



01N150V

Preliminary

Power MOSFET

0.1A, 1500V N-CHANNEL POWER MOSFET

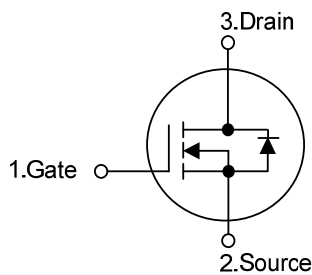
DESCRIPTION

The UTC **01N150V** is a planar power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and superior switching performance.

FEATURES

- * $R_{DS(ON)} \leq 130 \Omega$ @ $V_{GS}=10V$, $I_D=50mA$
- * High switching speed
- * 100% avalanche tested

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
01N150VL-AA2-R	01N150VG-AA2-R	SOT-223-2	G	D	S	Tape Reel
01N150VL-AA3-R	01N150VG-AA3-R	SOT-223	G	D	S	Tape Reel
01N150VL-TN3-R	01N150VG-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>01N150VG-AA2-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AA2: SOT-223-2, AA3: SOT-223, TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

SOT-223-2 / SOT-223	TO-252
<p>01N150V□□□ L: Lead Free G: Halogen Free Date Code 1</p>	<p>UTC 01N150V□□□□ L: Lead Free G: Halogen Free Date Code 1</p>

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	1500	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current	Continuous	I_D	0.1	A
	Pulsed (Note 2)	I_{DM}	0.2	A
Power Dissipation	SOT-223-2/SOT-223	P_D	0.9	W
	TO-252		16	W
Junction Temperature		T_J	+150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-223-2/SOT-223	θ_{JA}	150	$^{\circ}\text{C/W}$
	TO-252		110	$^{\circ}\text{C/W}$
Junction to Case	SOT-223-2/SOT-223	θ_{JC}	140	$^{\circ}\text{C/W}$
	TO-252		7.8	$^{\circ}\text{C/W}$

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate, $t \leq 10$ sec.

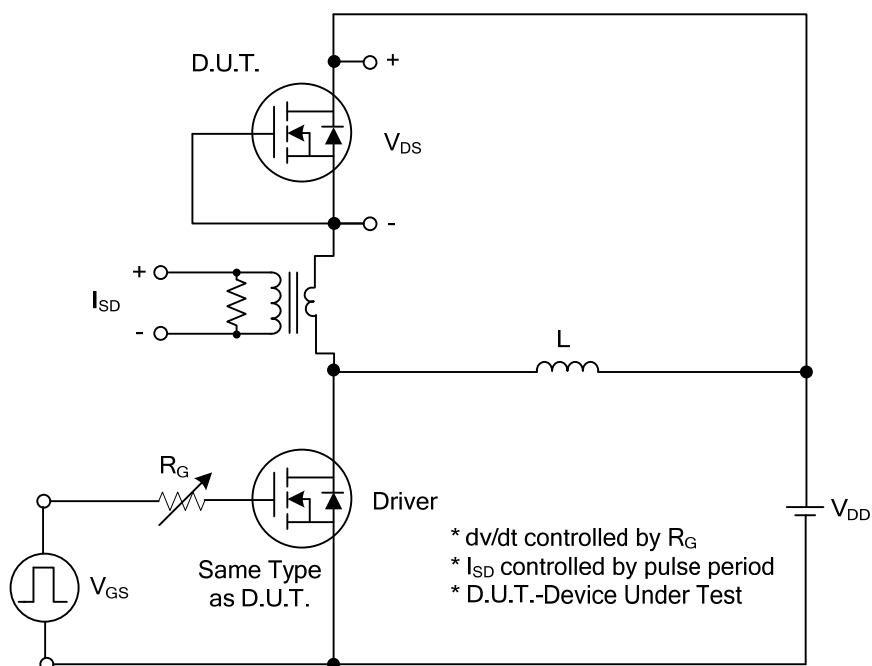
■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{DS} =0V	1500			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =1500V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+30V, V _{DS} =0V			±100	nA
	Reverse		V _{GS} =-30V, 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 =50mA			130	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		100		pF
Output Capacitance		C _{OSS}			15		pF
Reverse Transfer Capacitance		C _{RSS}			2.5		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =1200V, V _{GS} =10V, I _D =0.1A (Note1, 2)		11.8		nC
Gate to Source Charge		Q _{GS}			2.1		nC
Gate to Drain Charge		Q _{GD}			1.5		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =100V, V _{GS} =10V, I _D =0.1A, R _G =25Ω (Note1, 2)		4		ns
Rise Time		t _R			19		ns
Turn-OFF Delay Time		t _{D(OFF)}			40		ns
Fall-Time		t _F			235		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				0.1	A
Maximum Body-Diode Pulsed Current		I _{SM}				0.2	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =0.1A			1.4	V

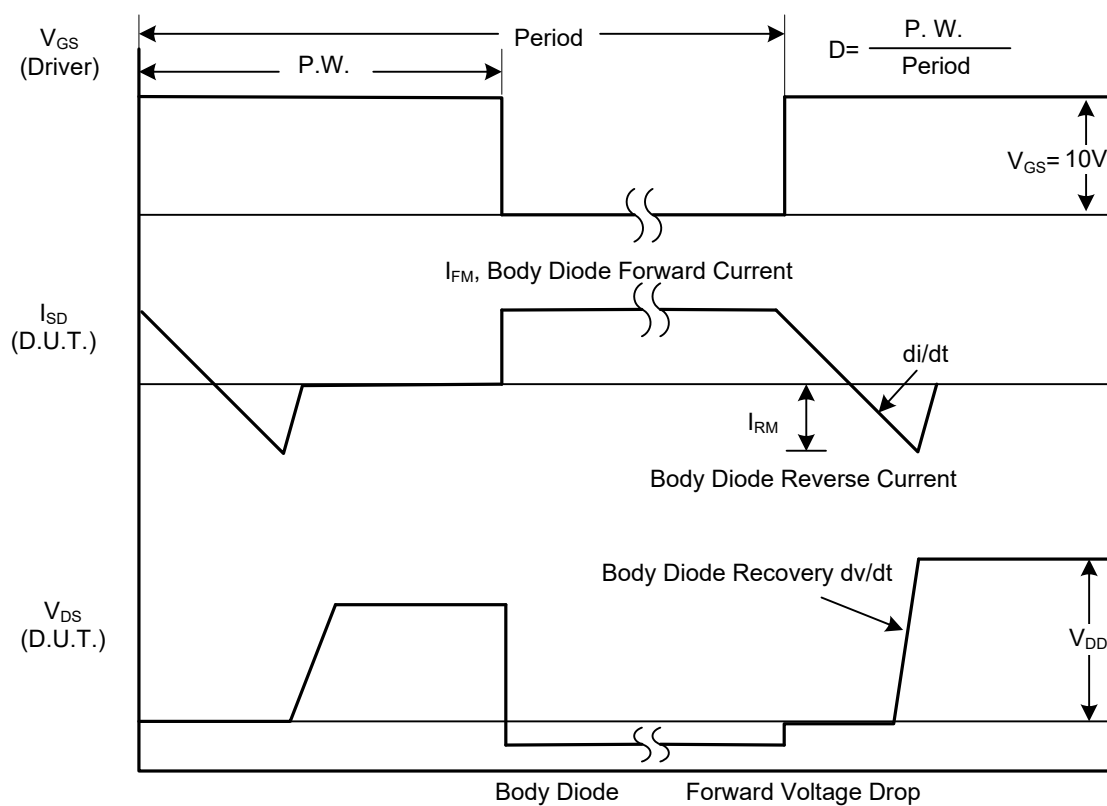
Notes: 1. Pulse Test: Pulse width $\leq 150\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

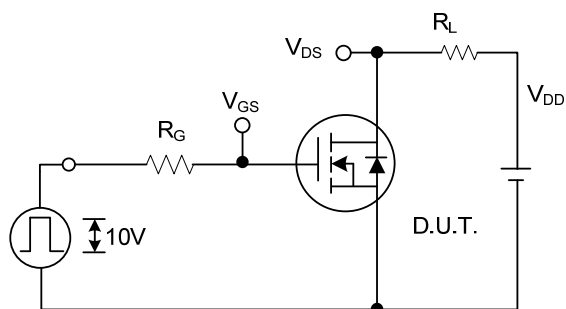


Peak Diode Recovery dv/dt Test Circuit

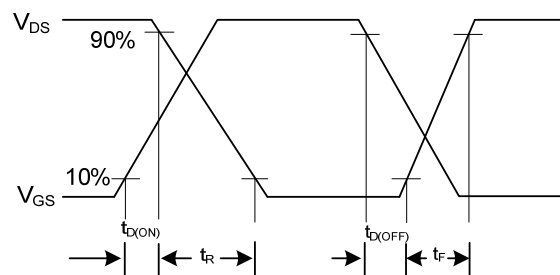


Peak Diode Recovery dv/dt Waveforms

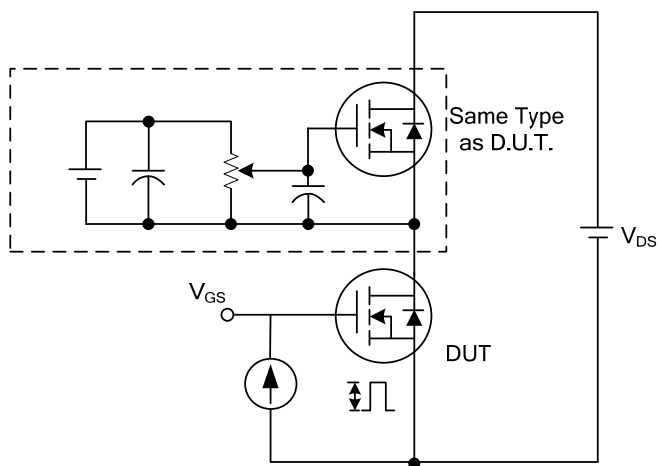
■ TEST CIRCUITS AND WAVEFORMS



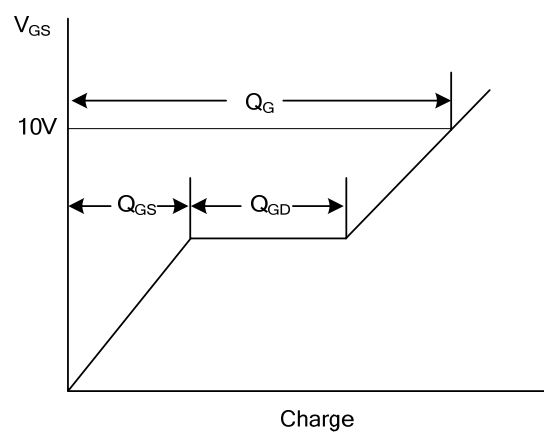
Switching Test Circuit



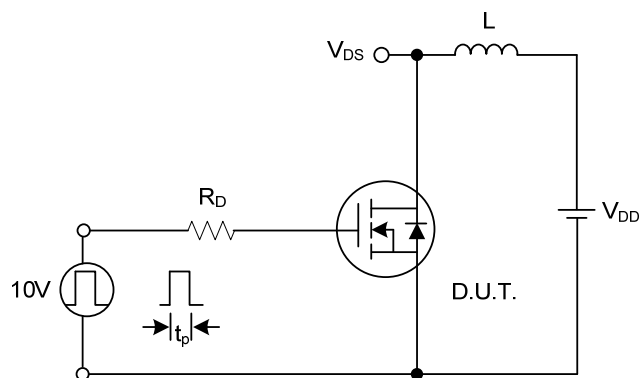
Switching Waveforms



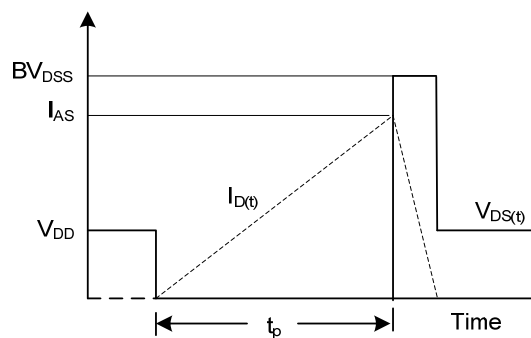
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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