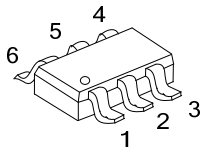
4A, 30V DUAL N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



SOT-26

■ DESCRIPTION

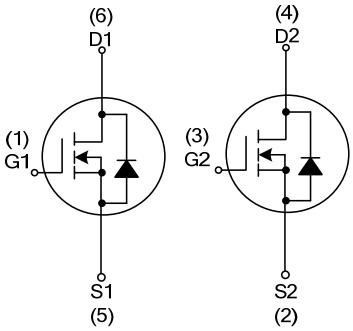
The UTC **UD4N03-H** is a dual N-Channel enhancement mode field effect transistor, it uses UTC's advanced technology to provide customers with a minimum on-state resistance and low gate charge, etc.

The UTC **UD4N03-H** is suitable for use as a load switch or in PWM applications.

■ FEATURES

* $R_{DS(ON)}$< 38 mΩ @ V_{GS}=10V, I_D=3.5A
  $R_{DS(ON)}$< 72 mΩ @ V_{GS}=4.5V, I_D=2.5A
* Low gate charge

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UD4N03L-AG6-R	UD4N03G-AG6-R	SOT-26	G1	S2	G2	D2	S1	D1	Tape Reel

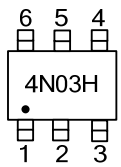
Note: Pin Assignment: G: Gate D: Drain S: Source

UD4N03G-AG6-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AG6: SOT-26
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current (Note 2)	I_{DM}	16	A
Peak Diode Recovery dv/dt (Note 4)	dv/dt	1.7	V/ns
Power Dissipation	P_D	1.14	W
Junction Temperature	T_J	-55 ~ +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 maximum junction temperature.
3. I_{SD} ≤ 4.0A, di/dt ≤ 200A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J = 25°C.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	150	°C/W
Junction to Case	θ_{JC}	80	°C/W

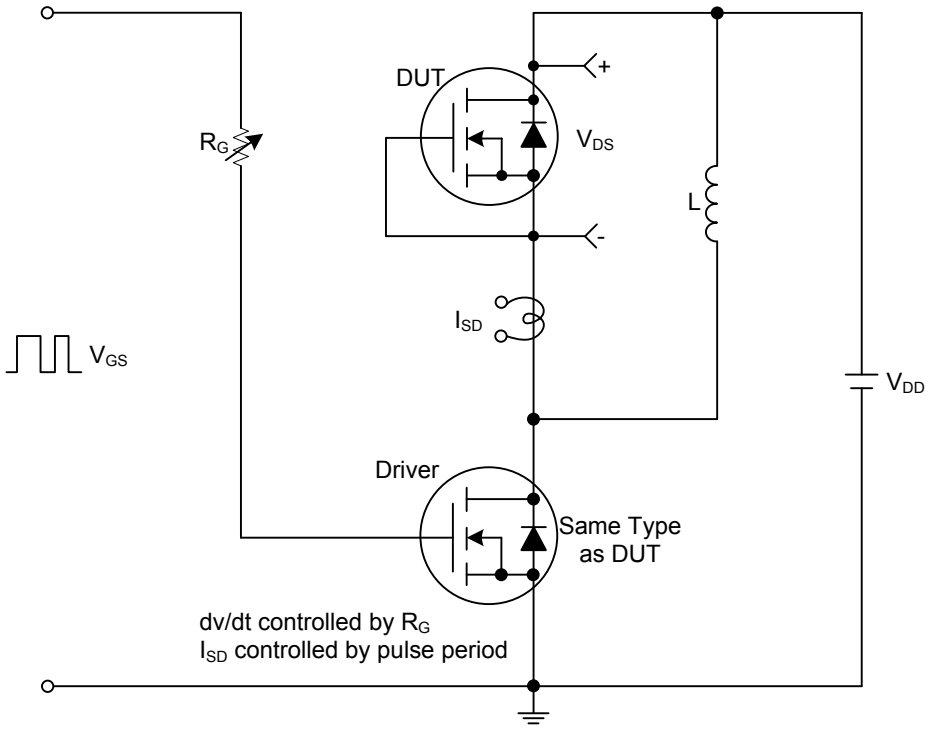
Note: Repetitive Rating: Pulse width limited by maximum junction temperature.

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

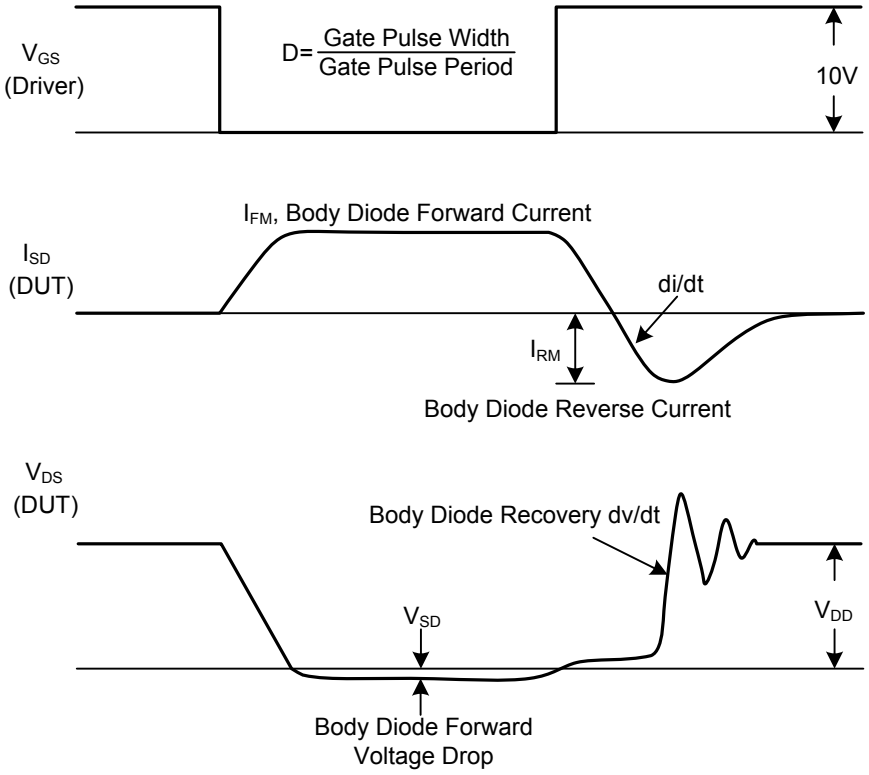
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Zero Gate Voltage Drain Current		I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		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=3.5A			38	mΩ
			V_{GS}=4.5V, I_D=2.5A			72	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1MHz		200		pF
Output Capacitance		C_{OSS}			37		pF
Reverse Transfer Capacitance		C_{RSS}			32		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DS}=20V, I_D=1.0A I_G=100μA		13		nC
Gate to Source Charge		Q_{GS}			0.8		nC
Gate to Drain Charge		Q_{GD}			1.4		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{GS}=10V, V_{DS}=20V, , I_D=1.0A R_G=25Ω		22		ns
Rise Time		t_R			30		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			98		ns
Fall-Time		t_F			70		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
Diode Forward Voltage		V_{SD}	I_S=3.5A, V_{GS}=0V			1.2	V
Body Diode Reverse Recovery Time		t_{rr}	I_F=4.0A, dI/dt=100A/μs		780		ns
Body Diode Reverse Recovery Charge		Q_{rr}			2.23		μC

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

■ TEST CIRCUITS AND WAVEFORMS



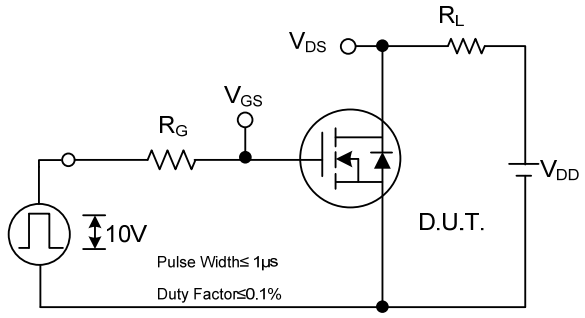
Peak Diode Recovery dv/dt Test Circuit



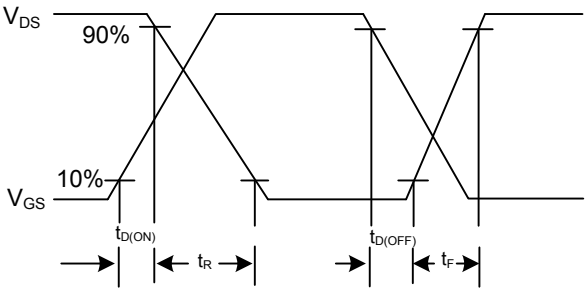
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

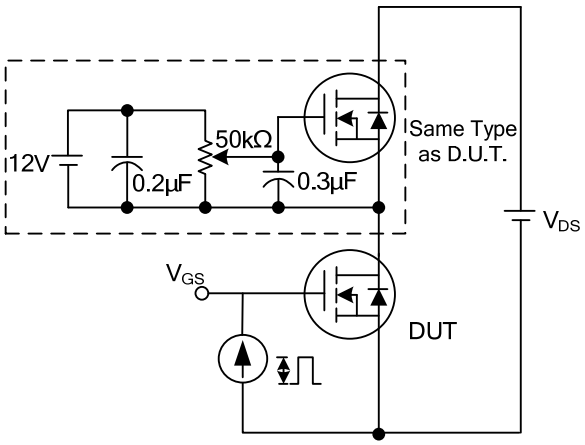
■ TEST CIRCUITS AND WAVEFORMS



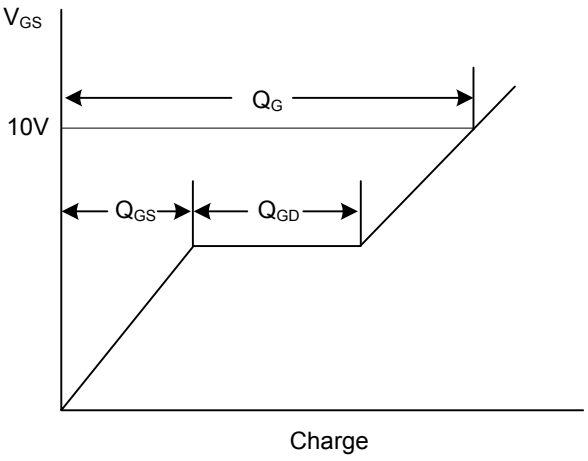
Switching Test Circuit



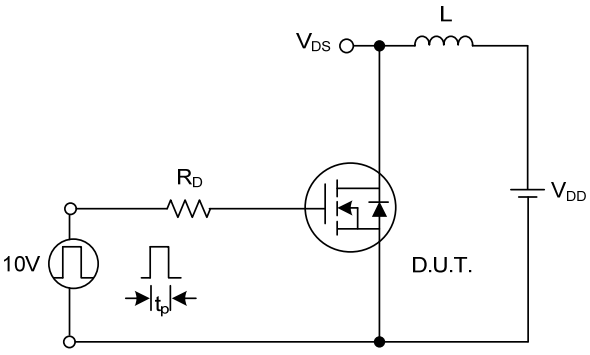
Switching Waveforms



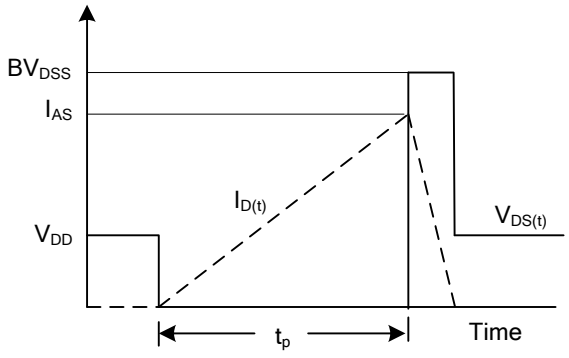
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms