

■ PRODUCT CHARACTERISTICS

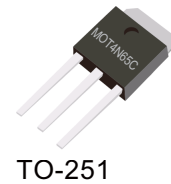
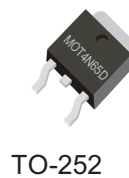
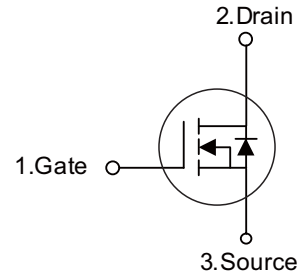
VDSS	650V
$R_{DS(on)max}(@V_{GS} = 10\text{ V})$	2.8Ω
Qg@type	25nC
ID	4A

■ APPLICATIONS

- * High frequency switching mode power supply
- * Electronic ballast
- * LED power supplies

■ FEATURES

- * $R_{DS(ON)} < 2.8\ \Omega @ V_{GS} = 10\text{ V}$
- * Fast switching capability
- * Avalanche energy tested
- * Improved dv/dt capability, high ruggedness

Symbol

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4N65D	TO-252	2500 pieces /Reel
N/A	MOT4N65C	TO-251	70 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	650	V	
Gate-Source Voltage	V_{GSS}	±30	V	
Continuous Drain Current	I_D	4	A	
Pulsed Drain Current (Note 2)	I_{DM}	16	A	
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	80	mJ
Peak Diode Recovery dv/dt (Note 4)	dv/dt	3.36	V/ns	
Power Dissipation	TO-251/252	P_D	50	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.

3. $L = 10\text{mH}$, $I_{AS} = 4.0\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\ \Omega$, Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 4.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$



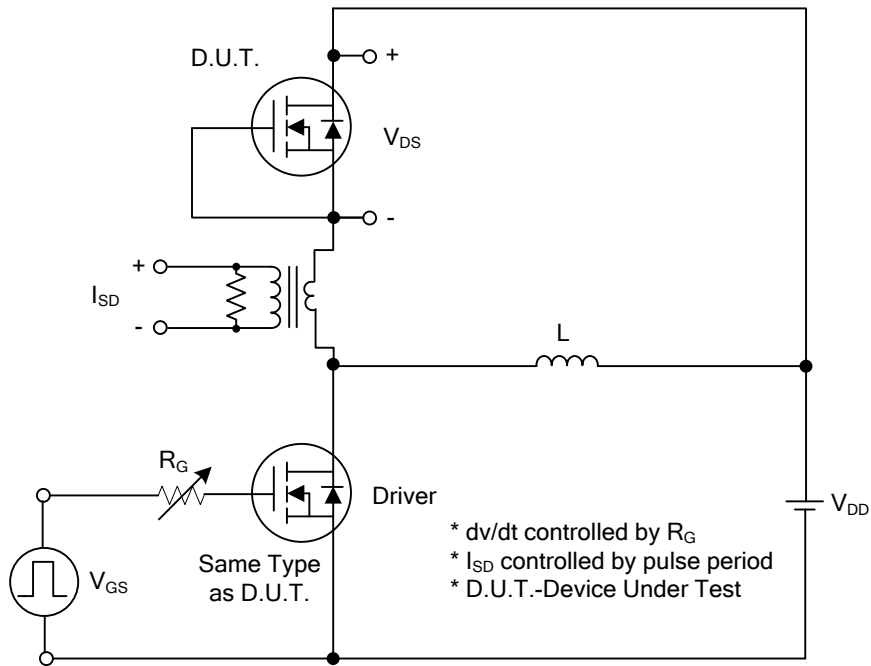
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	650			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 650V, V _{GS} = 0V			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
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	2.0		4.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 2.0A		2.41	2.8	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0 MHz		520	720	pF
Output Capacitance	C _{OSS}			75	90	pF
Reverse Transfer Capacitance	C _{RSS}			13	20	pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =300V, V _{GS} =10V, I _D =3.0A (Note 1, 2)		19	25	nC
Gate-Source Charge	Q _{GS}			3.5		nC
Gate-Drain Charge	Q _{GD}			5.8		nC
Turn-On Delay Time (Note 1)	t _{D(ON)}	V _{DD} =50V, V _{GS} =10V, I _D =0.5A, R _G =25Ω (Note 1, 2)		9.0		ns
Turn-On Rise Time	t _R			22		ns
Turn-Off Delay Time	t _{D(OFF)}			53		ns
Turn-Off Fall Time	t _F			42		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				4	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				16	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =4.0A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _S =4.0A, V _{GS} =0V di/dt=100A/μs		290		ns
Body Diode Reverse Recovery Charge	Q _{rr}			1.65		μC

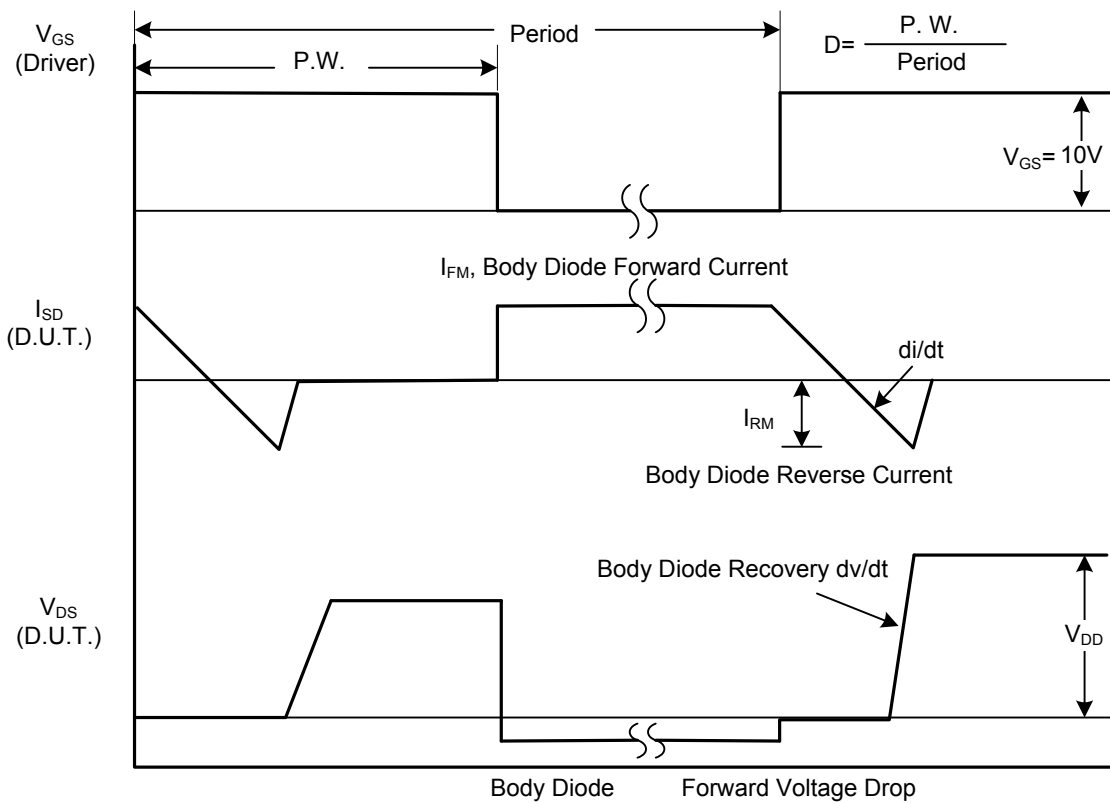
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

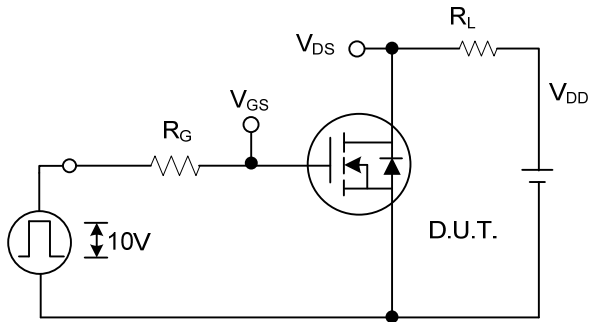


Peak Diode Recovery dv/dt Test Circuit

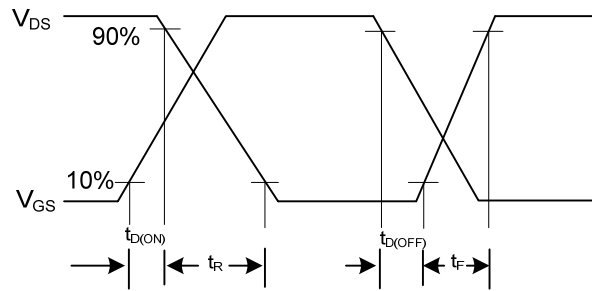


Peak Diode Recovery dv/dt Waveforms

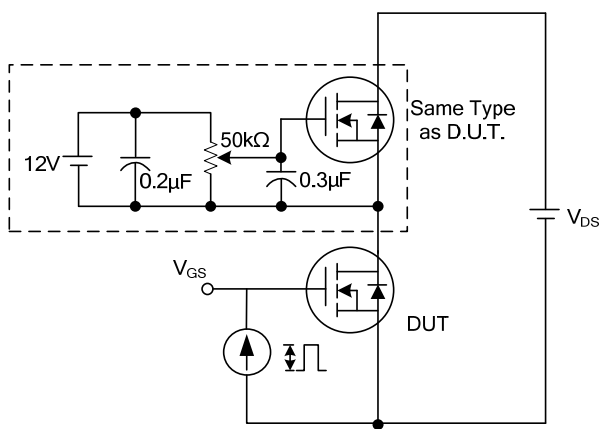
■ TEST CIRCUITS AND WAVEFORMS(Cont.)



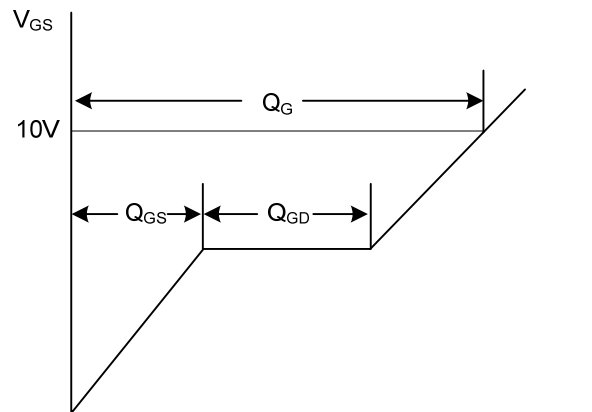
Switching Test Circuit



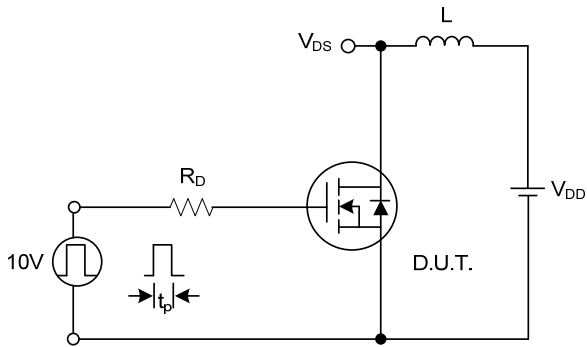
Switching Waveforms



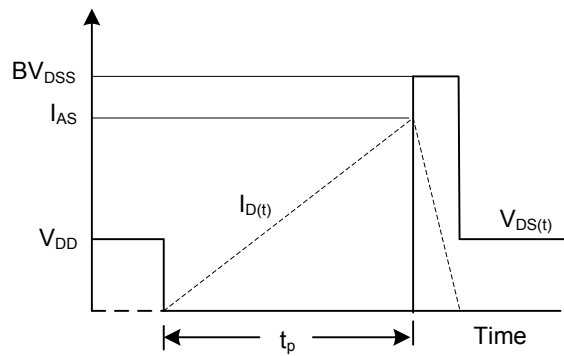
Gate Charge Test Circuit



Charge
Gate Charge Waveform

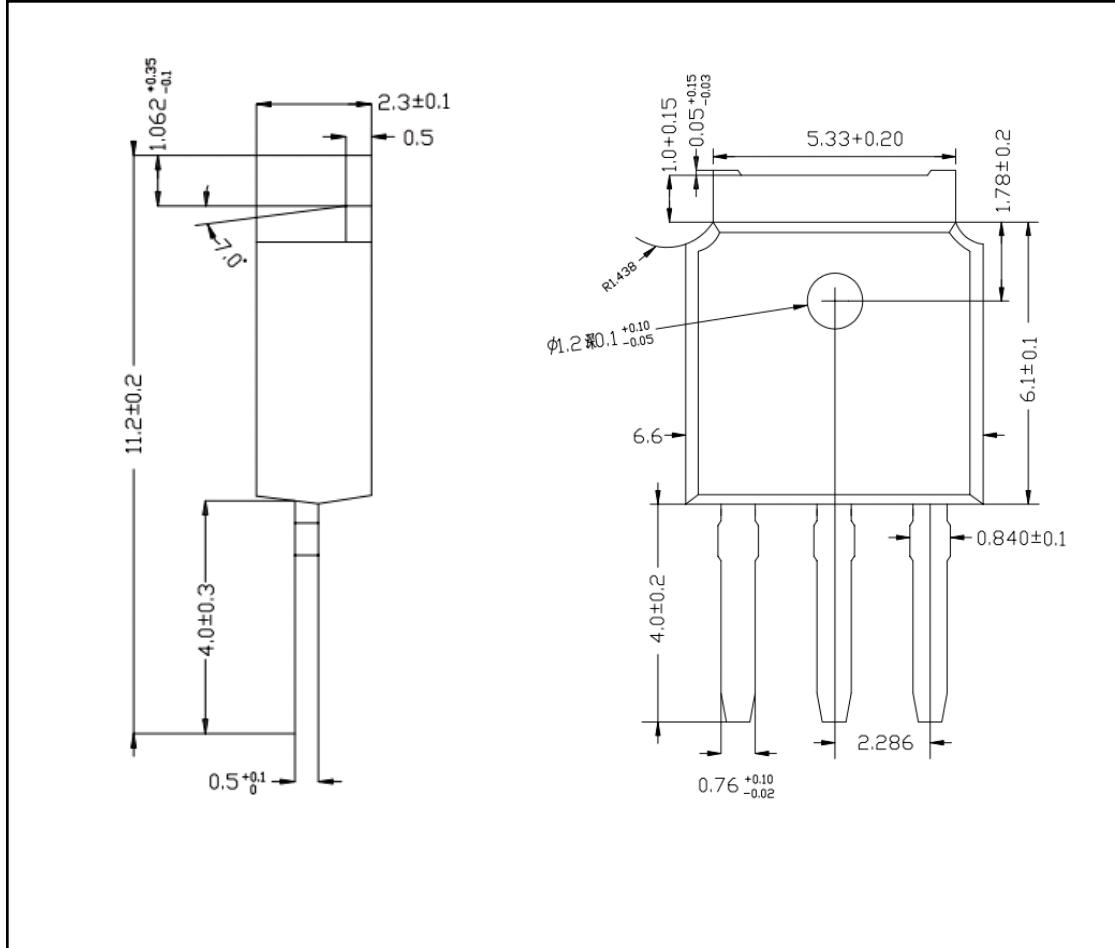


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TO-251-3L PACKAGE OUTLINE DIMENSIONS



■ TO-252-2L PACKAGE OUTLINE DIMENSIONS

