



15N10

Power MOSFET

14.7A, 100V (D-S) N-CHANNEL POWER MOSFET

DESCRIPTION

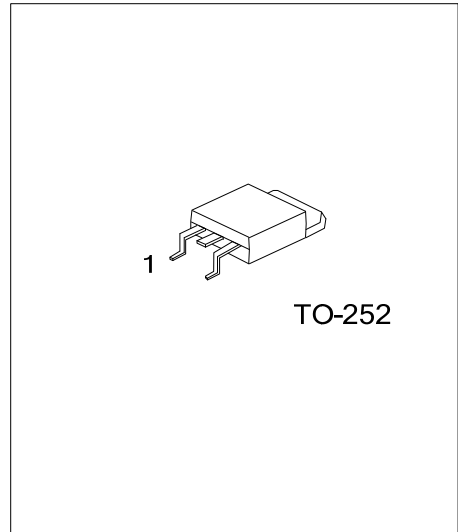
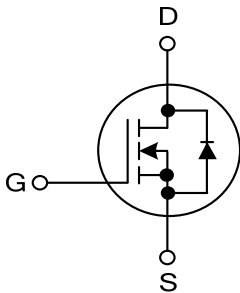
The UTC **15N10** is an N-Channel enhancement MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

The UTC **15N10** is suitable for high efficiency switching DC/DC converter, LCD display inverter and load switch.

FEATURES

- * $R_{DS(ON)}=0.08\Omega$ @ $V_{GS}=10V, I_D=8A$
- * Low gate charge (Typ=24nC)
- * Low C_{RSS} (Typ=23pF)
- * High switching speed

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
15N10L-TN3-T	15N10G-TN3-T	TO-252	G	D	S	Tube
15N10L-TN3-R	15N10G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>15N10L-TN3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	100	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Drain Current	Continuous	I_D	$T_C=25^\circ\text{C}, T_J=150^\circ\text{C}$	14.7	A
			$T_C=70^\circ\text{C}, T_J=150^\circ\text{C}$	13.6	A
Pulsed		I_{DM}	59	A	
Power Dissipation		P_D	$T_C=25^\circ\text{C}$	34.7	W
			$T_C=70^\circ\text{C}$	22.2	W
Operating Junction Temperature		T_J	-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 CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case (Note)	θ_{JC}	3.6	$^\circ\text{C/W}$

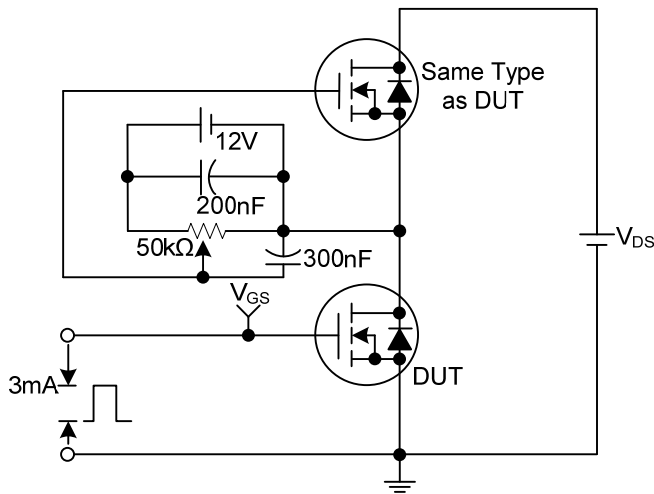
Note: The device mounted on 1in² FR4 board with 2 oz copper.

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

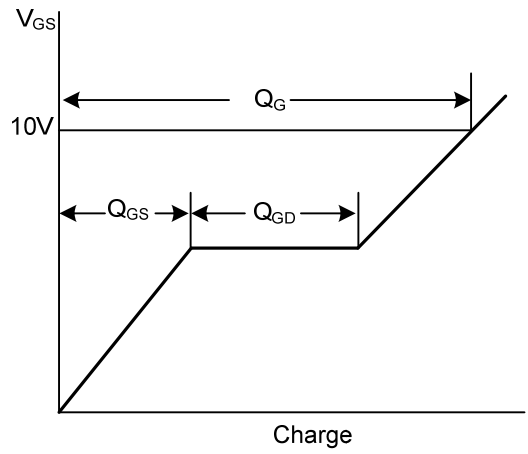
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$			+100	nA
		$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1		3	V
Drain-Source On-State Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=8\text{A}$		80	100	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1\text{MHz}$		890		pF
Output Capacitance	C_{OSS}			58		pF
Reverse Transfer Capacitance	C_{RSS}			23		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{GS}=10\text{V}, V_{DS}=80\text{V}, I_D=10\text{A}$		24		nC
Total Gate Charge	Q_G	$V_{GS}=4.5\text{V}, V_{DS}=80\text{V}, I_D=10\text{A}$		13		nC
Gate to Source Charge	Q_{GS}			4.6		nC
Gate to Drain Charge	Q_{GD}			7.6		nC
Gate-Resistance	R_G	$V_{DS}=0\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		0.9		Ω
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=50\text{V}, R_L=5\Omega, V_{GEN}=10\text{V}, R_G=1\Omega$		14		ns
Rise Time	t_R			33		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			39		ns
Fall-Time	t_F			5		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=8\text{A}, V_{GS}=0\text{V}$		0.9	1.2	V

Note: Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$, Guaranteed by design, not subject to production testing.

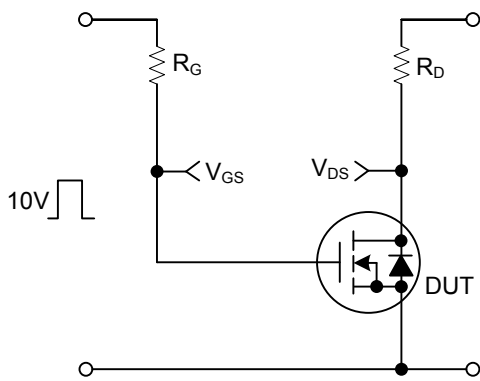
■ TEST CIRCUITS AND WAVEFORMS



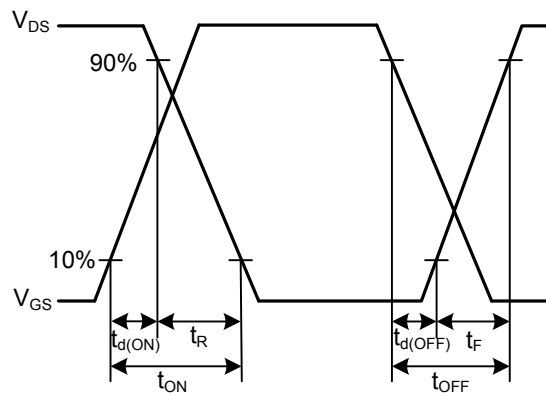
Gate Charge Test Circuit



Gate Charge Waveforms

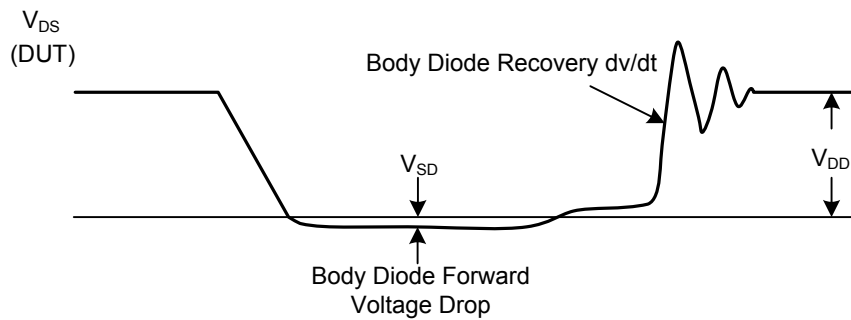
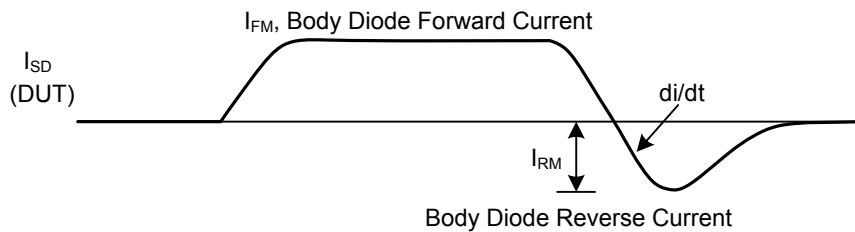
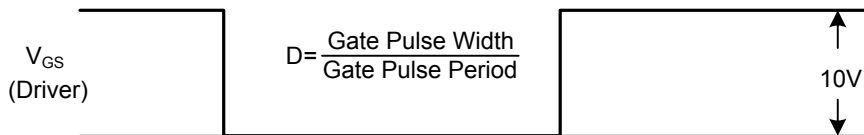
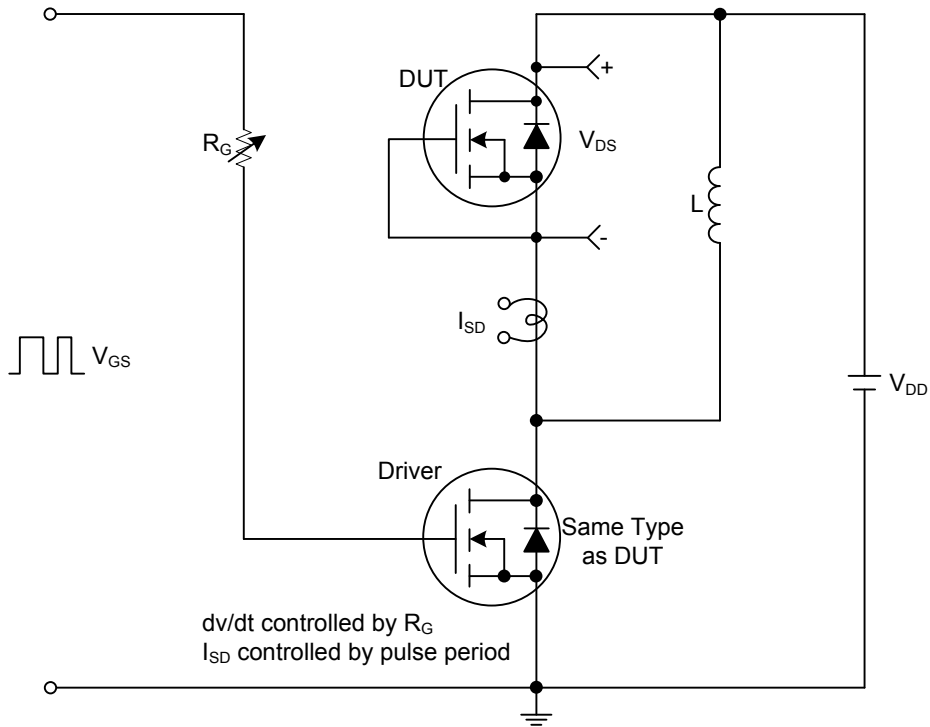


Resistive Switching Test Circuit



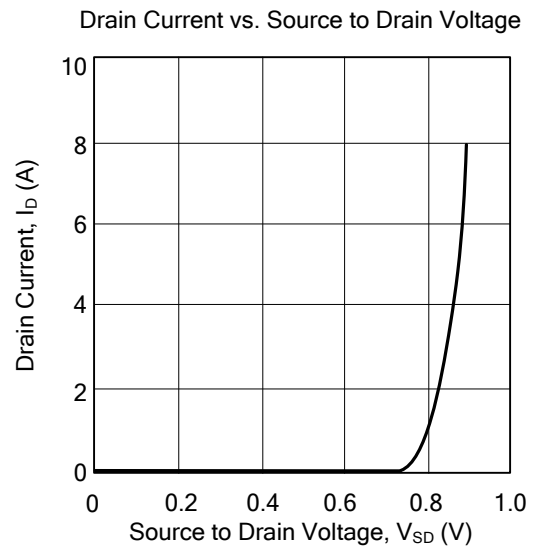
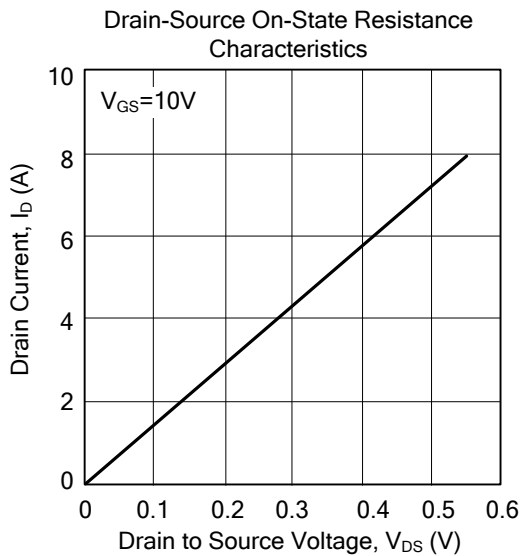
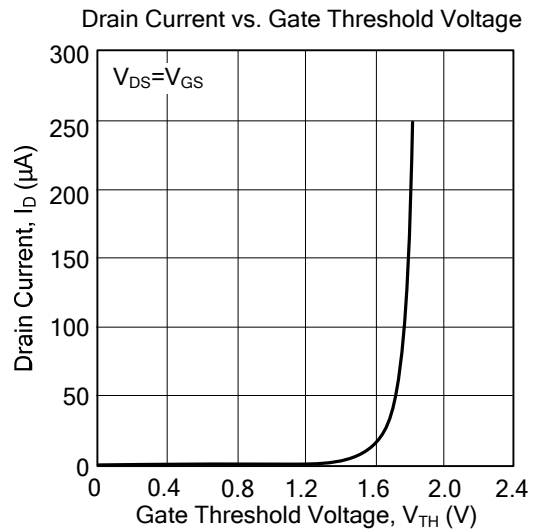
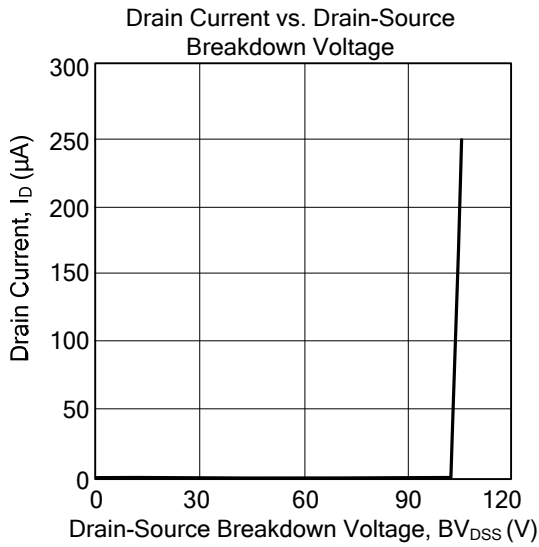
Resistive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS



Peak Diode Recovery dv/dt Test Circuit and Waveforms

TYPICAL CHARACTERISTICS



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