



160A, 40V N-CHANNEL POWER MOSFET

DESCRIPTION

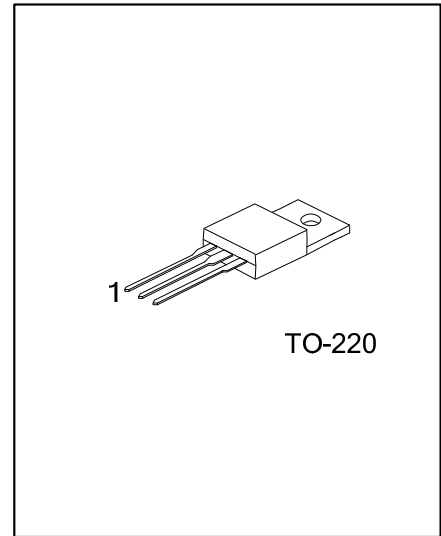
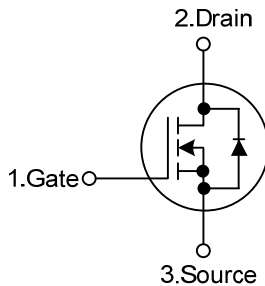
The UTC **UTF1404** is an N-channel enhancement MOSFET, it uses UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$ and high switching speed.

The UTC **UTF1404** is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts, etc.

FEATURES

- * $R_{DS(ON)}=3.5m\Omega @ V_{GS}=10V, I_D=95A$
- * High Switching Speed

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTF1404L-TA3-T	UTF1404G-TA3-T	TO-220	G	D	S	Tube

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

<p>UTF1404L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	40	V
Gate-Source Voltage			V_{GSS}	± 20	V
Drain Current	Continuous ($V_{GS}=10V$)	$T_C=25^\circ C$	I_D	162 (Note 4)	A
		$T_C=100^\circ C$		115 (Note 4)	A
	Pulsed (Note 2)		$T_C=25^\circ C$	I_{DM}	650
Avalanche Current (Note 2)			I_{AR}	95	A
Avalanche Energy	Single Pulsed (Note 3)		E_{AS}	519	mJ
	Repetitive (Note 2)		E_{AR}	20	mJ
Power Dissipation ($T_C=25^\circ C$)			P_D	166	W
Junction Temperature			T_J	+150	$^\circ C$
Storage Temperature			T_{STG}	-55~+150	$^\circ C$

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. Repetitive rating: pulse width limited by maximum junction temperature

3. Starting $T_J=25^\circ C$, $L=0.12mH$, $R_G=25\Omega$, $I_{AS}=95A$

4. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A

■ THERMAL DATA

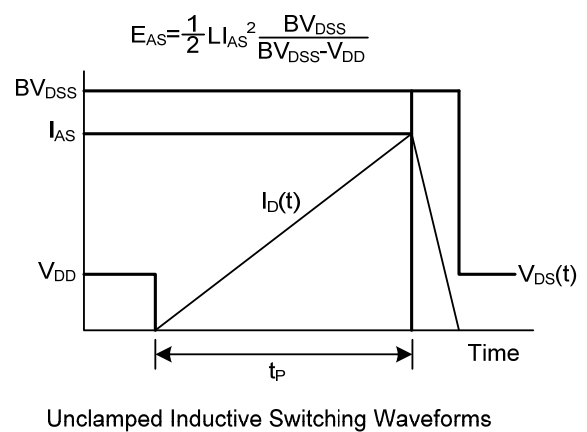
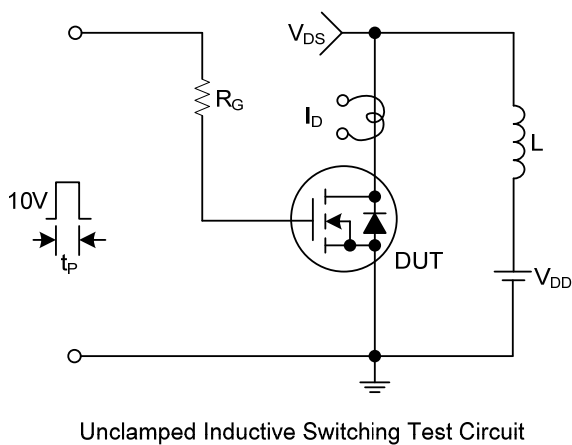
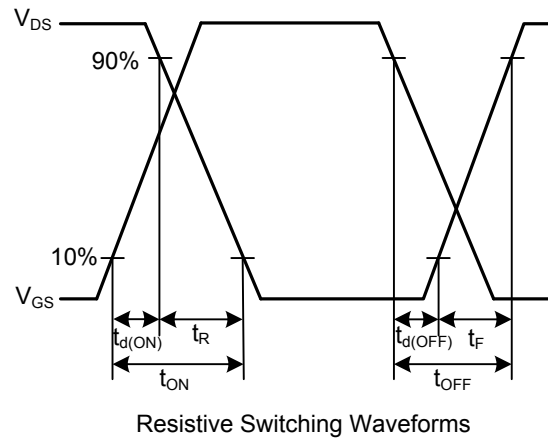
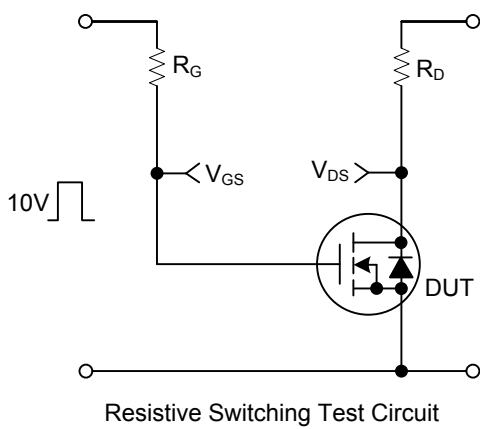
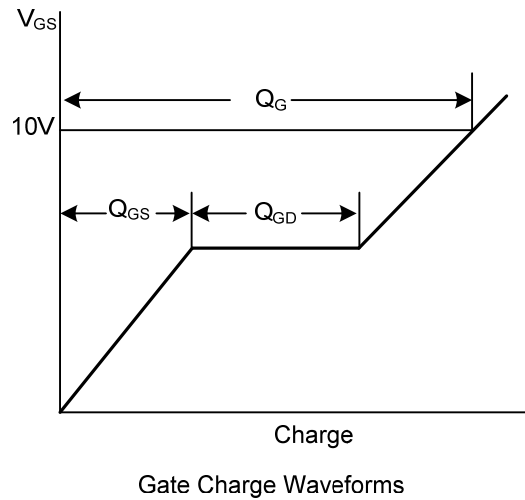
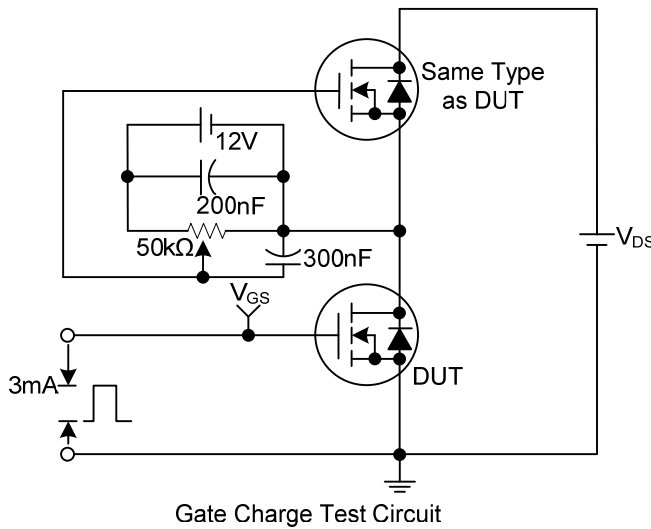
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62	$^\circ C/W$
Junction to Case	θ_{JC}	0.75	$^\circ C/W$

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

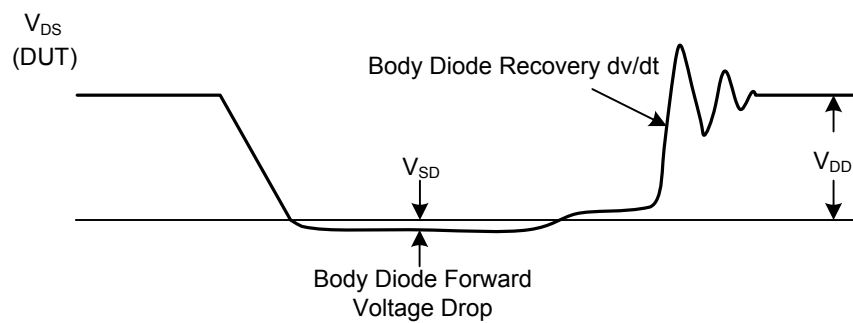
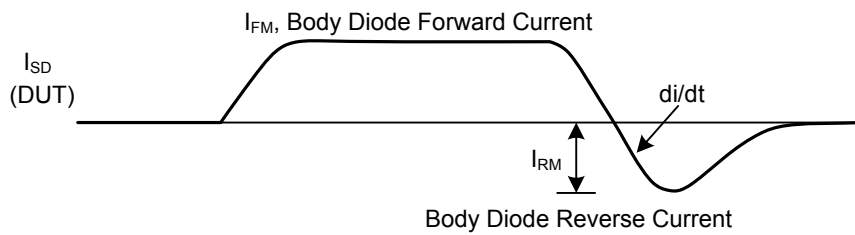
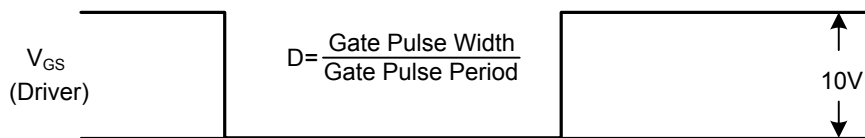
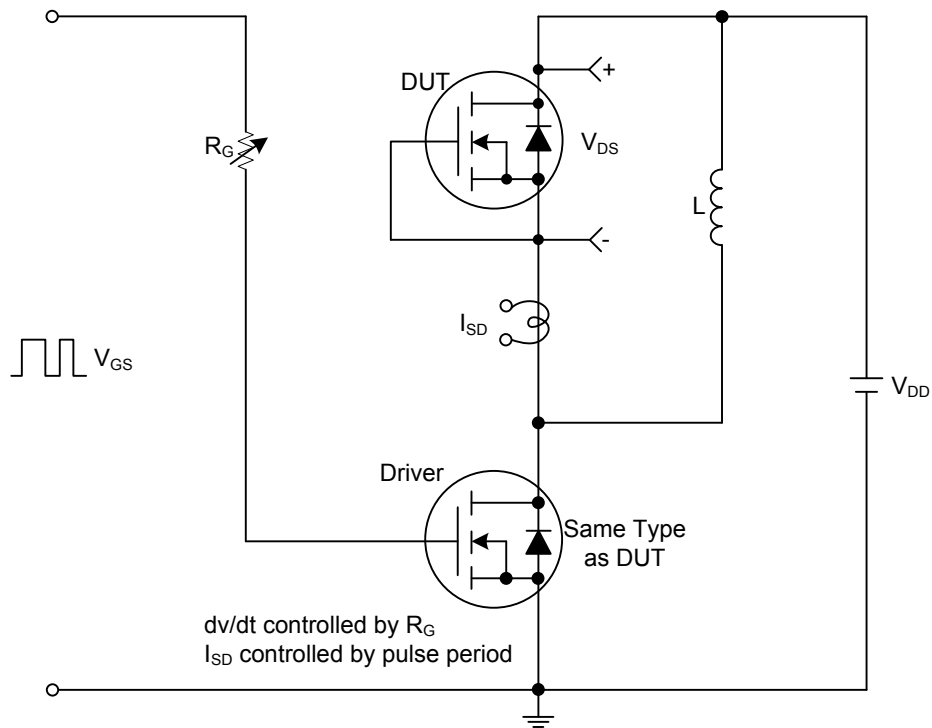
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	40			V	
Drain-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			20	μA	
		V _{DS} =32V, V _{GS} =0V, T _J =150°C			250	μA	
Gate- Source Leakage Current	Forward	I _{GSS}					
	Reverse						
		V _{GS} =+20V			+200	nA	
		V _{GS} =-20V			-200	nA	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V	
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =95A (Note 2)		3.5	4	mΩ	
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		7360		pF	
Output Capacitance	C _{OSS}				1680		pF
Reverse Transfer Capacitance	C _{RSS}				240		pF
SWITCHING PARAMETERS							
Total Gate Charge	Q _G	I _D =95A, V _{DS} =32V, V _{GS} =10V (Note 2)		160	200	nC	
Gate to Source Charge	Q _{GS}				35		nC
Gate to Drain Charge	Q _{GD}				42	60	nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =20V, I _D =95A, R _G =2.5Ω, R _D =0.21Ω (Note 2)		17		ns	
Rise Time	t _R			140		ns	
Turn-OFF Delay Time	t _{D(OFF)}			72		ns	
Fall-Time	t _F			26		ns	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current	I _S	(Note 3)			162	A	
Maximum Body-Diode Pulsed Current	I _{SM}	(Note 1)			650	A	
Drain-Source Diode Forward Voltage	V _{SD}	I _S =95A, V _{GS} =0V, T _J =25°C (Note 2)			1.3	V	

- Notes: 1. Repetitive rating: pulse width limited by maximum junction temperature
 2. Pulse width≤300μs, Duty cycle≤2%
 3. Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A

■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit and Waveforms

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