

■ PRODUCT CHARACTERISTICS

VDSS	650V
$R_{DS(on)typ}(V_{GS}=10V)$	0.55Ω
Qg@type	57nC
ID	16A

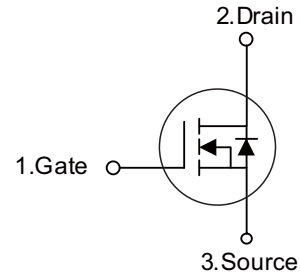
■ APPLICATIONS

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- LED power supply

■ FEATURES

- * High Switching Speed
- * 100% Avalanche Tested

Symbol



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT16N65HF	TO-220F	50 pieces/Tube
N/A	MOT16N65A	TO-220	50 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	650	V
Gate-Source Voltage		V _{GSS}	±30	V
Drain Current	Continuous (T _C = 25°C)	I _D	16 (Note 2)	A
	Pulsed (Note 3)	I _{DM}	64 (Note 2)	A
Avalanche Current (Note 3)		I _{AR}	16	A
Avalanche Energy	Single Pulsed (Note 4)	E _{AS}	780	mJ
	Repetitive (Note 5)	E _{AR}	20	mJ
Peak Diode Recovery dv/dt (Note 5)		dv/dt	4.5	V/ns
Power Dissipation	TO-220	P _D	270	W
	TO-220F		60	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. Drain current limited by maximum junction temperature

3. Repetitive Rating: Pulse width limited by maximum junction temperature

4. L = 6.1mH, I_{AS} = 16A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

5. I_{SD} ≤ 16A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

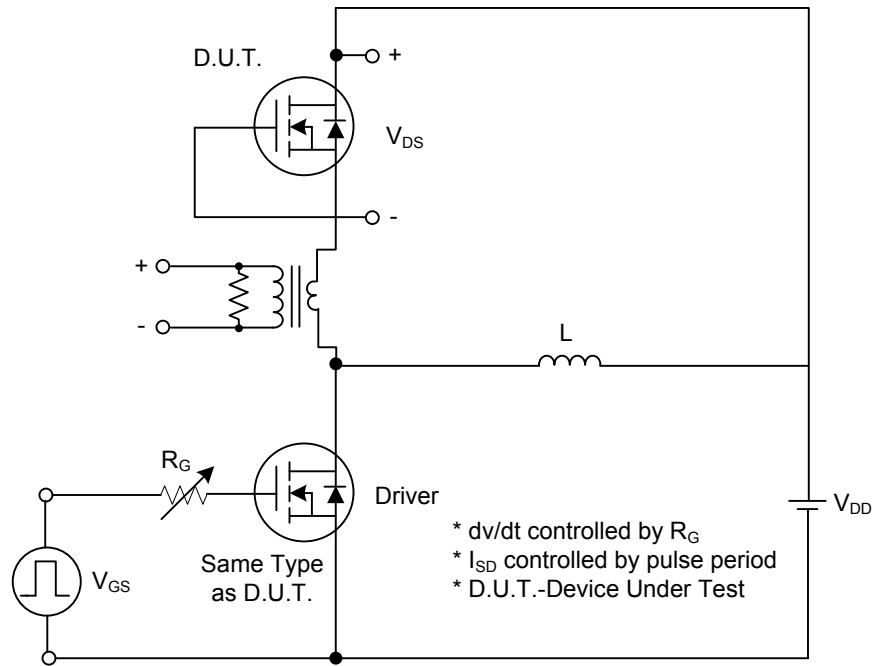
■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	650	-	-	V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	1	μA
			V _{DS} =520V, V _{GS} =0V, T _C =125°C	-	-	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	2.0	-	4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =8A	-	0.55	0.6	Ω
Dynamic characteristics							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz	-	1078	-	pF
Output Capacitance		C _{OSS}		-	225	-	pF
Reverse Transfer Capacitance		C _{RSS}		-	10	-	pF
Switching characteristics							
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =30V, I _D =0.5A, R _G =25Ω (Note 1, 2)	-	112	-	ns
Rise Time		t _R		-	186	-	ns
Turn-OFF Delay Time		t _{D(OFF)}		-	335	-	ns
Fall-Time		t _F		-	186	-	ns
Total Gate Charge		Q _G	V _{GS} =10V, V _{DS} =50V, I _D =1.3A (Note 1, 2)	-	57	-	nC
Gate to Source Charge		Q _{GS}		-	15.4	-	nC
Gate to Drain Charge		Q _{GD}		-	15.8	-	nC
Source-drain diode ratings and characteristics							
Maximum Body-Diode Continuous Current		I _S		-	-	16	A
Maximum Body-Diode Pulsed Current		I _{SM}		-	-	64	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =16A, V _{GS} =0V	-	-	1.4	V

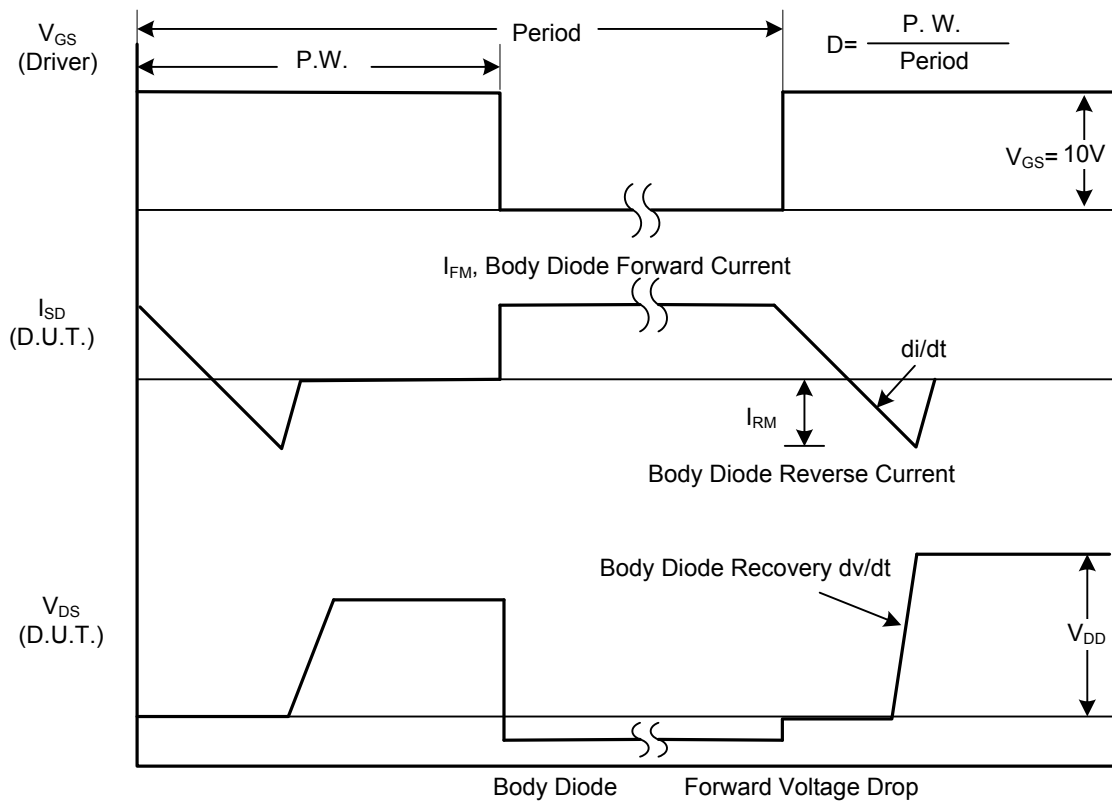
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS

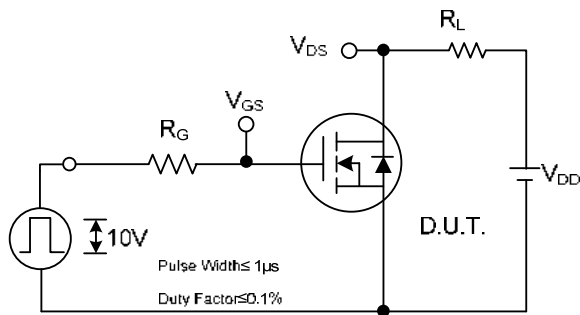


Peak Diode Recovery dv/dt Test Circuit

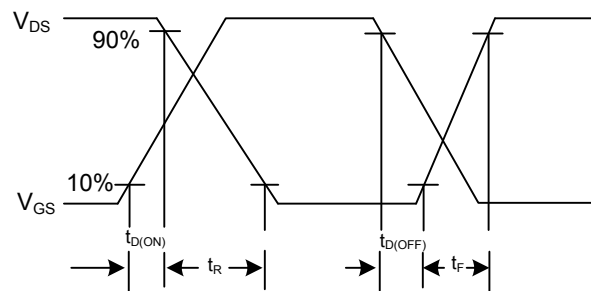


Peak Diode Recovery dv/dt Waveforms

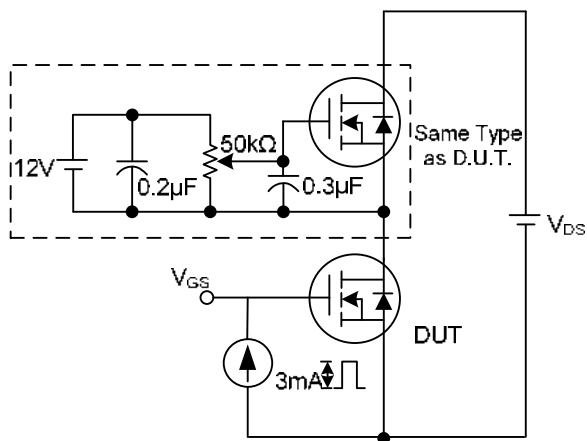
■ TEST CIRCUITS AND WAVEFORMS(Cont.)



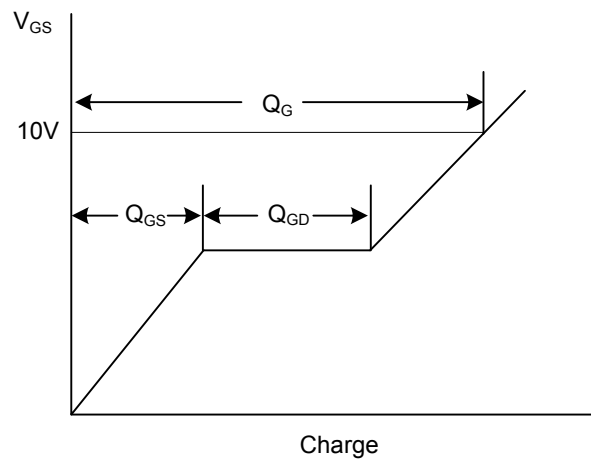
Switching Test Circuit



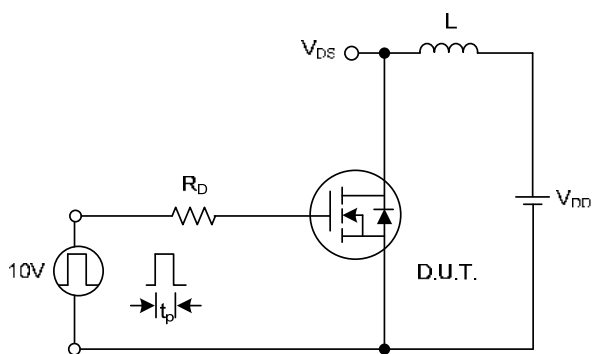
Switching Waveforms



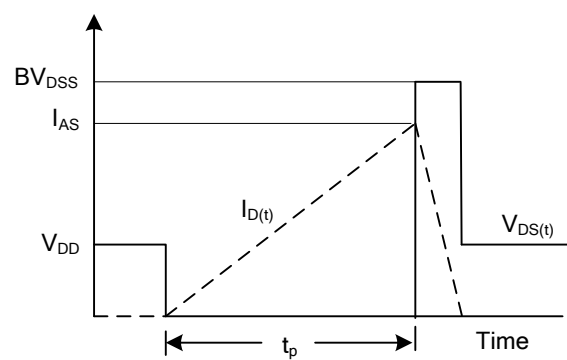
Gate Charge Test Circuit



Gate Charge Waveform

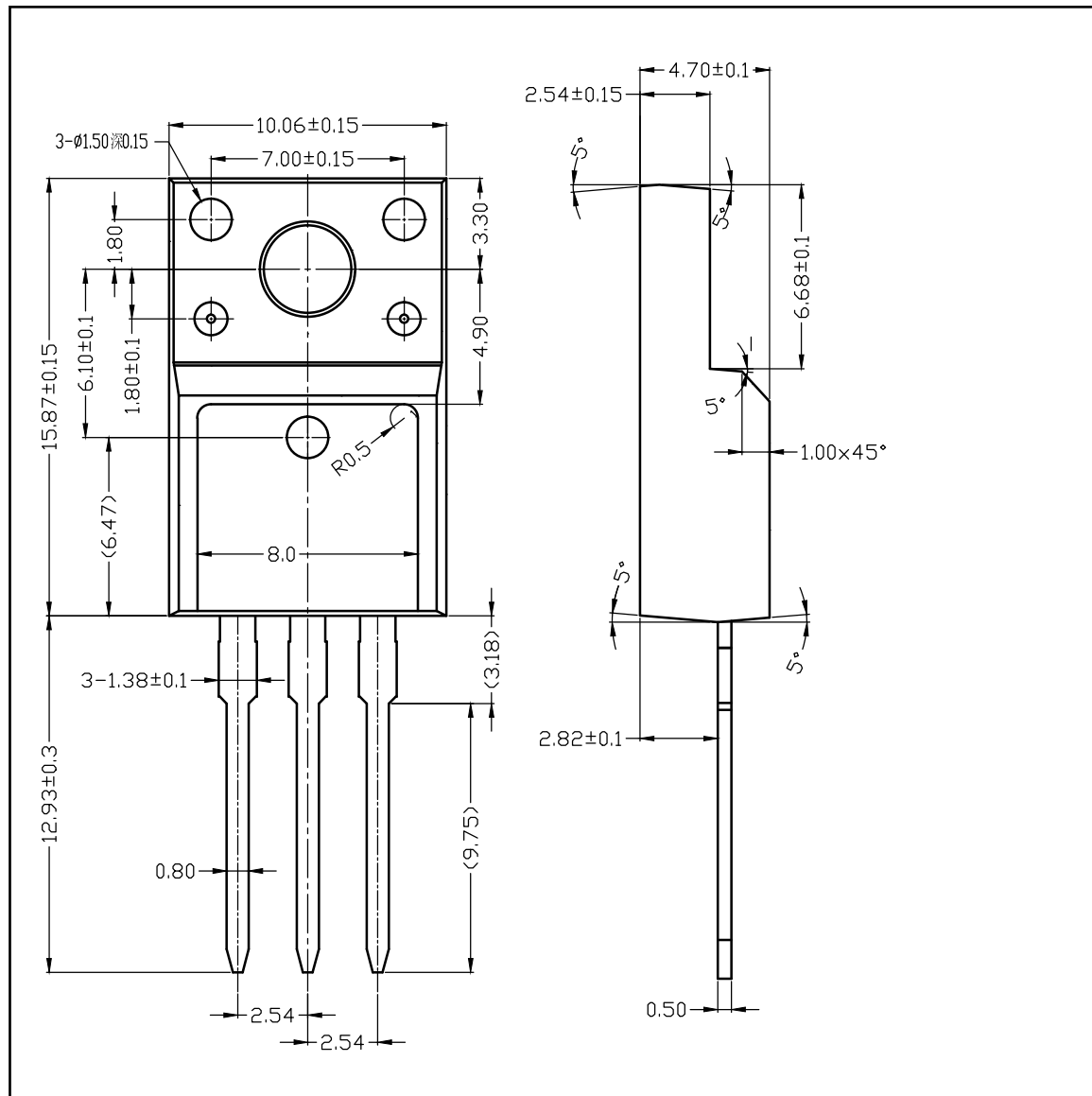


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TO-220F-3L PACKAGE OUTLINE DIMENSIONS



■ TO-220-3L PACKAGE OUTLINE DIMENSIONS

