



15N10

Power MOSFET

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

DESCRIPTION

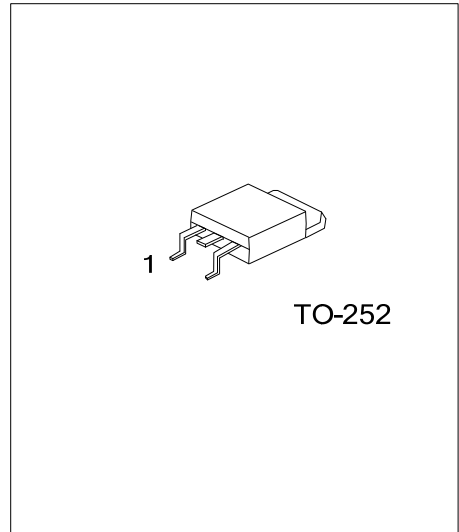
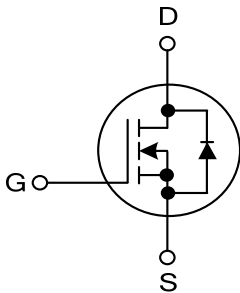
The UTC **15N10** is an N-Channel enhancement MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

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°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°C, T _J =150°C	14.7	A
			T _C =70°C, T _J =150°C	13.6	A
Pulsed		I _{DM}	59	A	
Power Dissipation	T _C =25°C		P _D	34.7	W
	T _C =70°C			22.2	W
Operating Junction Temperature		T _J	-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 CHARACTERISTICS (T_A=25°C, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Case (Note)	θ _{JC}	3.6	°C/W

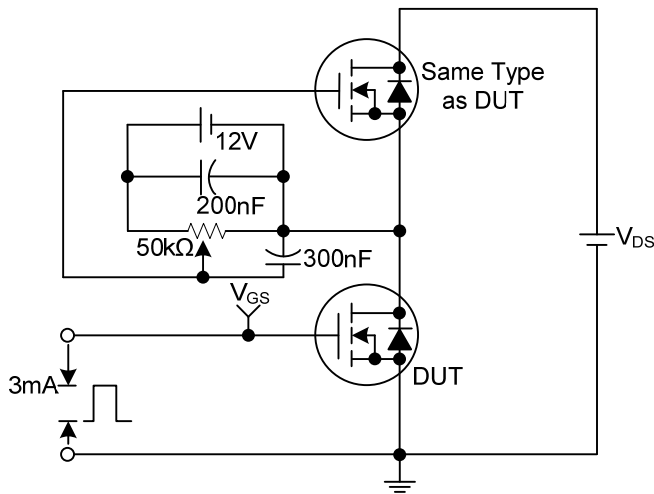
Note: The device mounted on 1in² FR4 board with 2 oz copper.

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

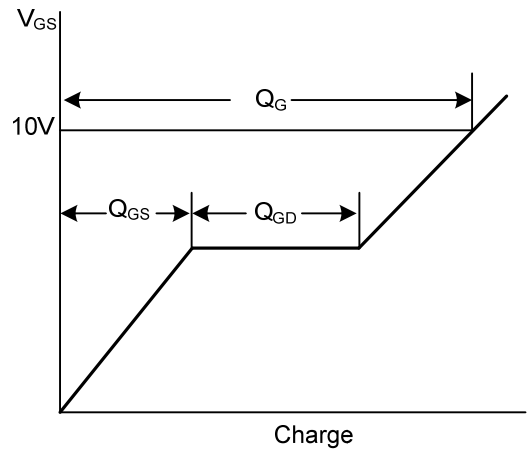
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1		3	V
Drain-Source On-State Resistance (Note)	R _{DS(ON)}	V _{GS} =10V, I _D =8A		80	100	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1MHz		890		pF
Output Capacitance	C _{OSS}			58		pF
Reverse Transfer Capacitance	C _{RSS}			23		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =80V, I _D =10A		24		nC
Total Gate Charge	Q _G	V _{GS} =4.5V, V _{DS} =80V, I _D =10A		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} =0V, V _{GS} =0V, f=1MHz		0.9		Ω
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =50V, R _L =5Ω, V _{GEN} =10V, R _G =1Ω		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 =8A, V _{GS} =0V		0.9	1.2	V

Note: Pulse test: pulse width≤300us, duty cycles≤2%, Guaranteed by design, not subject to production testing.

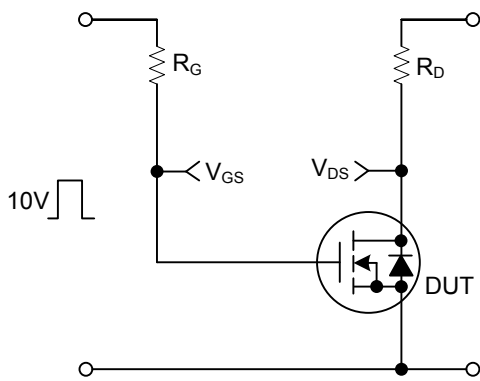
■ TEST CIRCUITS AND WAVEFORMS



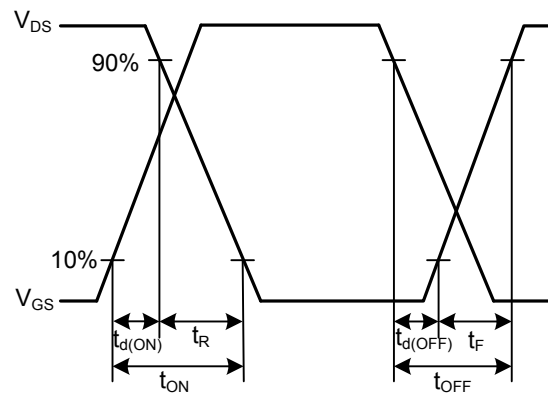
Gate Charge Test Circuit



Gate Charge Waveforms

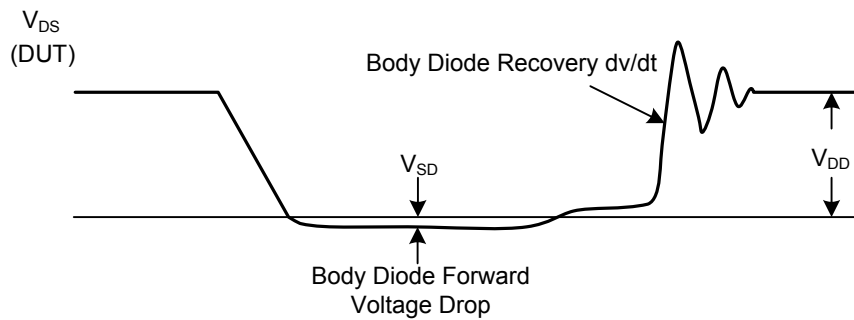
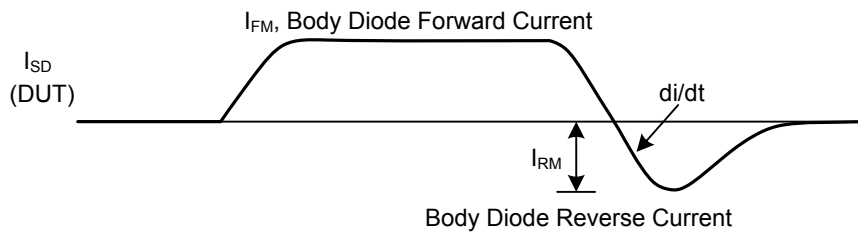
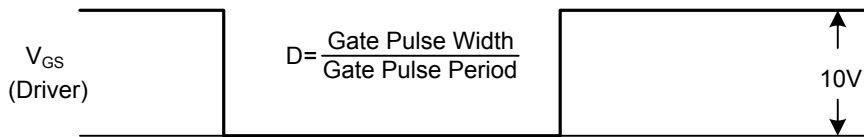
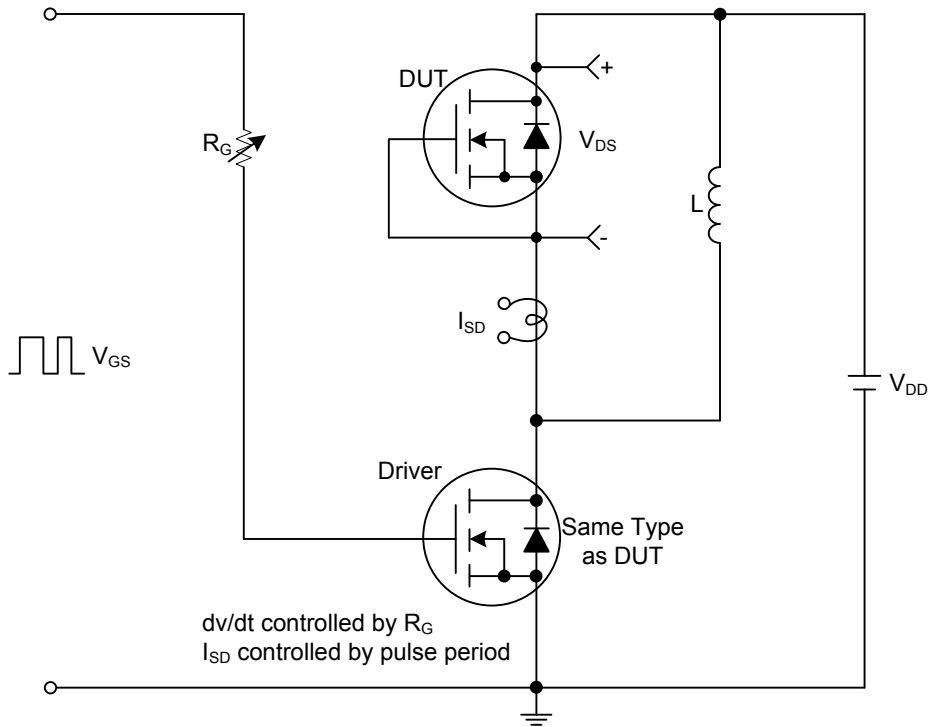


Resistive Switching Test Circuit



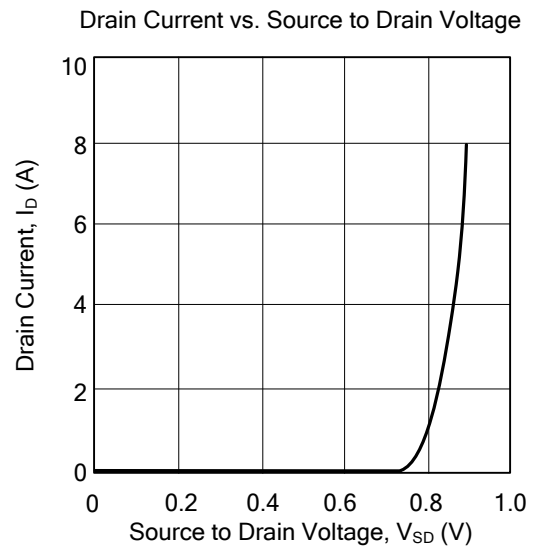
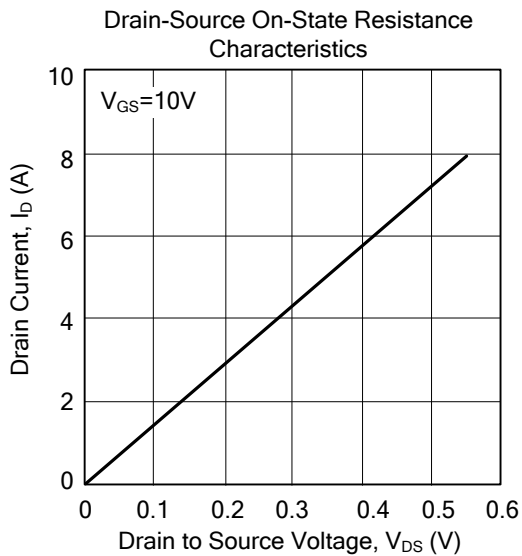
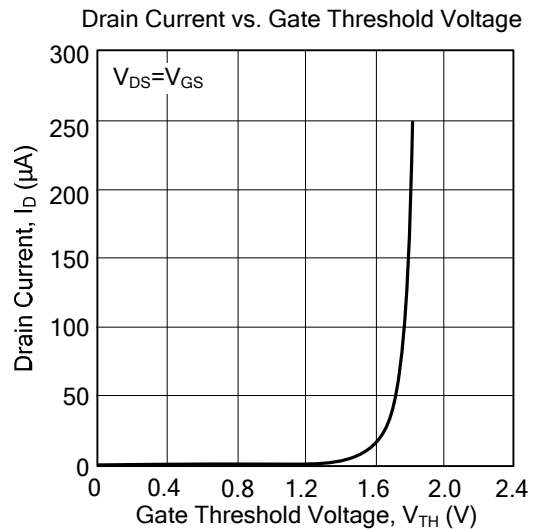
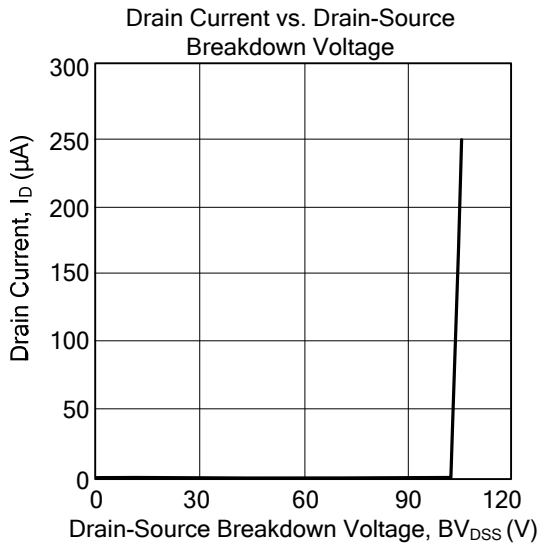
Resistive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS



Peak Diode Recovery dv/dt Test Circuit and Waveforms

TYPICAL CHARACTERISTICS



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