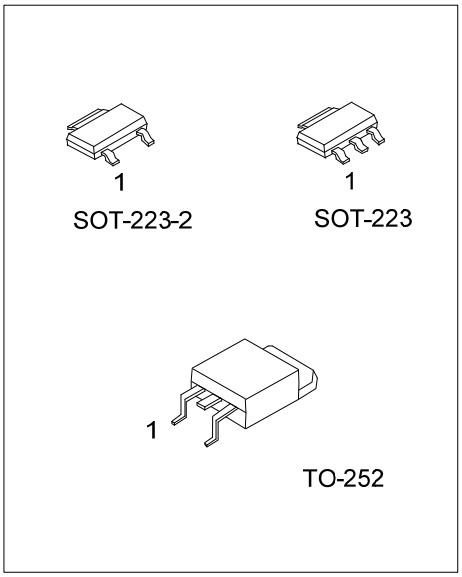
0.1A, 1500V N-CHANNEL POWER MOSFET



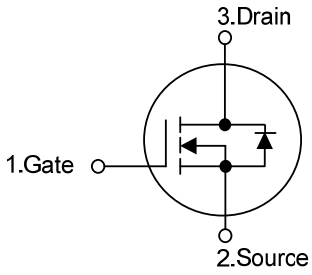
■ DESCRIPTION

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



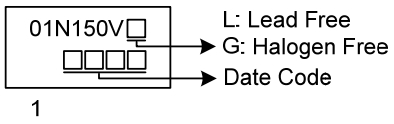
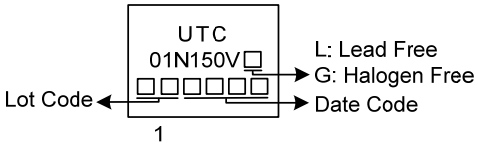
■ ORDERING INFORMATION

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

01N150VG-AA2-R (1)Packing Type (2)Package Type (3)Green Package	(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

■ MARKING

SOT-223-2 / SOT-223	TO-252
	

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	1500	V
Gate-Source Voltage		V_{GSS}	±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	°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.

■ THERMAL DATA

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

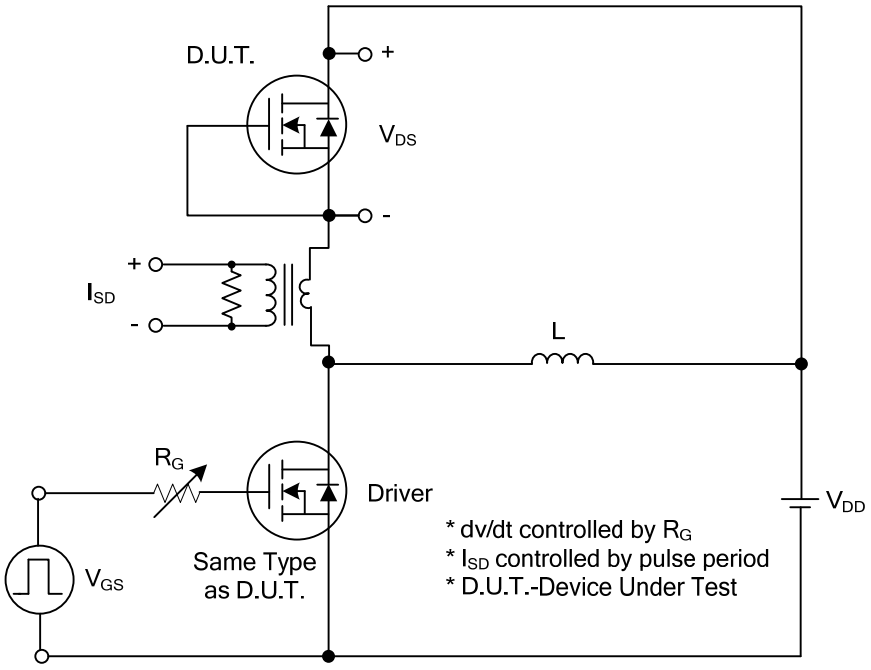
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate, t ≤ 10 sec.

■ ELECTRICAL CHARACTERISTICS

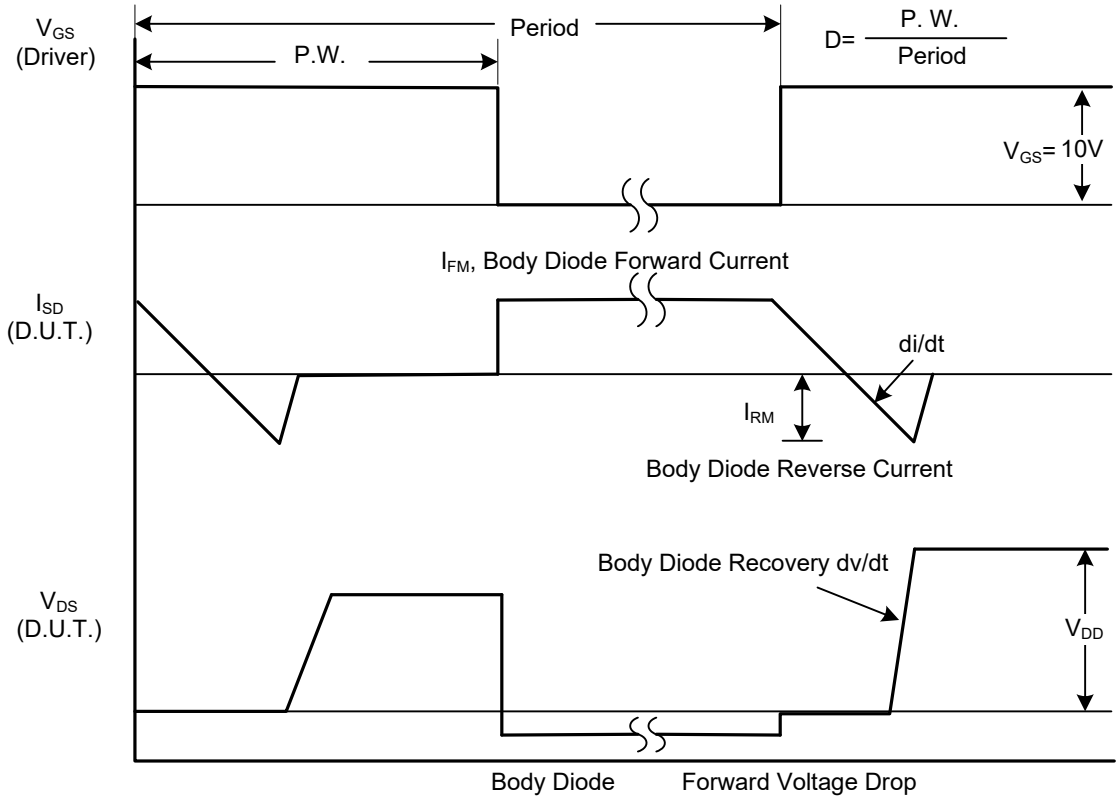
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{DS}=0V	1500			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=1500V			10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+30V, V_{DS}=0V			±100	nA
	Reverse		V_{GS}=-30V, 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 ≤150μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

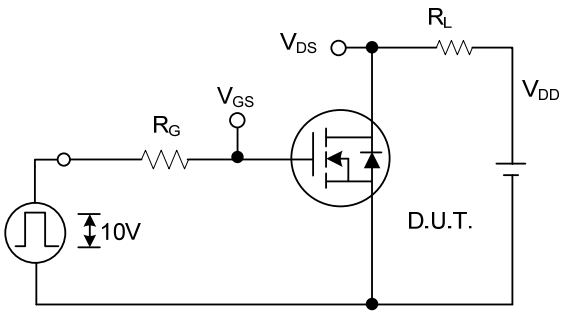


Peak Diode Recovery dv/dt Test Circuit

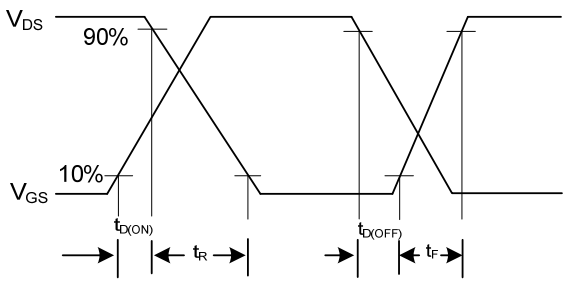


Peak Diode Recovery dv/dt Waveforms

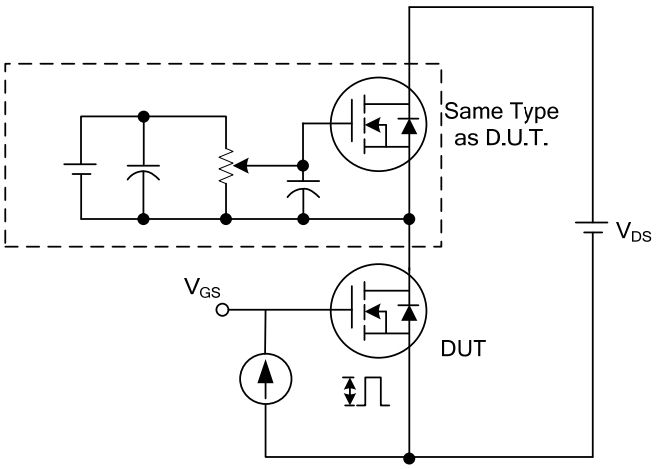
■ TEST CIRCUITS AND WAVEFORMS



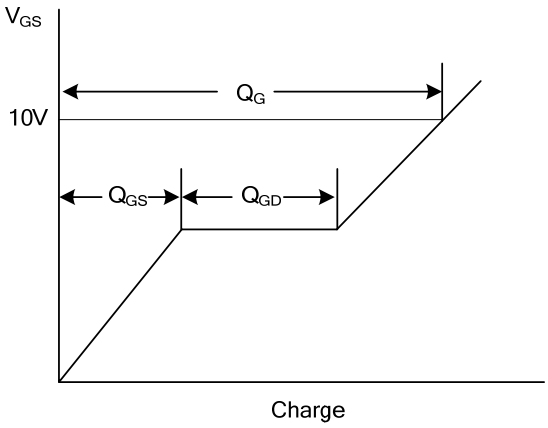
Switching Test Circuit



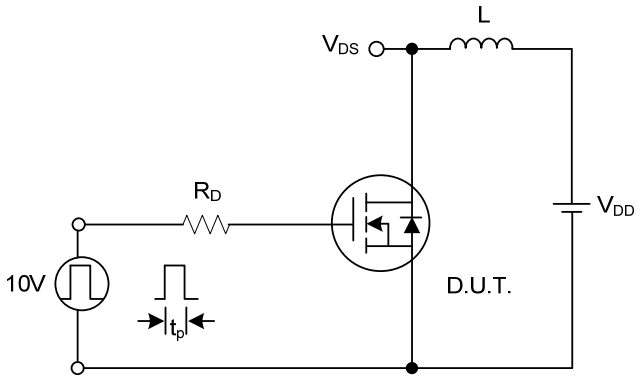
Switching Waveforms



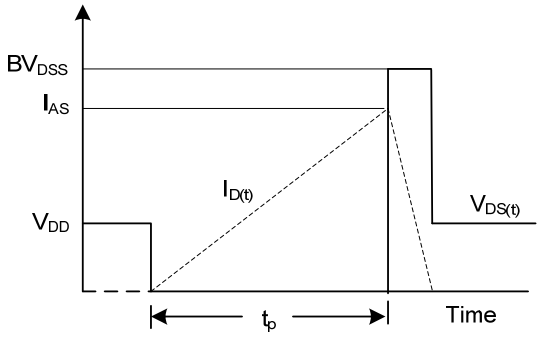
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms