



UTT80N03

Power MOSFET

30A, 80V N-CHANNEL POWER MOSFET

DESCRIPTION

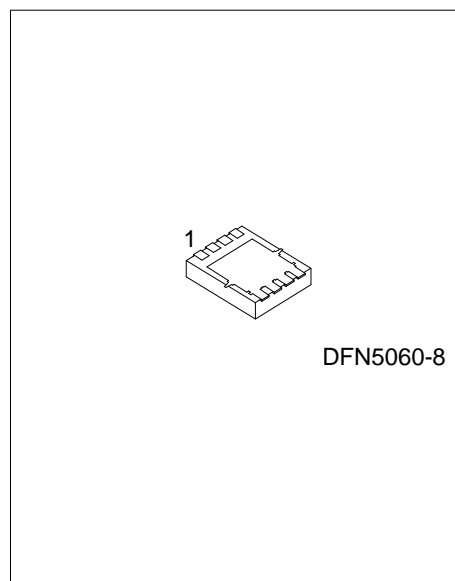
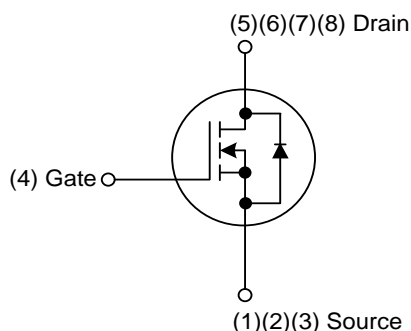
The UTC **UTT80N03** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with low $R_{DS(ON)}$ characteristic by high cell density trench technology.

The UTC **UTT80N03** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

FEATURES

- * $R_{DS(ON)} \leq 5.0 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=40\text{A}$
 $R_{DS(ON)} \leq 8.7 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=20\text{A}$
- * Fast switching capability
- * Avalanche energy tested
- * Improved dv/dt capability, high ruggedness

SYMBOL



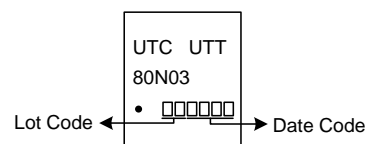
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT80N03L-K08-5080-R	UTT80N03G-K08-5080-R	DFN5080-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTT80N03G-K08-5080-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) K08-5060: DFN5060-8
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	80	A
Pulsed Drain Current (Note 2)	I _{DM}	160	A
Avalanche Energy	E _{AS}	205	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.8	V/ns
Power Dissipation	P _D	96	W
Junction Temperature	T _J	+150	°C
Storage Temperature Range	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. Repetitive rating; pulse width limited by max. junction temperature.

3. L=0.1mH, I_{AS}=64A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C

4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, starting T_J=25°C

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	110	°C/W
Junction to Case	θ _{JC}	1.3	°C/W

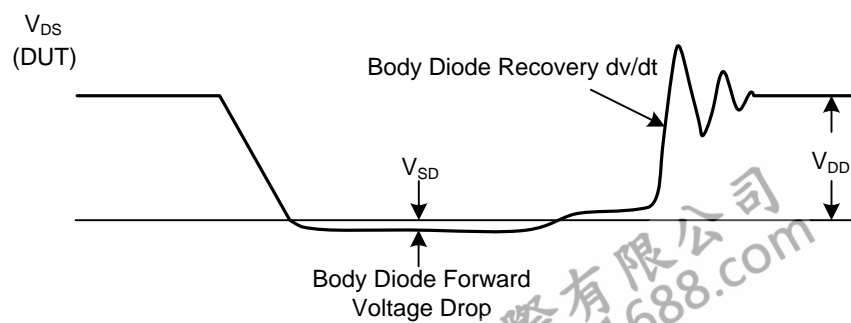
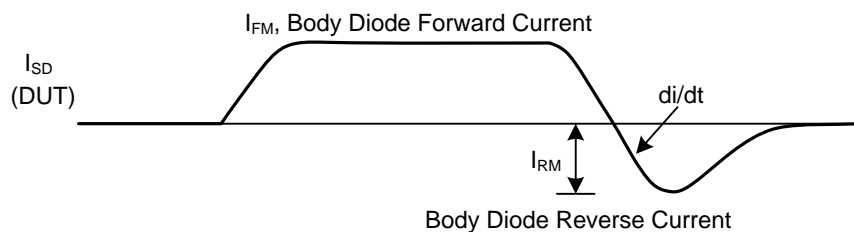
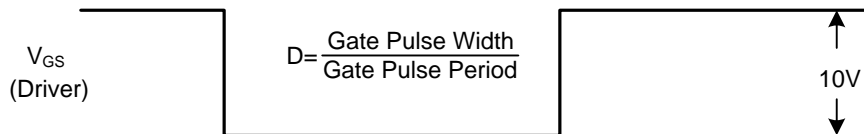
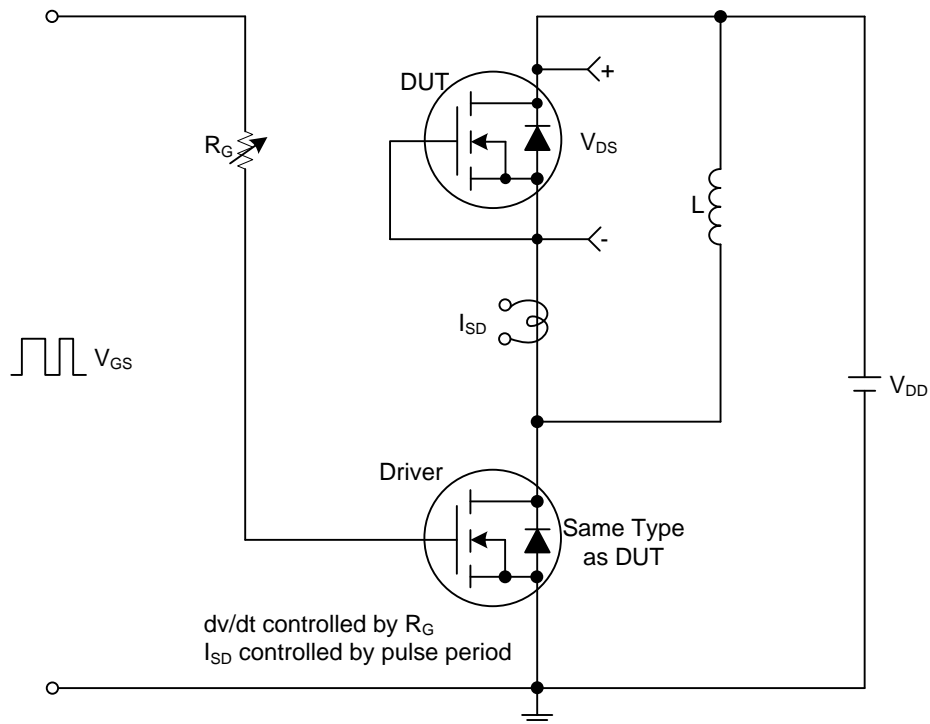
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =125°C			250	μA
Gate-Source Leakage Current	I _{GSS}	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 =40A			5.0	mΩ
		V _{GS} =4.5V, I _D =20A			8.7	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		4600		pF
Output Capacitance	C _{OSS}			570		pF
Reverse Transfer Capacitance	C _{RSS}			480		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =15V, V _{GS} =10V, I _D =15A, I _G =1mA(Note 1, 2)		98		nC
Gate to Source Charge	Q _{GS}			10		nC
Gate to Drain Charge	Q _{GD}			16		nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{DD} =15V, V _{GS} =10V, I _D =15A, R _G =3Ω(Note 1, 2)		30		ns
Turn-ON Rise Time	t _R			20		ns
Turn-OFF Delay Time	t _{D(OFF)}			85		ns
Turn-OFF Fall-Time	t _F			28		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				80	A
Pulsed Source Current	I _{SM}				160	A
Diode Forward Voltage (Note 1)	V _{SD}	I _S =80A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =30A, di/dt=100A/μs		84		ns
Body Diode Reverse Recovery Charge	Q _{rr}	(Note 1, 2)		80		nC

Notes: 1. Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%.

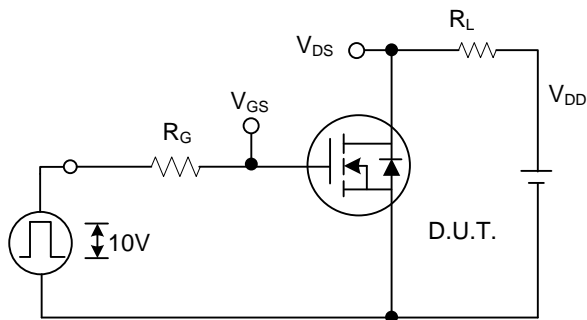
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

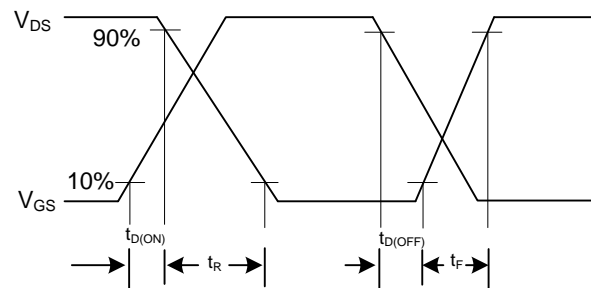


Peak Diode Recovery dv/dt Test Circuit and Waveforms

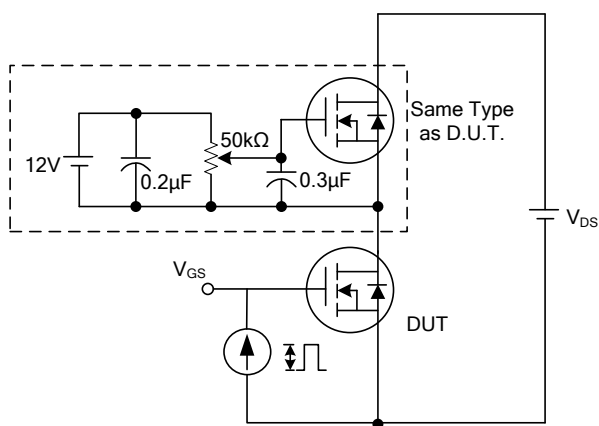
■ TEST CIRCUITS AND WAVEFORMS



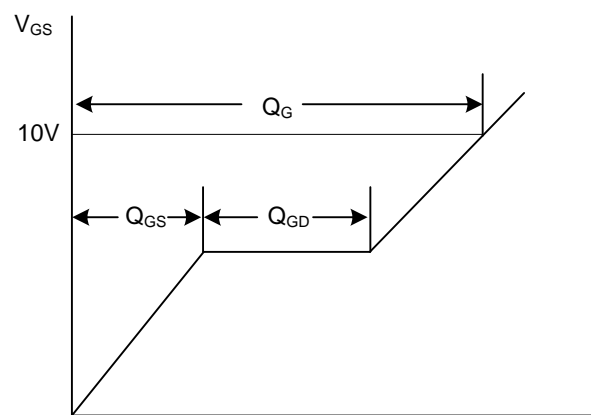
Switching Test Circuit



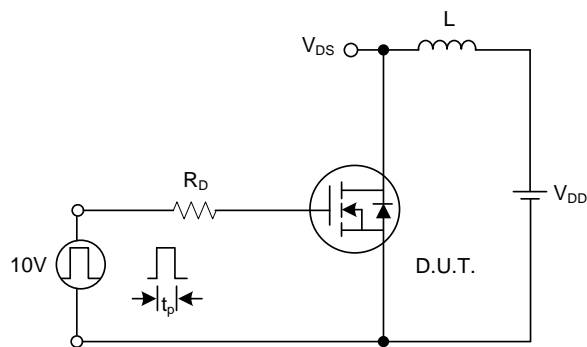
Switching Waveforms



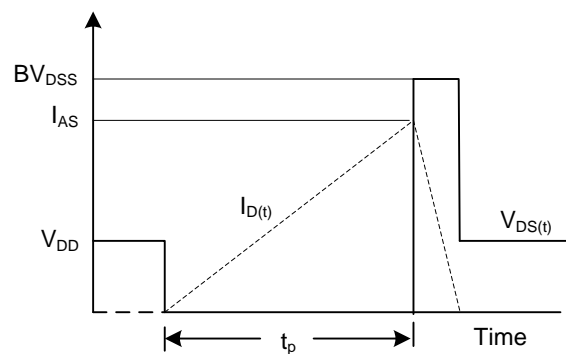
Gate Charge Test Circuit



Charge
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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