



UTT80N10

Power MOSFET

80A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

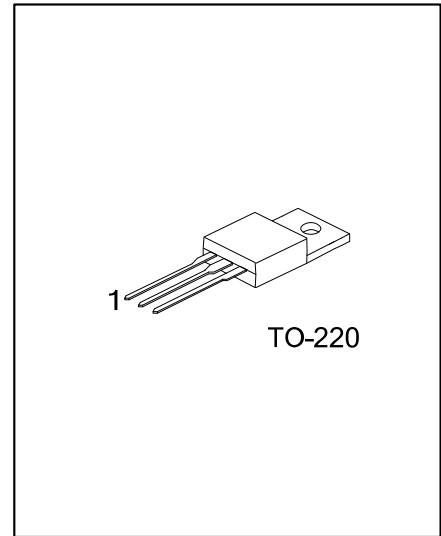
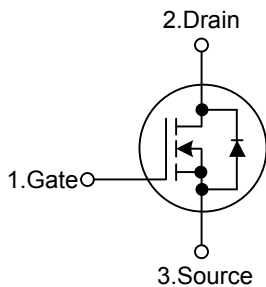
The UTC **UTT80N10** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

The UTC **UTT80N10** is suitable for DC-DC converters, Off-Line UPS, High Voltage Synchronous Rectifier, Primary Switch for 48V and 24V Systems, etc.

FEATURES

- * $R_{DS(ON)} < 18m\Omega @ V_{GS}=10V, I_D=80A$
- * High Switching Speed
- * High Current Capacity
- * Low Gate Charge (typical 49nC)

SYMBOL



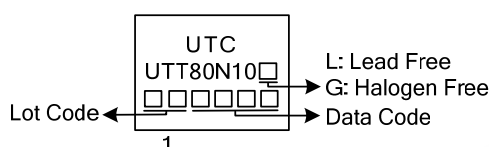
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT80N10L-TA3-T	UTT80N10G-TA3-T	TO-220	G	D	S	Tube

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

UTT80N10L-TA3-T 	(1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube (2) TA3: TO-220 (3) L: Lead Free, G: Halogen Free and Lead Free
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MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	100	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	80	A
	Pulsed (Note 2)	I _{DM}	320	A
Single Pulsed Avalanche Energy (Note 3)		E _{AS}	416	mJ
Power Dissipation		P _D	211	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

3. L = 0.13mH, I_{AS} = 80A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

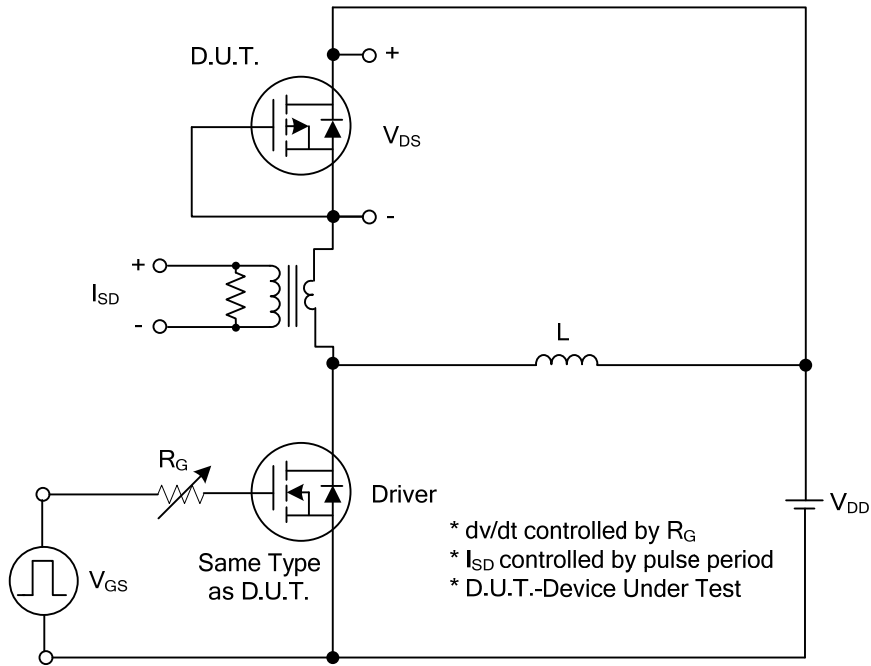
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	62	°C/W
Junction to Case	θ _{JC}	0.59	°C/W

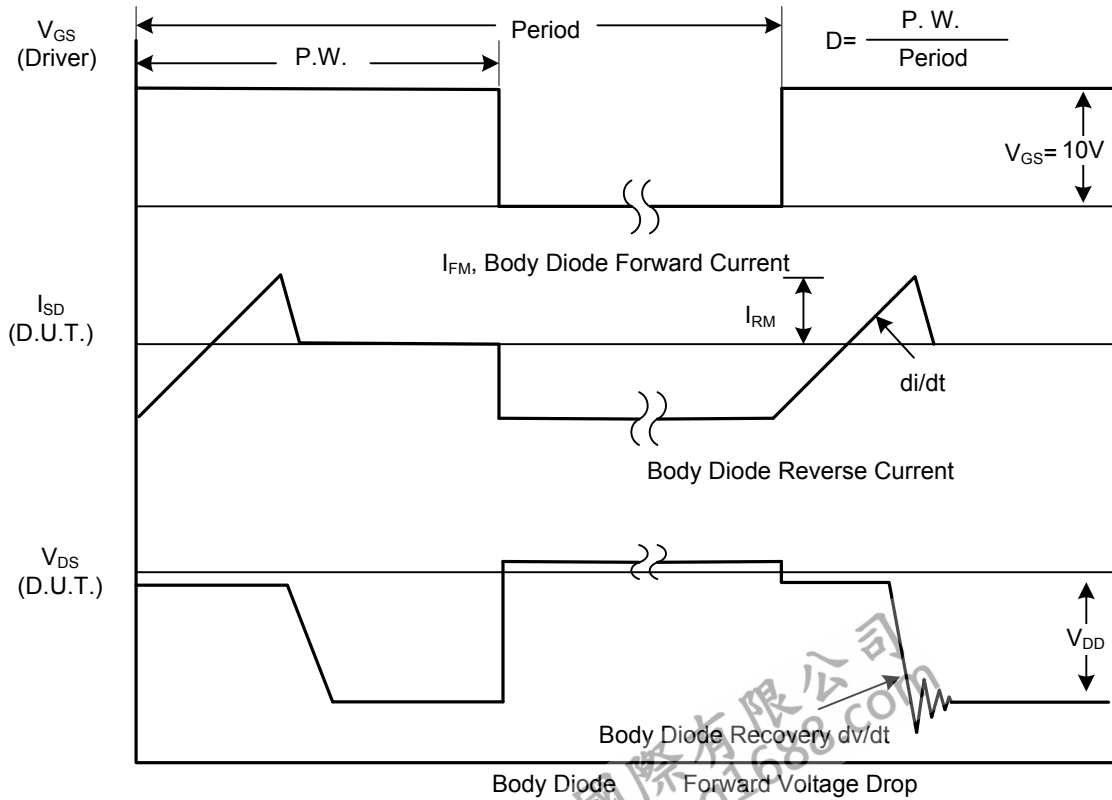
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV _{DSS}	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	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA	
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA	
ON CHARACTERISTICS								
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V	
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =80A		15	18	mΩ	
DYNAMIC PARAMETERS								
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		4152		pF	
Output Capacitance		C _{OSS}				485		pF
Reverse Transfer Capacitance		C _{RSS}				220		pF
SWITCHING PARAMETERS								
Total Gate Charge		Q _G	V _{GS} =10V, V _{DD} =50V, I _D =80A		350		nC	
Gate to Source Charge		Q _{GS}				23		nC
Gate to Drain Charge		Q _{GD}				16		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =50V, I _D =80A, V _{GS} =10V, R _{GS} =5.0Ω		90		ns	
Rise Time		t _R				100		ns
Turn-OFF Delay Time		t _{D(OFF)}				450		ns
Fall-Time		t _F				200		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS								
Maximum Body-Diode Continuous Current		I _S				80	A	
Maximum Body-Diode Pulsed Current		I _{SM}				320	A	
Drain-Source Diode Forward Voltage		V _{SD}	I _{SD} =80A		0.99	1.25	V	
Body Diode Reverse Recovery Time		t _{rr}	I _S =40A, dI/dt=100A/μs		70	105	ns	
Body Diode Reverse Recovery Charge		Q _{rr}				202	303	nC

TEST CIRCUITS AND WAVEFORMS

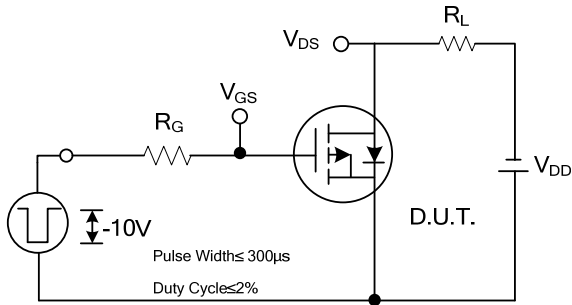


Peak Diode Recovery dv/dt Test Circuit

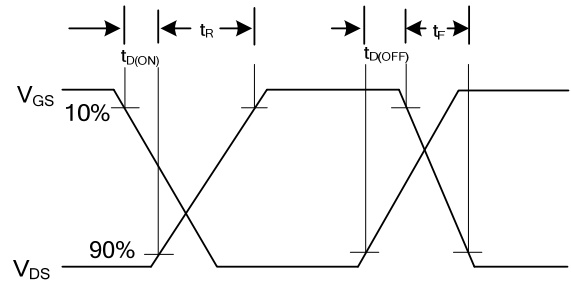


Peak Diode Recovery dv/dt Waveforms

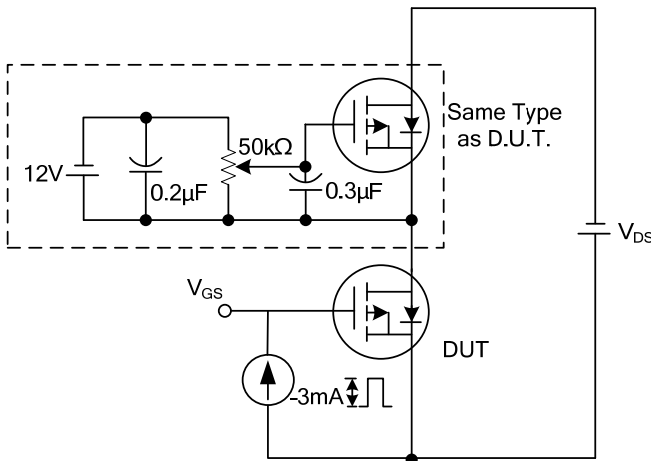
TEST CIRCUITS AND WAVEFORMS (Cont.)



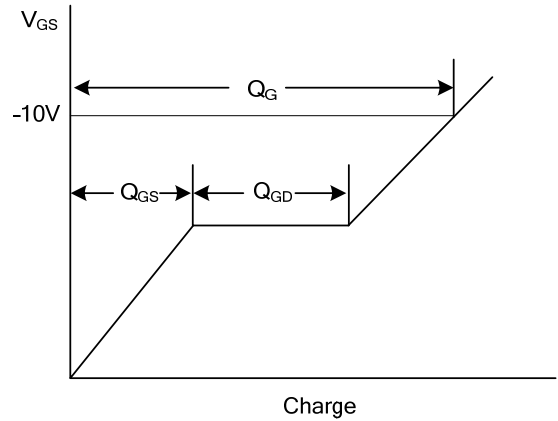
Switching Test Circuit



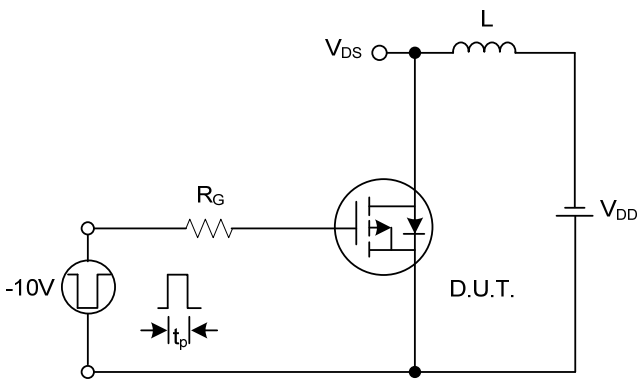
Switching Waveforms



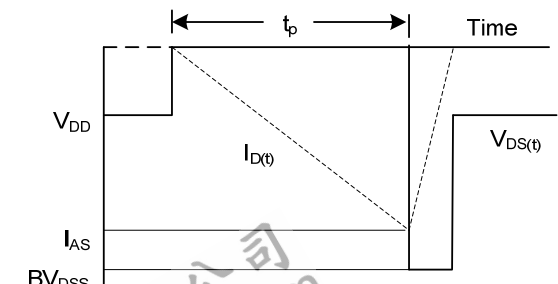
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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