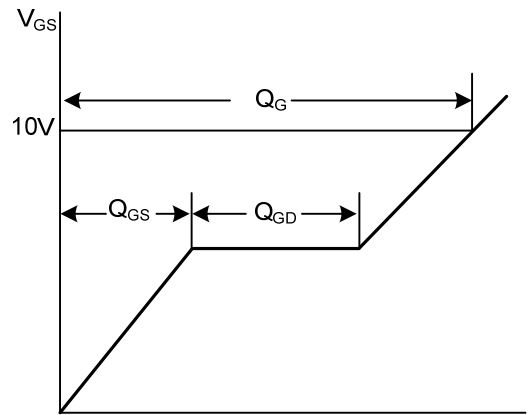
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	60			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
		$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$ , $T_J=55^\circ\text{C}$			5	$\mu\text{A}$
Gate-Body Leakage Current	Forward	$I_{GSS}$				nA
	Reverse					
						-100
		$V_{GS}=-20\text{V}$ , $V_{DS}=0\text{V}$				nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.5	2.0	2.5	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=20\text{A}$		12	15	$\text{m}\Omega$
		$V_{GS}=10\text{V}$ , $I_D=20\text{A}$ , $T_J=125^\circ\text{C}$		20.5	25	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$ , $I_D=18\text{A}$		15	19	$\text{m}\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=30\text{V}$ , $f=1.0\text{MHz}$		390		pF
Output Capacitance	$C_{OSS}$			190		pF
Reverse Transfer Capacitance	$C_{RSS}$			170		pF
Gate Resistance	$R_G$	$f=1.0\text{MHz}$		1.1		$\Omega$
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DS}=30\text{V}$ , $I_D=20\text{A}$		6		nC
Gate to Source Charge	$Q_{GS}$			0.5		nC
Gate to Drain Charge	$Q_{GD}$			0.5		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS}=10\text{V}$ , $V_{DS}=30\text{V}$ , $R_L=1.5\Omega$ , $R_{GEN}=3\Omega$		60		ns
Rise Time	$t_R$			75		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			500		ns
Fall-Time	$t_F$			230		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				30	A
Drain-Source Diode Forward Voltage (Note2)	$V_{SD}$	$I_S=1\text{A}$ , $V_{GS}=0\text{V}$	0.72	1		V

- Notes: 1. Pulse width limited by  $T_{J(MAX)}$   
 2. Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 3. Surface Mounted on  $1\text{in}^2$  pad area.

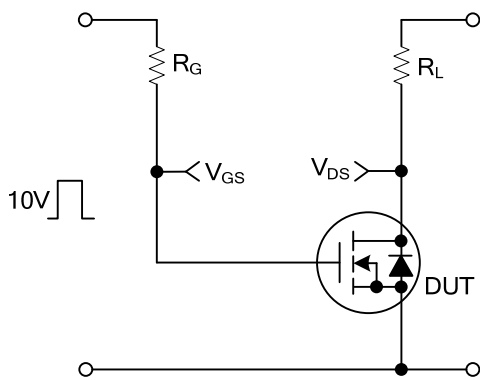
■ TEST CIRCUITS AND WAVEFORMS



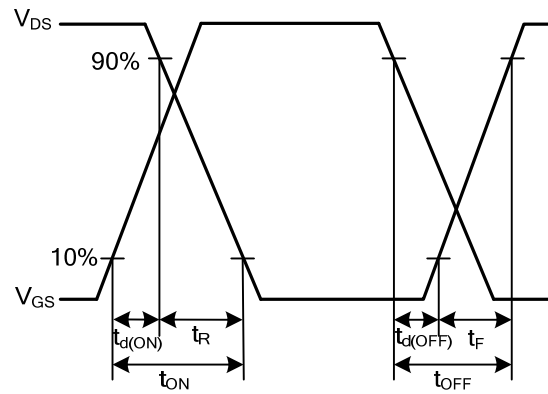
Gate Charge Test Circuit



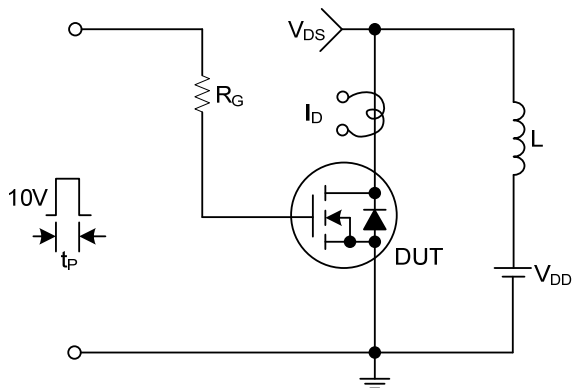
Gate Charge Waveforms



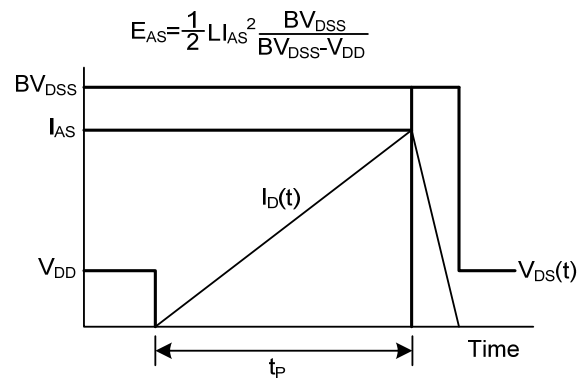
Resistive Switching Test Circuit



Resistive Switching Waveforms

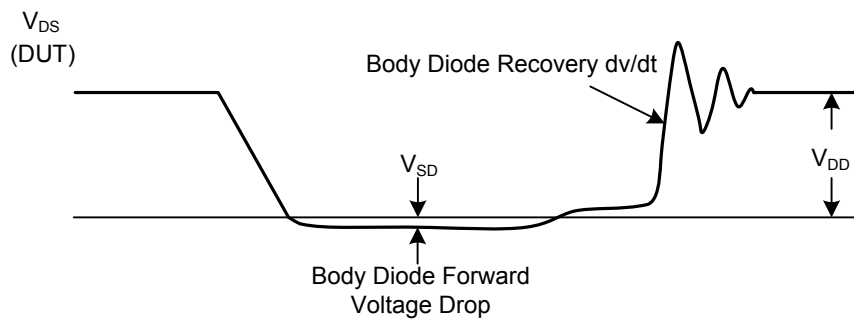
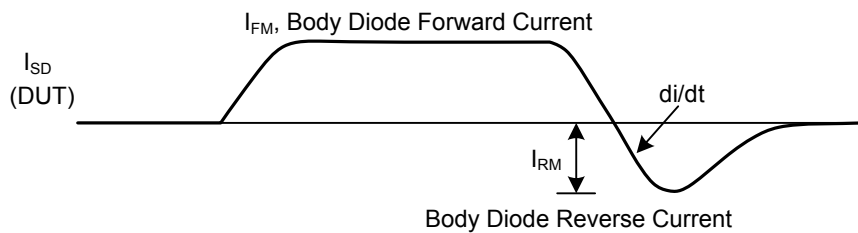
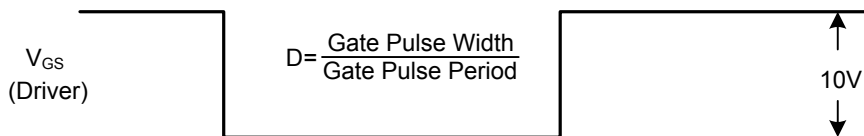
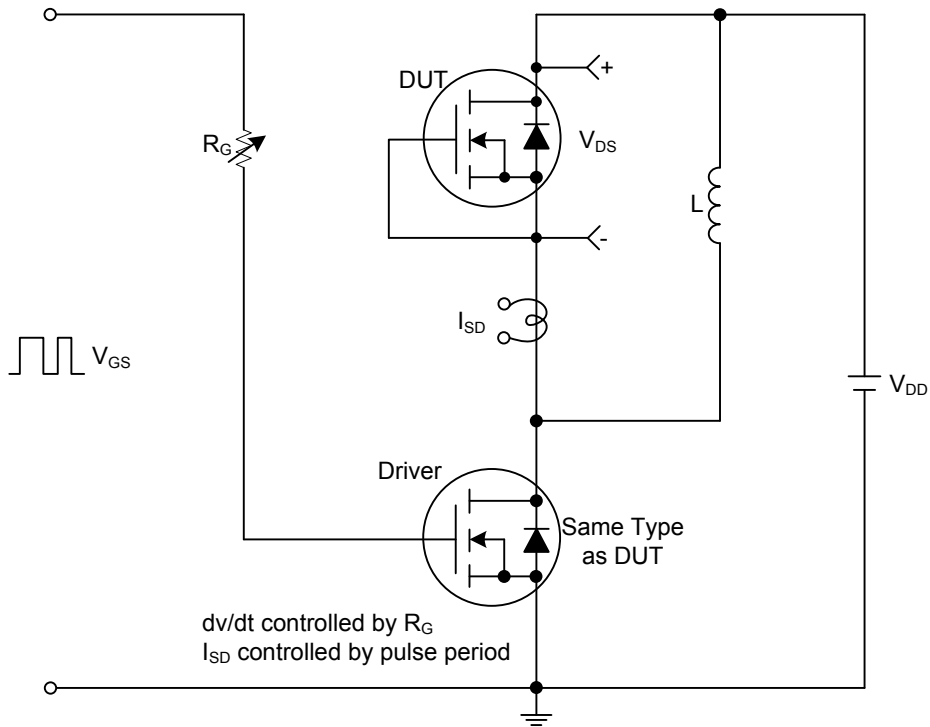


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)



Peak Diode Recovery dv/dt Test Circuit and Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.