UTC UNISONIC TECHNOLOGIES CO., LTD

4N80

4.0A, 800V   N-CHANNEL POWER MOSFET

TO-251   TO-220F

TO-262   TO-220F1

TO-220F2   TO-220

TO-252   TO-252D

■ DESCRIPTION

The UTC **4N80** is a N-channel mode power MOSFET using UTC's advanced technology to provide costomers planar stripe and DMOS technology. This technology is specialized in allowing a minimum on-state resistance, and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The UTC **4N80** is universally applied in high efficiency switch mode power supply.

■ FEATURES

* $R_{DS(on)}$=3.0Ω @V_{GS} =10V
* High switching speed
* Improved dv/dt capability
* 100% avalanche tested

■ SYMBOL

2.Drain

1.Gate

3.Source
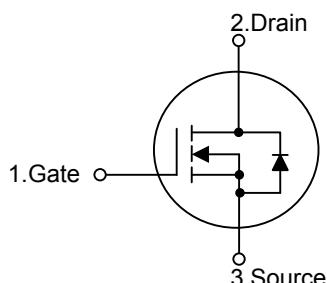
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
4N80L-TA3-T	4N80G-TA3-T	TO-220	G	D	S	Tube
4N80L-TF1-T	4N80G-TF1-T	TO-220F1	G	D	S	Tube
4N80L-TF2-T	4N80G-TF2-T	TO-220F2	G	D	S	Tube
4N80L-TF3-T	4N80G-TF3-T	TO-220F	G	D	S	Tube
4N80L-TM3-T	4N80G-TM3-T	TO-251	G	D	S	Tube
4N80L-TN3-R	4N80G-TN3-R	TO-252	G	D	S	Tape Reel
4N80L-TND-R	4N80G-TND-R	TO-252D	G	D	S	Tape Reel
4N80L-T2Q-T	4N80G-T2Q-T	TO-262	G	D	S	Tube

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

4N80L-TA3-T
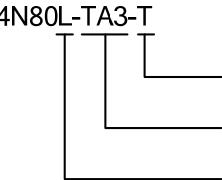
(1) Packing Type
(2) Package Type
(3) Green Package

(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TF3: TO-220F, TF1: TO-220F1
    TF2: TO-220F2, TM3:TO-251, TN3: TO-252,
    TND: TO-252D, T2Q:TO-262
(3) L: Lead Free, G: Halogen Free and Lead Free

■ **MARKING**

UTC
4N80□

L: Lead Free
G: Halogen Free
Data Code

Lot Code

1
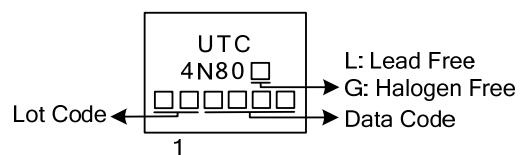
■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	800	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	Continuous	I_D	4.0	A
	Pulsed (Note 2)	I_{DM}	16	A
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	460	mJ
	Repetitive (Note 2)	E_{AR}	13	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.0	V/ns
Power Dissipation	TO-220/TO-262	P_D	106	W
	TO-220F/TO-220F1		36	W
	TO-220F2		38	W
	TO-251/TO-252 TO-252D		50	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. Repetitive Rating: Pulse width limited by maximum junction temperature

3. L=57mH, I_{AS}=4A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C

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

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2 TO-262	θ_{JA}	62.5	°C/W
	TO-251/TO-252 TO-252D		110	°C/W
Junction to Case	TO-220/TO-262	θ_{JC}	1.18	°C/W
	TO-220F/TO-220F1		3.47	°C/W
	TO-220F2		3.28	°C/W
	TO-251/TO-252 TO-252D		2.5	°C/W

■ 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}	V_{GS}=0V, I_D=250µA	800			V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	I_D=250µA,Referenced to 25°C		950		mV/°C
Drain-Source Leakage Current		I_{DSS}	V_{DS}=800V, V_{GS}=0V			10	µA
			V_{DS}=640V, T_C=125°C			100	µA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{DS}=0V ,V_{GS}=30V			100	nA
	Reverse		V_{DS}=0V ,V_{GS}=-30V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250µA	3.0		5.0	V
Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=2A		2.3	3.0	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=25V,V_{GS}=0V,f=1.0MHz		680	880	pF
Output Capacitance		C_{OSS}			75	100	pF
Reverse Transfer Capacitance		C_{RSS}			8.6	12	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS}=640V, V_{GS}=10V, I_D=4A (Note 1,2)		19	25	nC
Gate-Source Charge		Q_{GS}			4.2		nC
Gate-Drain Charge		Q_{GD}			9.1		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=400V, I_D=4A, R_G=25Ω (Note 1,2)		16	40	ns
Turn-ON Rise Time		t_R			45	100	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			35	80	ns
Turn-OFF Fall Time		t_F			35	80	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				4	A
Maximum Body-Diode Pulsed Current		I_{SM}				16	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S =4A, V_{GS}=0V			1.4	V
Body Diode Reverse Recovery Time		t_{rr}	V_{GS}=0V, I_S=4A, dI$_F$/dt=100A/µs (Note 1)		575		ns
Body Diode Reverse Recovery Charge		Q_{RR}			3.65		µC

Notes: 1. Pulse Test: Pulse width ≤ 300µs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ **TEST CIRCUITS AND WAVEFORMS**
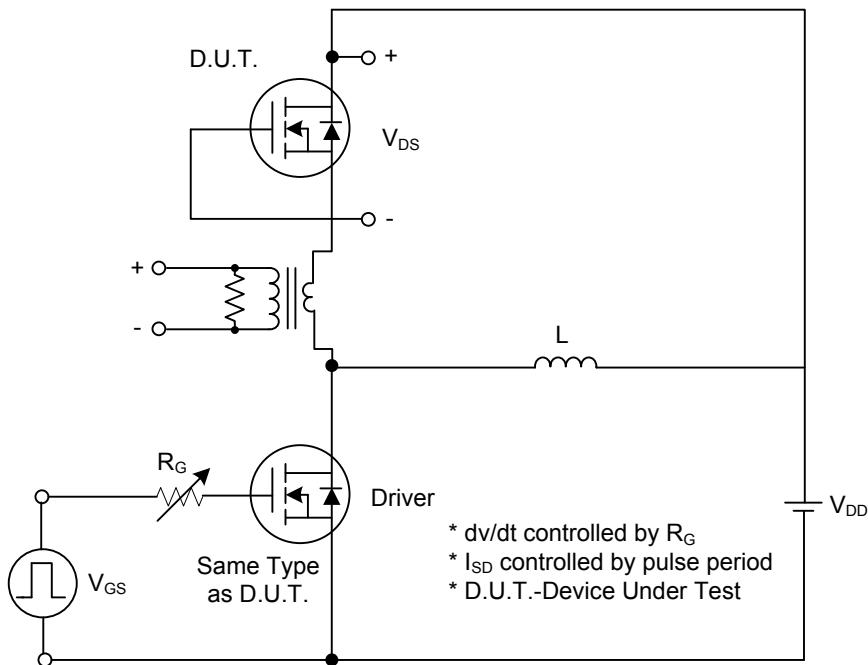

Peak Diode Recovery dv/dt Test Circuit

* dv/dt controlled by R_G
* I_{SD} controlled by pulse period
* D.U.T.-Device Under Test

$$D= \frac{P.\,W.}{Period}$$

$V_{GS}= 10V$

I_{FM}, Body Diode Forward Current

Body Diode Reverse Current

Body Diode Recovery dv/dt

Body Diode   Forward Voltage Drop
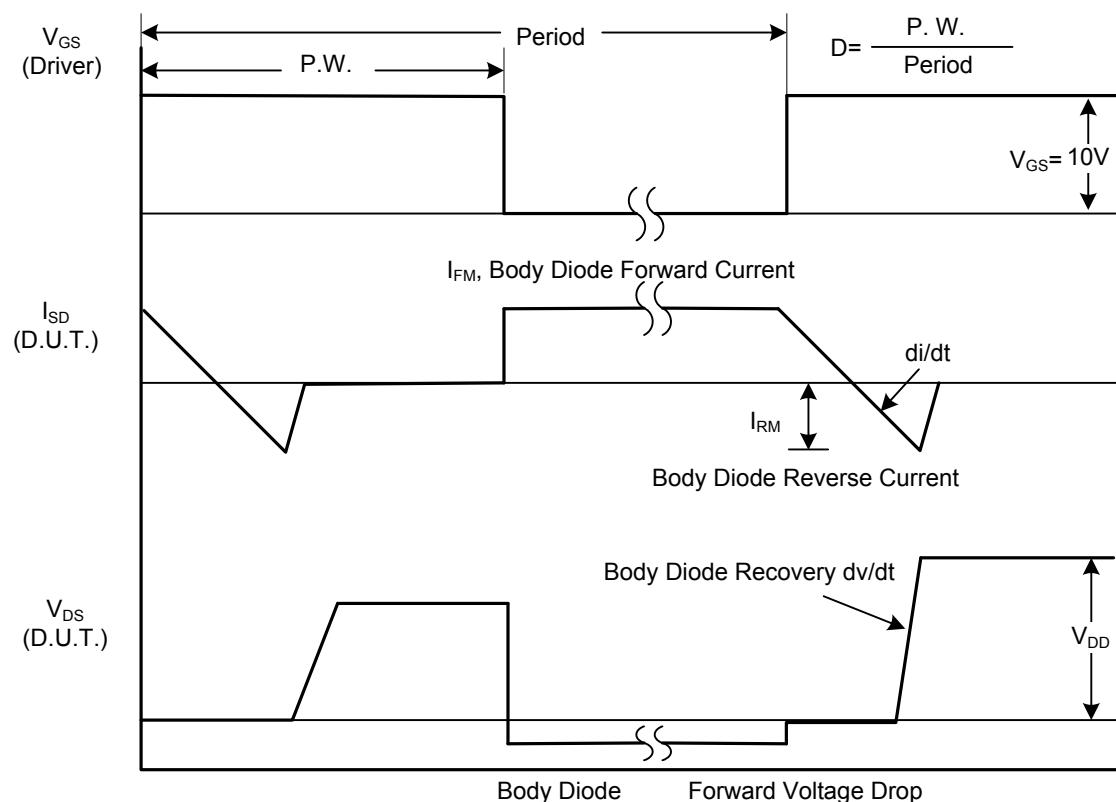
Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS(Cont.)
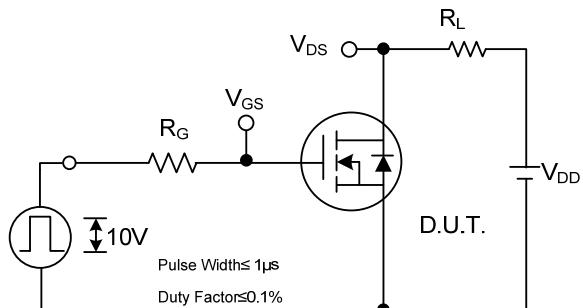
Switching Test Circuit
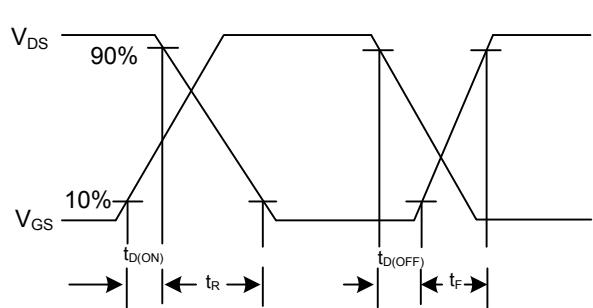
Switching Waveforms
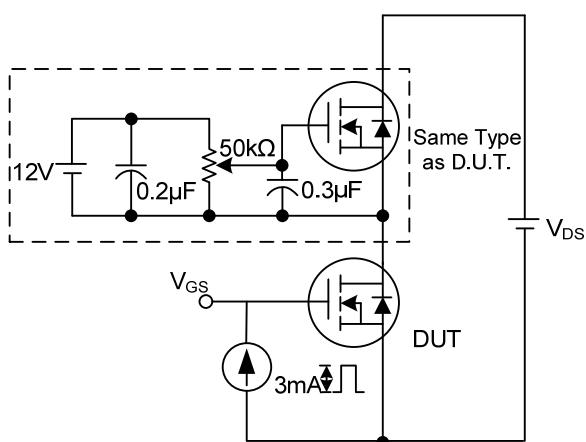
Gate Charge Test Circuit
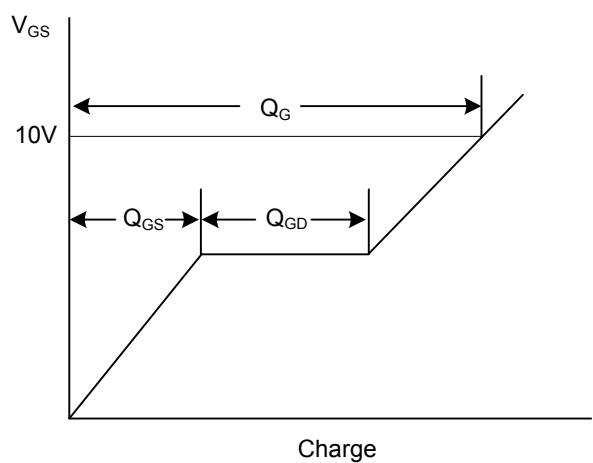
Gate Charge Waveform
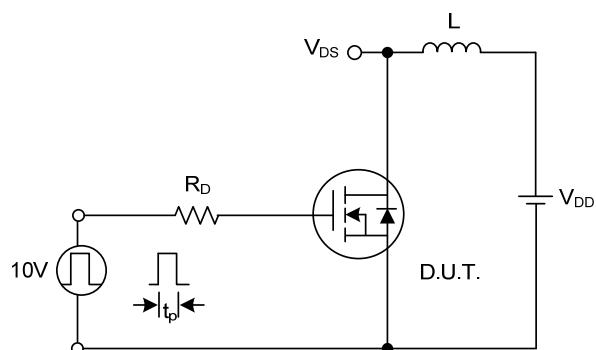
Unclamped Inductive Switching Test Circuit
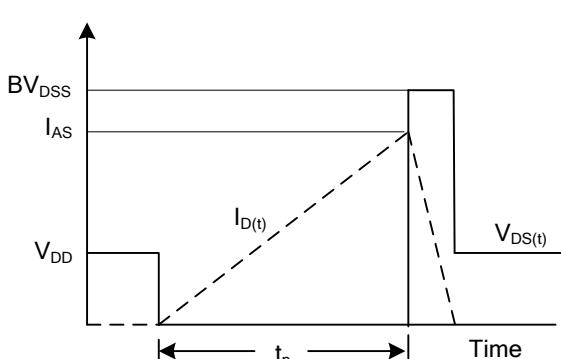
Unclamped Inductive Switching Waveforms

■ **TYPICAL CHARACTERISTICS**

Drain Current vs. Drain-Source Breakdown Voltage

Drain Current vs. Gate Threshold Voltage

Drain-Source On-State Resistance Characteristics

V_{GS}=10V, I_D=2A

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET *category:*

Click to view products by Unisonic *manufacturer:*

Other Similar products are found below :

614233C 648584F IRFD120 IRFF430 JANTX2N5237 2N7000 FCA20N60_F109 FDZ595PZ 2SK2267(Q) 2SK2545(Q,T) 405094E 423220D MIC4420CM-TR VN1206L 614234A 715780A SSM6J414TU,LF(T 751625C PSMN4R2-30MLD TK31J60W5,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 NTE2969 NTE6400A DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 SSM6P54TU,LF DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 STU5N65M6 C3M0021120D DMN13M9UCA6-7 BSS340NWH6327XTSA1 MCM3400A-TP DMTH10H4M6SPS-13 IPS60R1K0PFD7SAKMA1 IPS60R360PFD7SAKMA1 IPS60R600PFD7SAKMA1 IPS60R210PFD7SAKMA1 DMN2990UFB-7B ISZ040N03L5ISATMA1