



UT40N03

Power MOSFET

40 Amps, 30 Volts N-CHANNEL POWER MOSFET

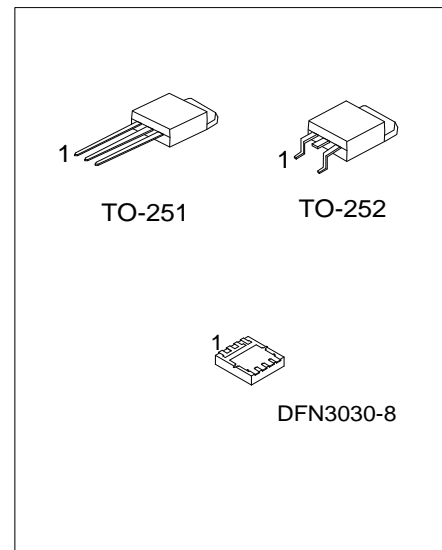
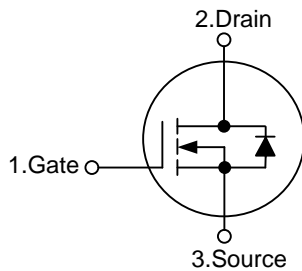
DESCRIPTION

The UT40N03 power MOSFET provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness

FEATURES

- * $R_{DS(ON)} \leq 17 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=20\text{A}$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



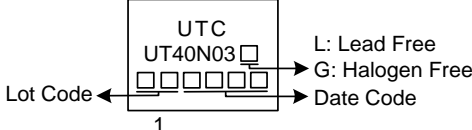
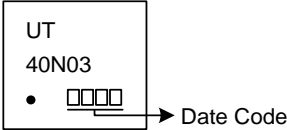
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT40N03L-TM3-T	UT40N03G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UT40N03L-TN3-R	UT40N03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT40N03L-K08-3030-R	UT40N03G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT40N03G-TM3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, TN3: TO-252</p> <p>K08-3030: DFN3030-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

TO-251 / TO-252	DFN3030-8
 <p>The diagram shows a rectangular marking area for a TO-251 / TO-252 package. It contains the text 'UTC' and 'UT40N03' followed by a small square. Below this is a row of five small squares. An arrow points from the first square to the left, labeled 'Lot Code'. An arrow points from the last square to the right, labeled 'Date Code'. Below the row of squares is the number '1'. To the right of the marking area, there are three lines of text: 'L: Lead Free', 'G: Halogen Free', and 'Date Code'.</p>	 <p>The diagram shows a rectangular marking area for a DFN3030-8 package. It contains the text 'UT' and '40N03' followed by a small square. Below this is a row of four small squares. An arrow points from the last square to the right, labeled 'Date Code'.</p>

■ ABSOLUTE MAXIMUM RATINGS (T_J=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	40	A
Pulsed Drain Current (Note 1)	I _{DM}	80	A
Total Power Dissipation	TO-251/TO-252	48	W
	DFN3030-8	20	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Note: 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-251/TO-252	50	°C/W
	DFN3030-8	65	°C/W
Junction to Case	TO-251/TO-252	2.6	°C/W
	DFN3030-8	6.25	°C/W

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

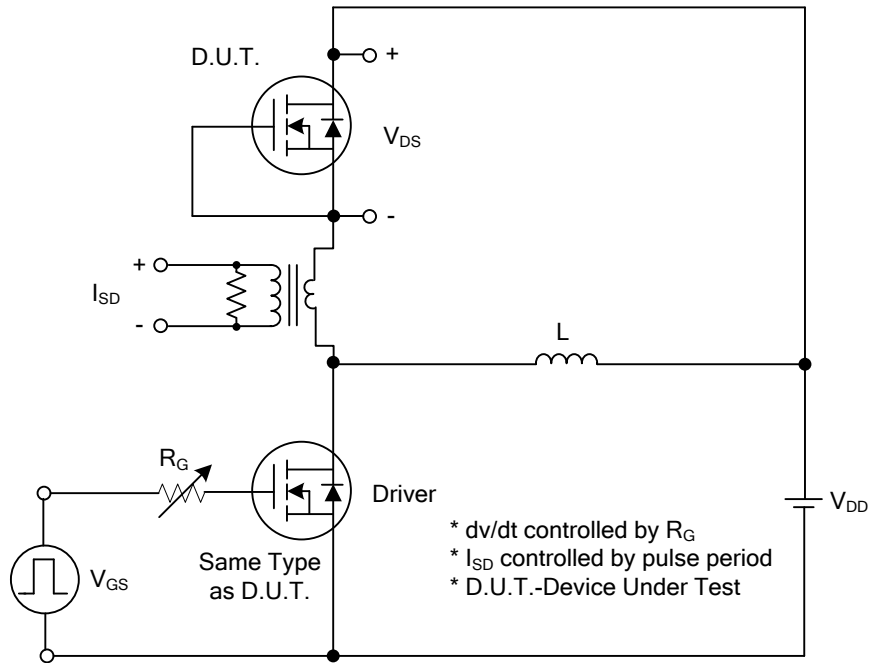
■ ELECTRICAL CHARACTERISTICS (T_A =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30 V, V _{GS} =0 V, T _J =25°C			1	μA
Gate- Source Leakage Current	I _{GSS}	V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1		3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =20 A		14	17	mΩ
		V _{GS} =4.5 V, I _D =16 A		20	23	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25 V, V _{GS} =0V, f=1.0MHz		600		pF
Output Capacitance	C _{OSS}			145		
Reverse Transfer Capacitance	C _{RSS}			125		
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =10V, I _D =20A		24		nC
Gate-Source Charge	Q _{GS}			3		
Gate-Drain Charge	Q _{GD}			6		
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =15 V, V _{GS} =10V, I _D =1.0A, R _G =3.3 Ω, R _L =0.75 Ω		14		ns
Turn-ON Rise Time	t _R			18		
Turn-OFF Delay Time	t _{D(OFF)}			32		
Turn-OFF Fall-Time	t _F			28		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				40	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				80	
Drain-Source Diode Forward Voltage	V _{SD}	T _J =25°C, I _S =40A, V _{GS} =0V			1.3	V

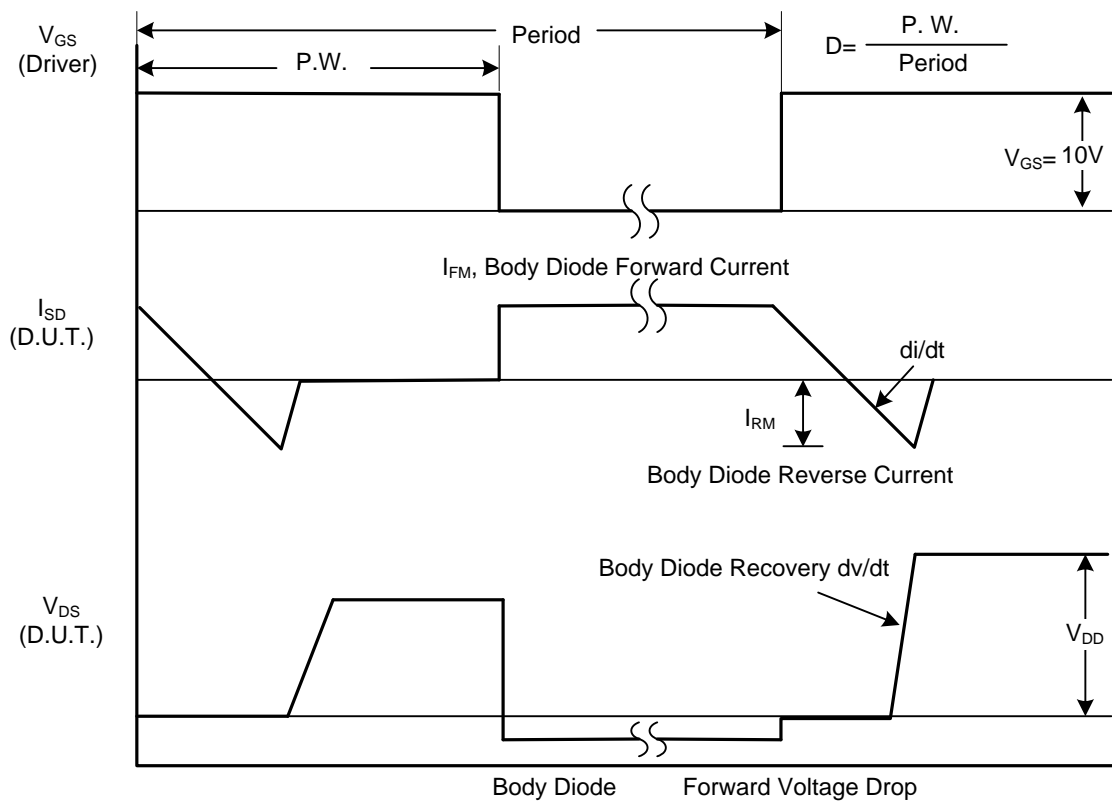
Notes: 1. Repetitive rating; pulse width limited by max. junction temperature.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

TEST CIRCUITS AND WAVEFORMS

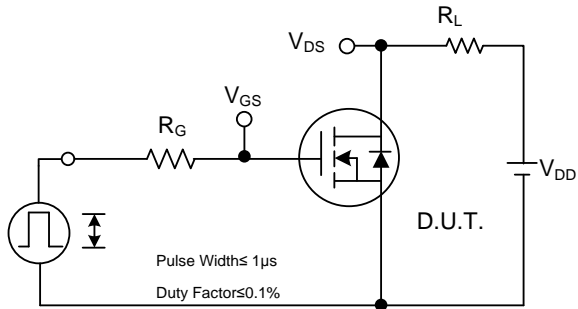


Peak Diode Recovery dv/dt Test Circuit

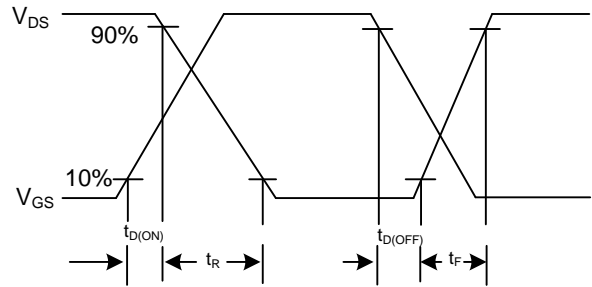


Peak Diode Recovery dv/dt Waveforms

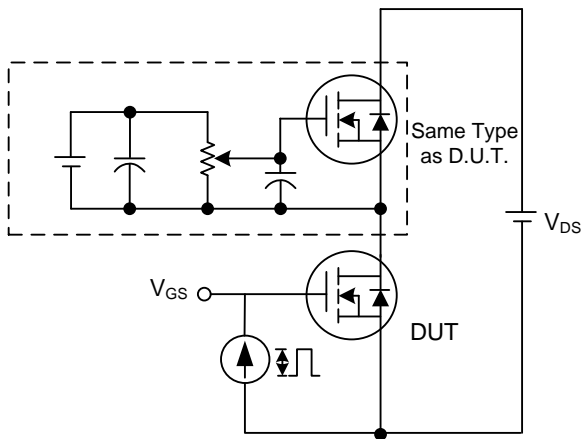
TEST CIRCUITS AND WAVEFORMS



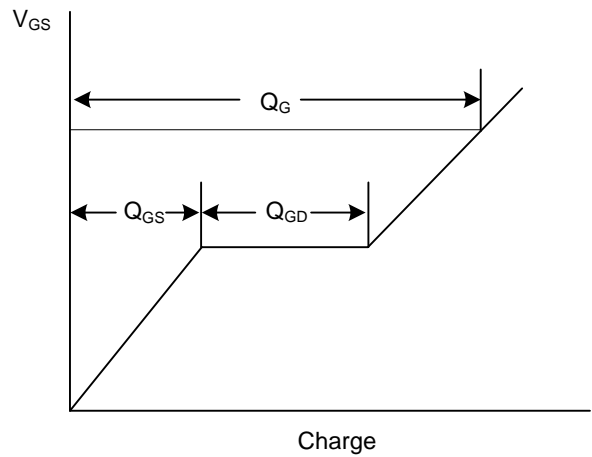
Switching Test Circuit



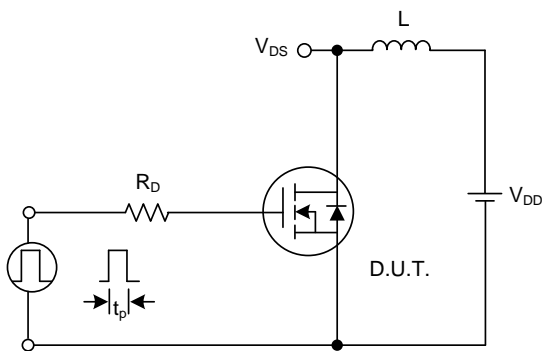
Switching Waveforms



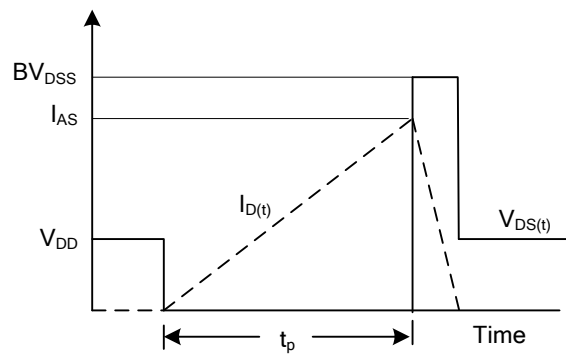
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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