

**UT7852**

Preliminary

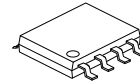
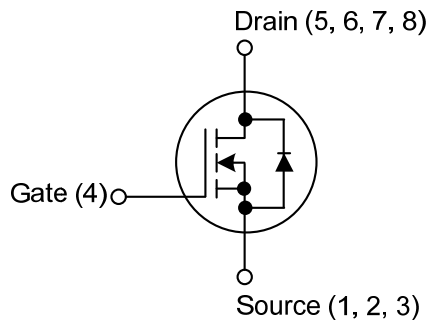
Power MOSFET**N-CHANNEL 80V (D-S) MOSFET****DESCRIPTION**

The UTC **UT7852** is an N-Channel MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance and high switching speed.

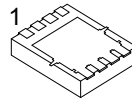
The UTC **UT7852** is suitable for primary side switch for DC/DC applications.

FEATURES

- * High switching speed
- * Low on-state resistance

SYMBOL

SOP-8



DFN5060-8

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT7852L-S08-R	UT7852G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT7852L-K08-5060-R	UT7852G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) S08: UT7852, K08-5060: DFN5060-8
		(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING

SOP-8	DFN5060-8

■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	80	V
Gate-Source Voltage			V _{GSS}	±20	V
Pulsed Drain Current			I _{DM}	50	A
Continuous Drain Current (T _J =150°C)(Note 1)	T _A =25°C	I _D	12.5	A	
	T _A =70°C		10.0	A	
Avalanche Current		L=0.1mH	I _{AS}	40	A
Continuous Source Current (Diode Conduction) (Note 1)			I _S	4.7	A
Power Dissipation (Note 1)	T _A =25°C	SOP-8	P _D	1.5	W
		DFN5060-8		5.2	W
Junction Temperature			T _J	-55 ~ +150	°C
Storage Temperature Range			T _{STG}	-55 ~ +150	°C
Soldering Recommendations (Peak Temperature)				260	°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 CHARACTERISTICS**

PARAMETER		SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 1)	SOP-8	θ_{JA}			85	$^{\circ}\text{C/W}$
	DFN5060-8			52	65	$^{\circ}\text{C/W}$
Junction to Case (Drain)	SOP-8	θ_{JC}			24	$^{\circ}\text{C/W}$
	DFN5060-8			1.5	1.8	$^{\circ}\text{C/W}$

Note: Surface Mounted on 1" x 1" FR4 board.

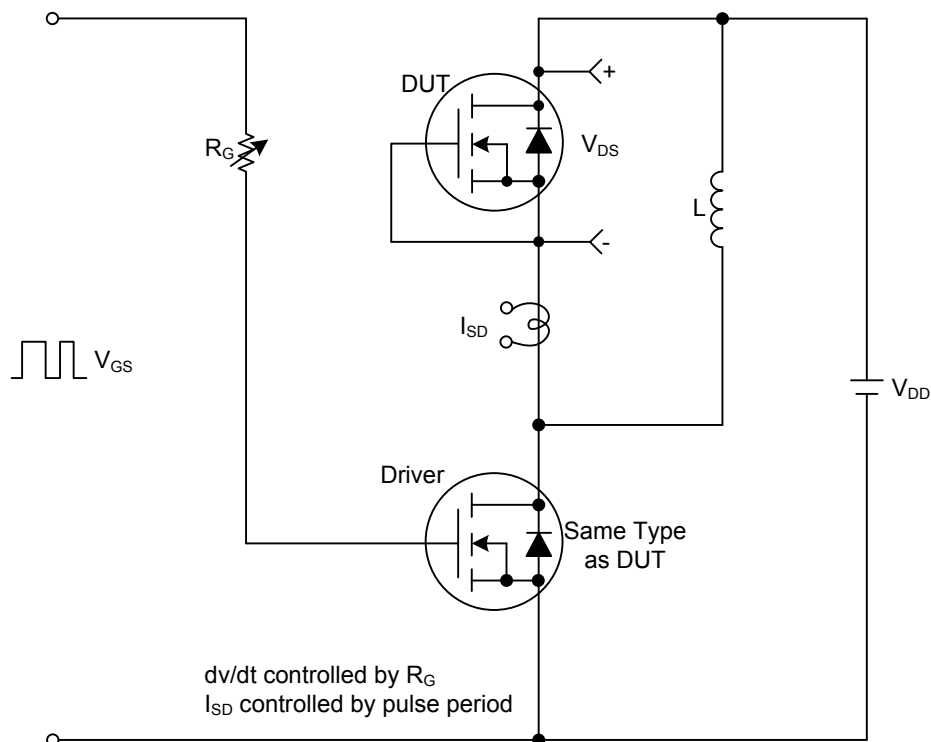
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Zero Gate Voltage Drain Current		I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
			V _{DS} =80V, V _{GS} =0V, T _J =55°C			5	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	2.0			V
Static Drain-Source On-State Resistance (Note 1)		R _{DS(ON)}	V _{GS} =10V, I _D =10A		12.5	16.5	mΩ
			V _{GS} =6.0V, I _D =8.0A		14	22	mΩ
Forward Transconductance (Note 1)		g _{FS}	V _{DS} =15V, I _D =10A		25		S
On State Drain Current (Note 1)		I _{D(ON)}	V _{DS} ≥5V, V _{GS} =10V	50			A
DYNAMIC PARAMETERS (Note 2)							
Gate Resistance		R _G			2		Ω
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =40V, I _D =10A		34	41	nC
Gate to Source Charge		Q _{GS}			7.5		nC
Gate to Drain Charge		Q _{GD}			11.0		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =30V, R _L =60Ω, I _D ≈0.5A, V _{GEN} =10V, R _G =25Ω		120		ns
Rise Time		t _R			130		ns
Turn-OFF Delay Time		t _{D(OFF)}			700		ns
Fall-Time		t _F			220		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Diode Forward Voltage (Note 1)		V _{SD}	I _S =2.8A, V _{GS} =0V		0.75	1.1	V
Source-Drain Reverse Recovery Time		t _{rr}	I _F =2.8A, dI/dt=100A/μs		45	75	ns

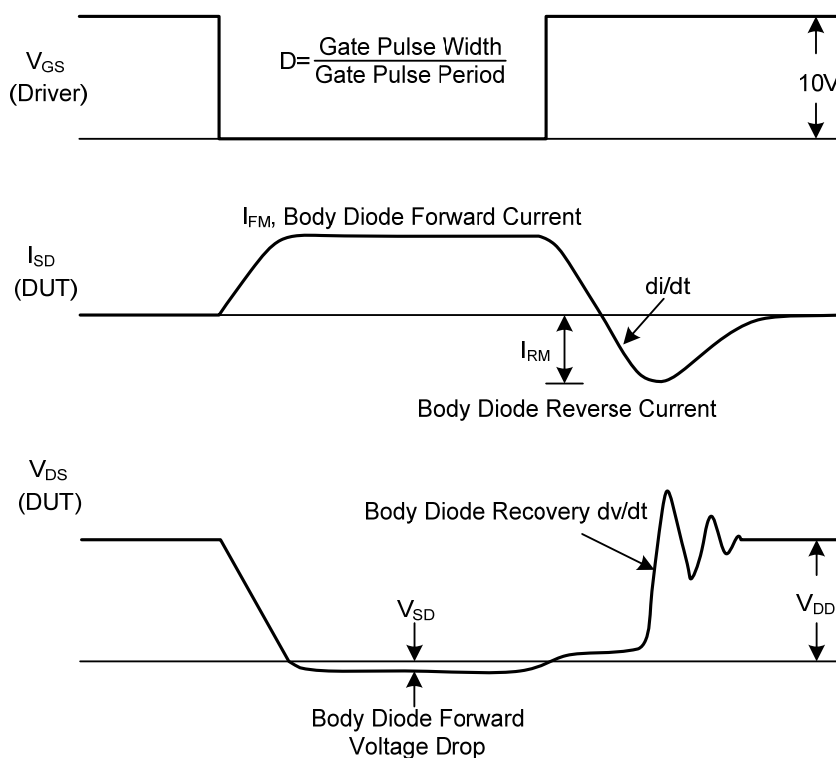
Notes: 1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

2. Guaranteed by design, not subject to production testing.

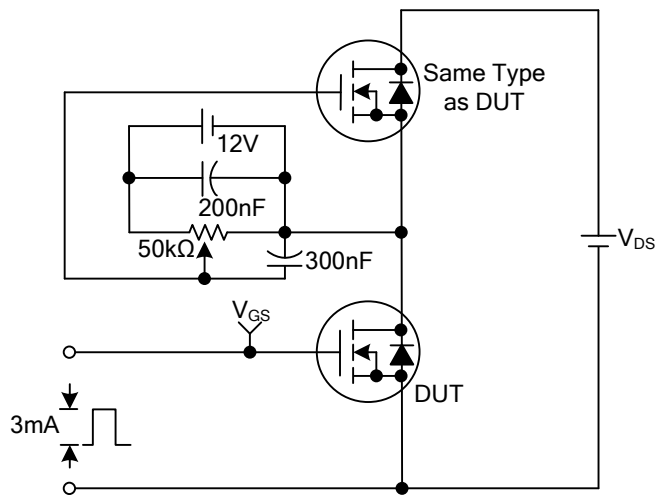
■ TEST CIRCUITS AND WAVEFORMS



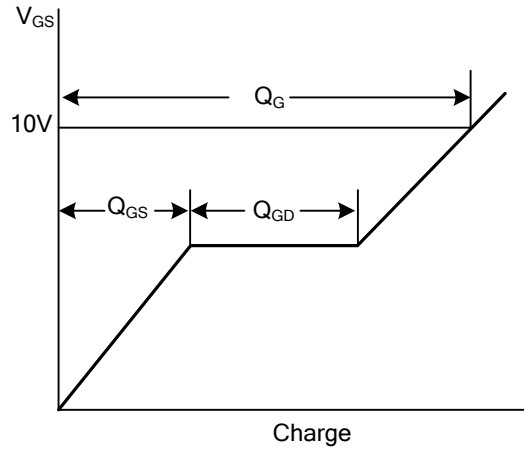
Peak Diode Recovery dv/dt Test Circuit & Waveforms



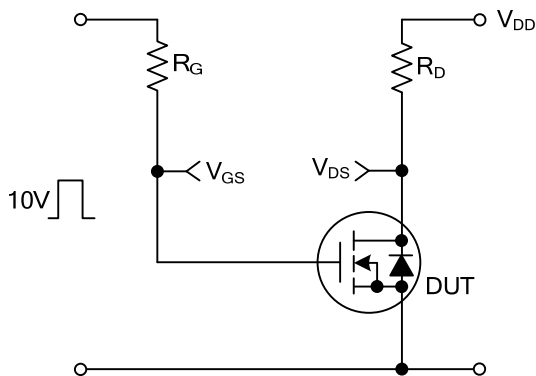
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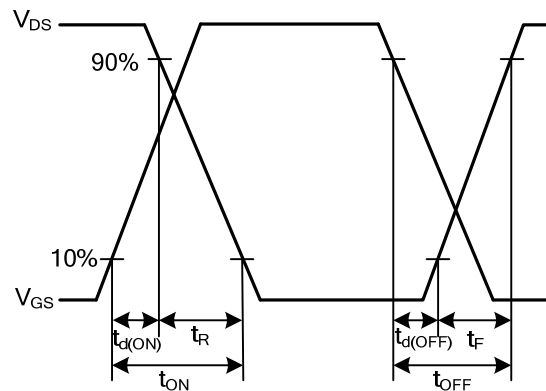
Gate Charge Test Circuit



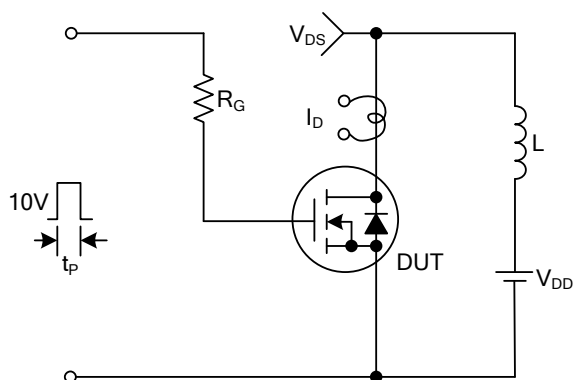
Gate Charge Waveforms



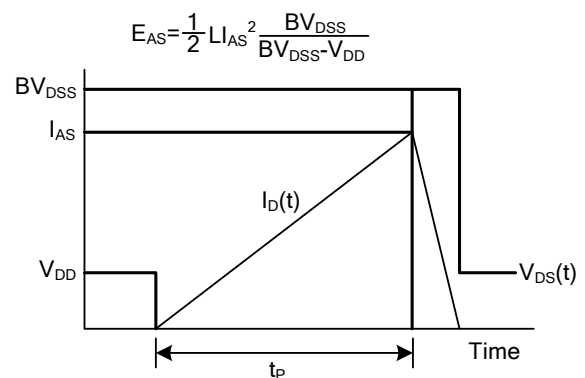
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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