

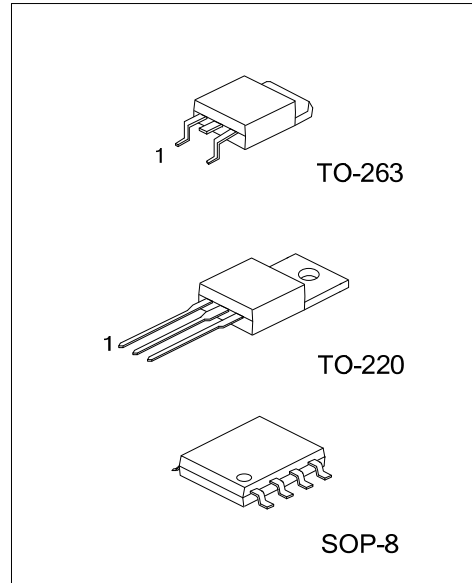


UTT80N06

Preliminary

Power MOSFET

**60V, 80A N-CHANNEL
POWER MOSFET**



■ DESCRIPTION

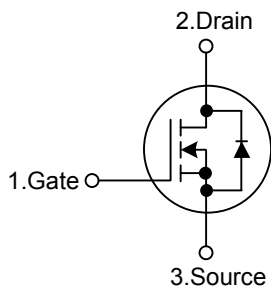
The UTC **UTT80N06** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and high switching speed. It can also withstand high energy pluse in the avalanche and commutation mode.

The UTC **UTT80N06** is suitable for active power factor correction, high efficient switched mode power supplies and electronic lamp ballast based on half bridge topology, etc.

■ FEATURES

- * $R_{DS(ON)} < 10m\Omega @ V_{GS}=10V$
- * High switching speed
- * Improved dv/dt capability
- * Low Crss(typical 145pF)
- * Low Gate Charge(typical 57nC)

■ SYMBOL



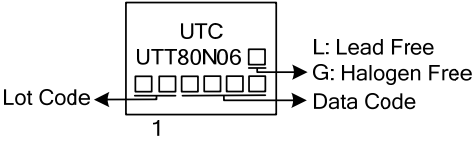
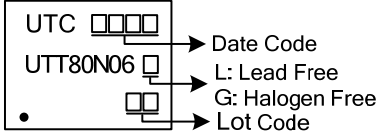
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT80N06L-TA3-T	UTT80N06G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT80N06L-TQ2-T	UTT80N06G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT80N06L-TQ2-R	UTT80N06G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT80N06L-S08-R	UTT80N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT80N06L-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TQ2: TO-263, S08: SOP-8</p> <p>(3) L: Lead Free, G: Halogen Free</p>
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MARKING INFORMATION

PACKAGE	MARKING
<p>TO-220 TO-263</p>	 <p>The diagram shows a rectangular marking area with the following layout: UTC UTT80N06 □ □ □ □ □ □ □ □ □ Lot Code ← □ □ □ □ □ □ □ □ → Data Code 1</p> <p>Legend: L: Lead Free G: Halogen Free</p>
<p>SOP-8</p>	 <p>The diagram shows a rectangular marking area with the following layout: UTC □ □ □ □ → Date Code UTT80N06 □ → L: Lead Free □ → G: Halogen Free • □ □ → Lot Code</p>

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified) (Note 2)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	60	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Drain Current	Continuous	I_D	$T_C=25^\circ\text{C}$	80	A
			$T_C=100^\circ\text{C}$	65	A
	Pulsed (Note 3)		I_{DM}	320	A
Avalanche Current (Note 3)		I_{AR}	80	A	
Avalanche Energy	Single Pulsed (Note 4)	E_{AS}	480	mJ	
	Repetitive (Note3)	E_{AR}	17.6	mJ	
Power Dissipation	TO-220/TO-263	P_D	147	W	
	SOP-8		5.2		
Junction Temperature		T_J	+150	$^\circ\text{C}$	
Storage Temperature		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. Drain current limited by maximum junction temperature
3. Repetitive Rating: Pulse width limited by maximum junction temperature
4. $L = 0.15\text{mH}$, $I_{AS} = 80\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
5. $I_{SD} \leq 80\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
	SOP-8		110	
Junction to Case	TO-220/TO-263	θ_{JC}	0.85	$^\circ\text{C}/\text{W}$
	SOP-8		24	

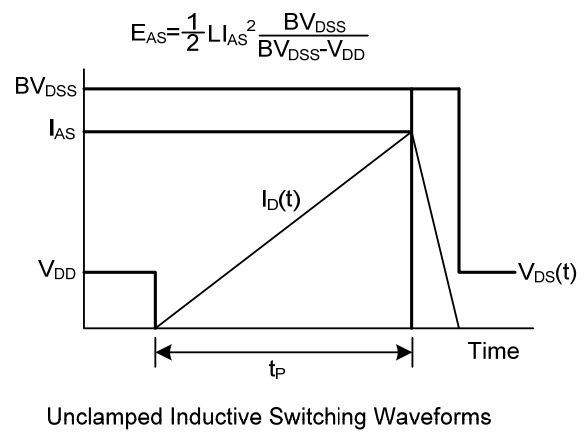
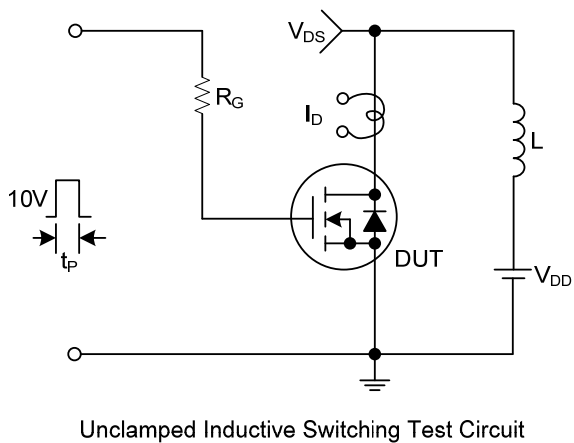
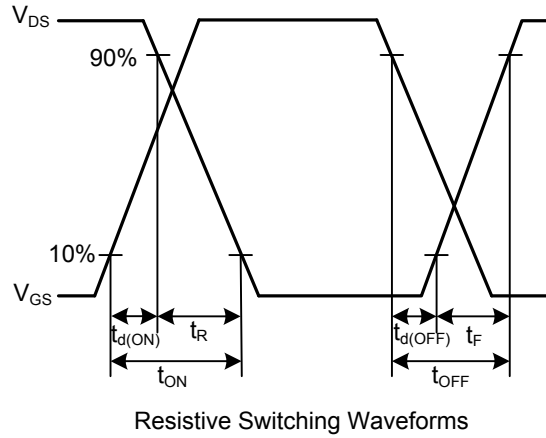
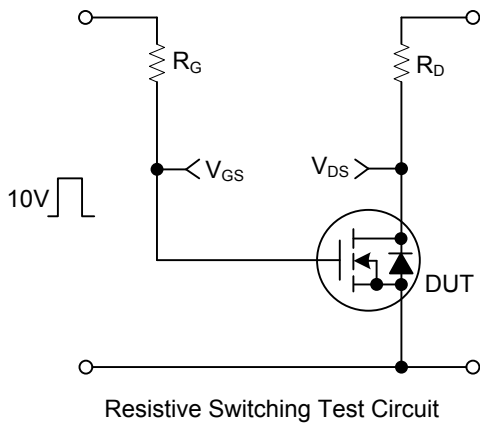
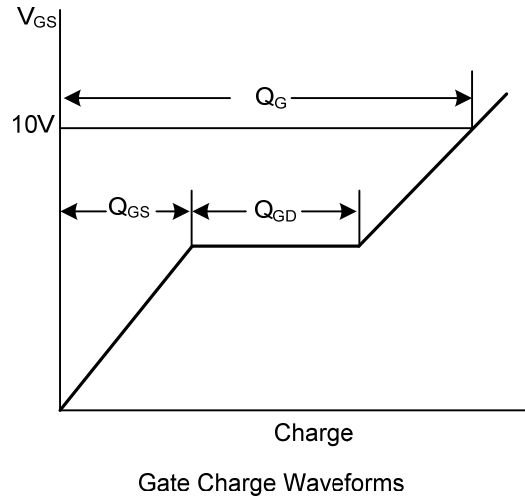
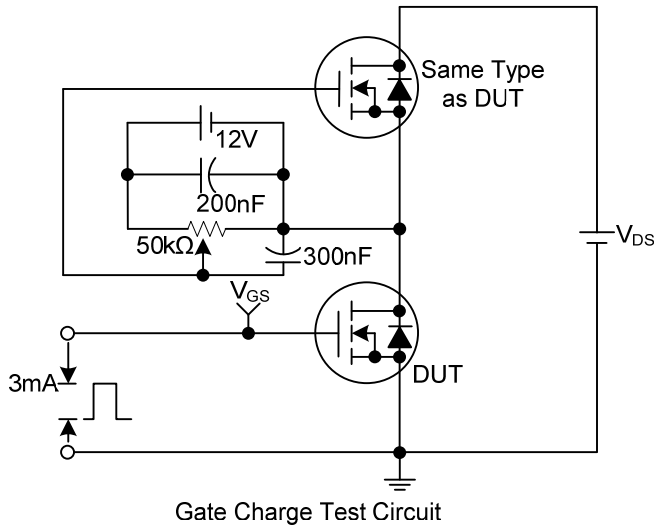
■ ELECTRICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V, T _J =25°C	60			V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =250μA		0.075		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
		V _{DS} =48V, T _C =150°C			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}			+100	nA
	Reverse					
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 =40A		8.5	10	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		2450	3190	pF
Output Capacitance	C _{OSS}			910	1190	pF
Reverse Transfer Capacitance	C _{RSS}			145	190	pF
SWITCHING PARAMETERS						
Total Gate Charge at 10V	Q _{G(TOT)}	V _{GS} =10V, V _{DS} =48V, I _D =80A (Note 1, 2)		57	74	nC
Gate to Source Charge	Q _{GS}			15		nC
Gate to Drain Charge	Q _{GD}			24		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =30V, I _D =80A, R _G =25Ω (Note 1, 2)		32	75	ns
Rise Time	t _R			259	528	ns
Turn-OFF Delay Time	t _{D(OFF)}			136	282	ns
Fall-Time	t _F			113	236	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 _S =80A, V _{GS} =0V			1.4	V

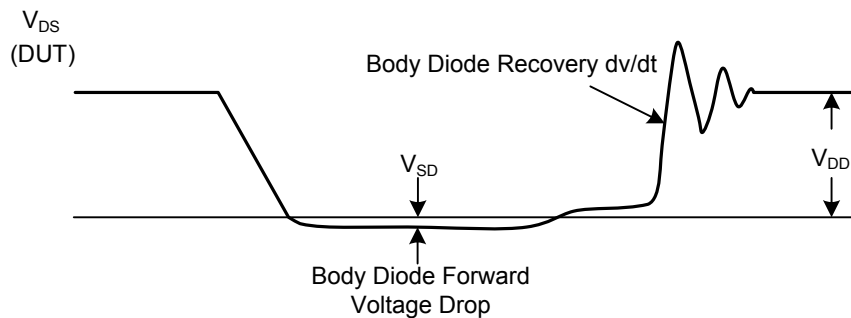
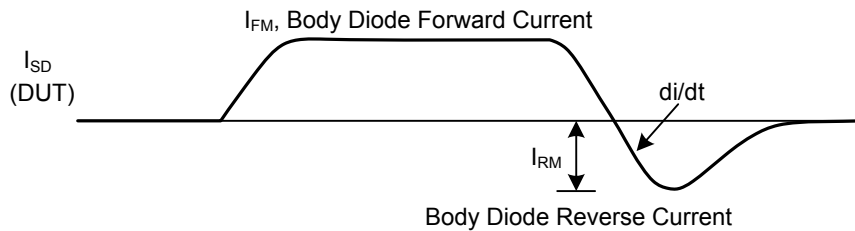
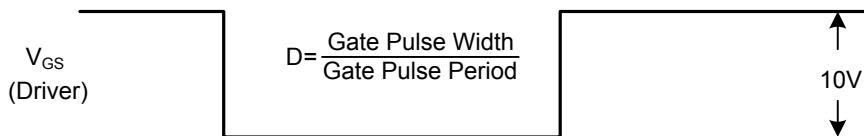
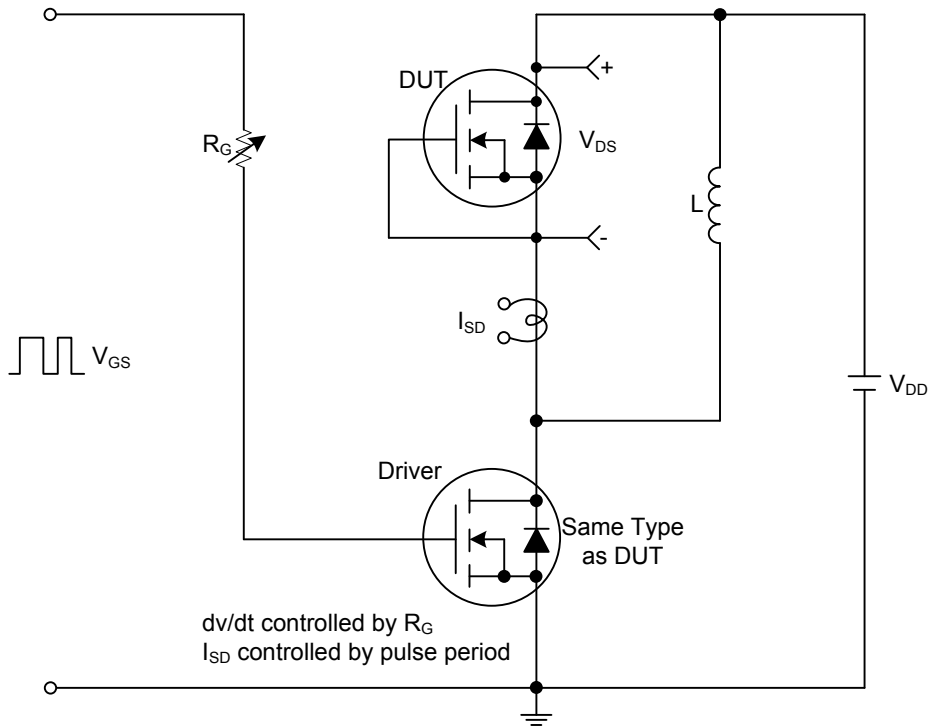
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%

2. Essentially independent of operating temperature typical characteristics

■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS(Cont.)



Peak Diode Recovery dv/dt Test Circuit and Waveforms

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