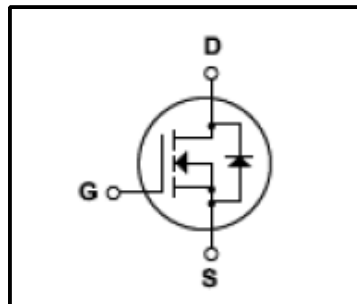


Silicon N-Channel MOSFET

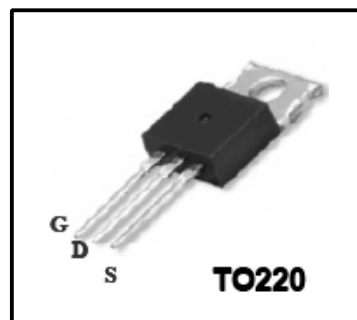
Features

- 10A,400V, $R_{DS(on)}$ (Max 0.55 Ω)@ $V_{GS}=10V$
- Ultra-low Gate Charge(Typical 60nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Maximum Junction Temperature Range(150℃)



General Description

This Power MOSFET is produced using Winsemi's advanced planar stripe,VDMOS technology. This latest technology has been especially designed to minimize on-state resistance,have a high rugged avalanche characteristics. This devices is specially well suited for high efficiency switch model power supplies, power factor correction and half bridge and full bridge resonant topology line a electronic lamp ballast.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain Source Voltage	400	V
I_D	Continuous Drain Current(@ $T_c=25^\circ C$)	10	A
	Continuous Drain Current(@ $T_c=100^\circ C$)	6.3	A
I_{DM}	Drain Current Pulsed (Note1)	40	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note2)	450	mJ
E_{AR}	Repetitive Avalanche Energy (Note1)	13	mJ
dv/dt	Peak Diode Recovery dv/dt (Note3)	4	V/ ns
P_D	Total Power Dissipation(@ $T_c=25^\circ C$)	134	W
	Derating Factor above $25^\circ C$	1.0	W/℃
T_J, T_{stg}	Junction and Storage Temperature	-55~150	℃
T_L	Maximum lead Temperature for soldering purposes	300	℃

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	0.93	℃/W
R_{QCS}	Thermal Resistance, Case- to -Sink	-	0.5	-	℃/W
R_{QJA}	Thermal Resistance , Junction-to -Ambient	-	-	62	℃/W

Electrical Characteristics(Tc=25℃)

Characteristics		Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current		I _{GSS}	V _{GS} =±30V, V _{DS} =0V	-	-	±100	nA
Gate-source breakdown voltage		V _{(BR)GSS}	I _G =±10 μA, V _{DS} =0V	±30	-	-	V
Drain cut -off current		I _{DSS}	V _{DS} =400V, V _{GS} =0V	-	-	25	μA
Drain -source breakdown voltage		V _{(BR)DSS}	I _D =250 μA, V _{GS} =0V	400	-	-	V
Break voltage Temperature Coefficient		ΔBV _{DSS} / ΔT _J	I _D =250μA, Referenced to 25℃	-	0.4	-	V/℃
Gate threshold voltage		V _{GS(th)}	V _{DS} =10V, I _D =250 μA	2	-	4	V
Drain -source ON resistance		R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	0.48	0.55	Ω
Forward Transconductance		g _{fs}	V _{DS} =40V, I _D =5A	-	9.6	-	S
Input capacitance		C _{iss}	V _{DS} =25V,	-	1400	1800	pF
Reverse transfer capacitance		C _{rss}	V _{GS} =0V,	-	36	46	
Output capacitance		C _{oss}	f=1MHz	-	150	195	
Switching time	Rise time	t _r	V _{DD} =200V,	-	20	50	ns
	Turn-on time	t _{on}	I _D =10A,	-	80	170	
	Fall time	t _f	R _G =25Ω,	-	125	260	
	Turn-off time	t _{off}	(Note4,5)	-	85	180	
Total gate charge(gate-source plus gate-drain)		Q _g	V _{DD} =320V, V _{GS} =10V,	-	60	71	nC
Gate-source charge		Q _{gs}	I _D =10A	-	7	-	
Gate-drain("miller") Charge		Q _{gd}	(Note4,5)	-	27	-	

Source-Drain Ratings and Characteristics(Ta=25℃)

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I _{DR}	-	-	-	10	A
Pulse drain reverse current	I _{DRP}	-	-	-	40	A
Forward voltage(diode)	V _{DSF}	I _{DR} =10A, V _{GS} =0V	-	1.4	1.5	V
Reverse recovery time	t _{rr}	I _{DR} =10A, V _{GS} =0V,	-	330	-	ns
Reverse recovery charge	Q _{rr}	dI _{DR} / dt =100 A / μs	-	3.57	-	μC

Note 1.Repeativity rating :pulse width limited by junction temperature

2.L=7.9mH I_{AS}=10A, V_{DD}=50V, R_G=0Ω ,Starting T_J=25℃

3.I_{SD}≤10A, di/dt≤300A/μs, V_{DD}<BV_{DSS}, STARTING T_J=25℃

4.Pulse Test:Pulse Width≤300us, Duty Cycle≤2%

5. Essentially independent of operating temperature.

This transistor is an electrostatic sensitive device

Please handle with caution

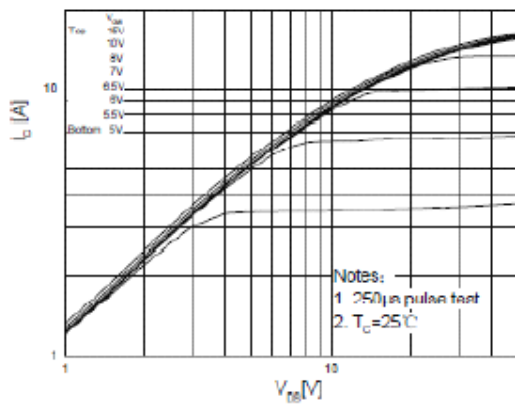


Fig.1 On-State Characteristics

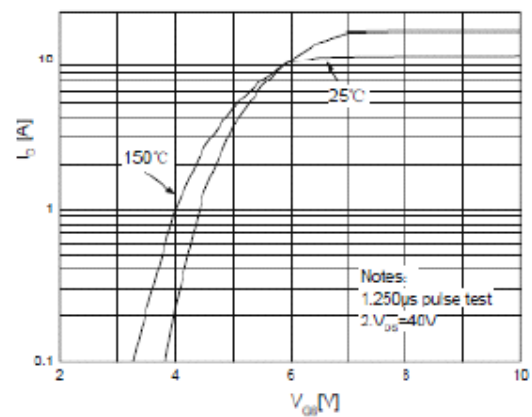


Fig.2 Transfer characteristics

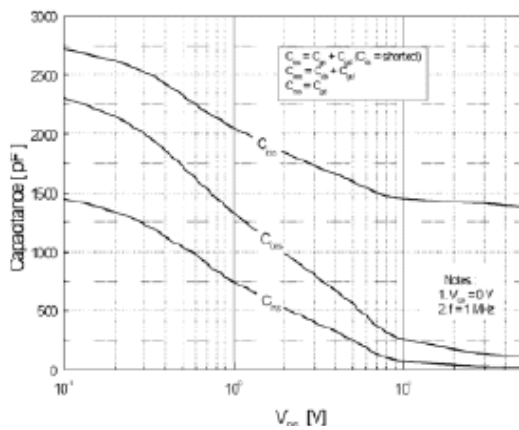


Fig.3 Capacitance Variation vs Drain Voltage

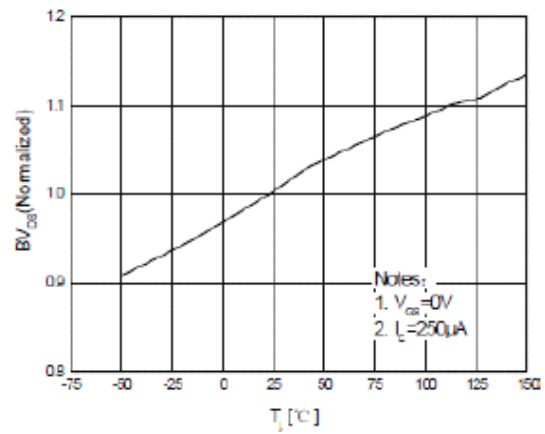


Fig.4 Breakdown voltage Variation vs Temperature

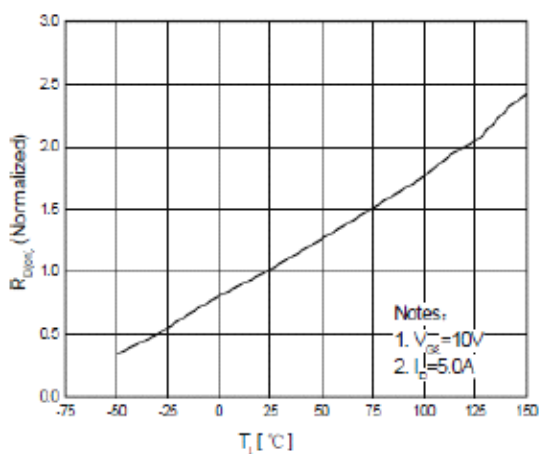


Fig.5 On-Resistance Variation vs Junction Temperature

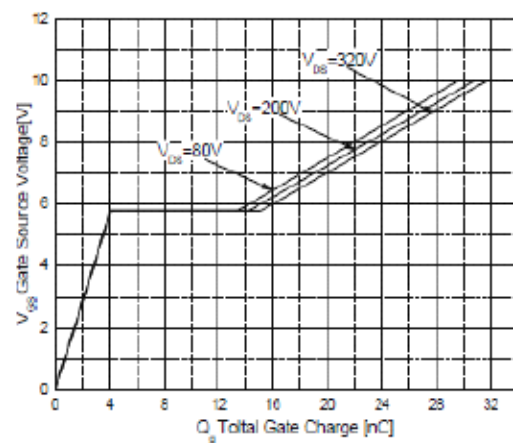


Fig.6 Gate Charge Characteristics

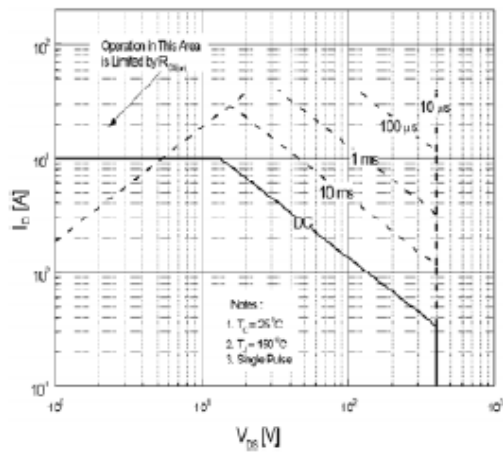


Fig.7 Maximum Safe Operation Area

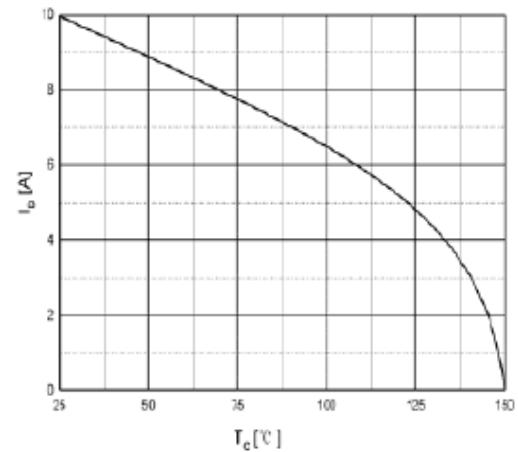


Fig.8 Maximum Drain Current vs Case Temperature

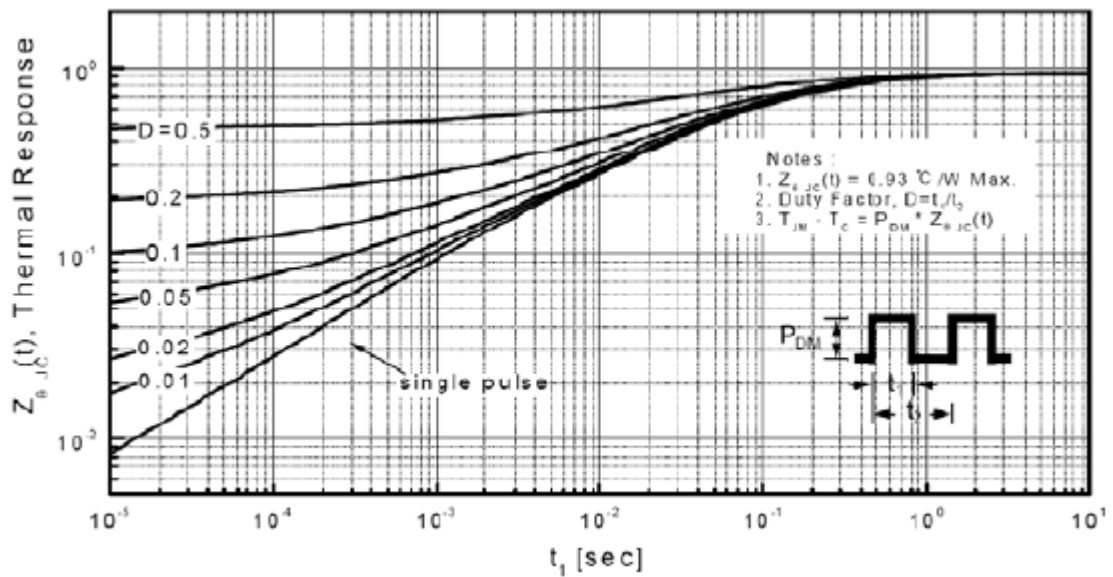


Fig.9 Transient Thermal Response curve

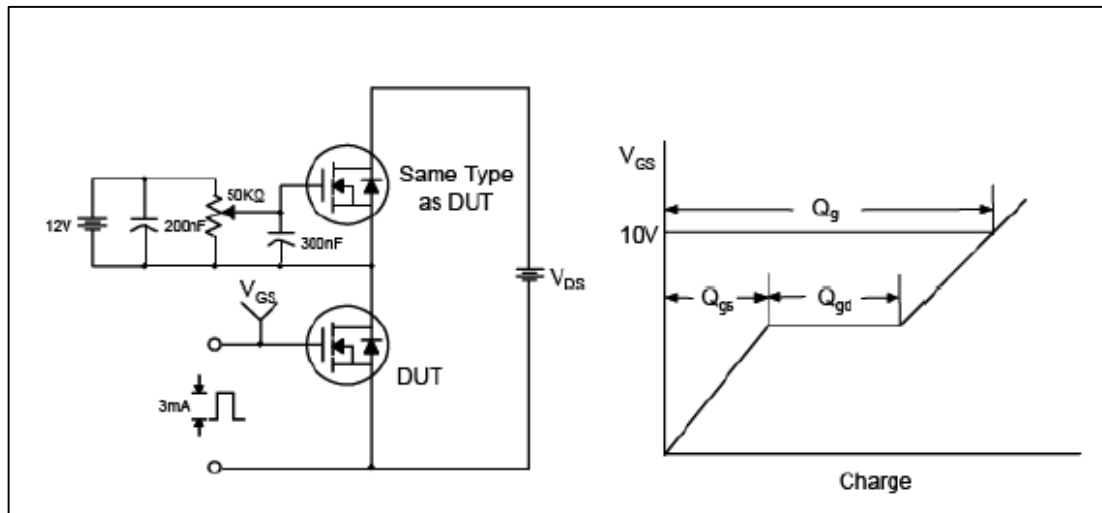


Fig.10 Gate Test circuit & Waveform

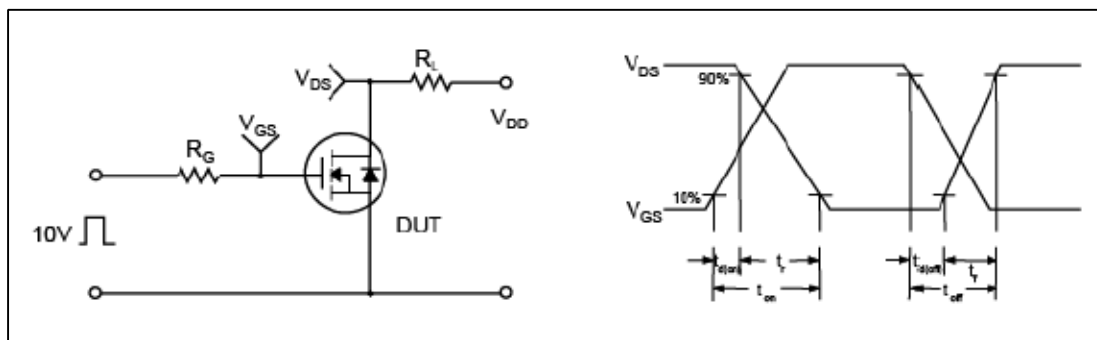


Fig.11 Resistive Switching Test Circuit & Waveform

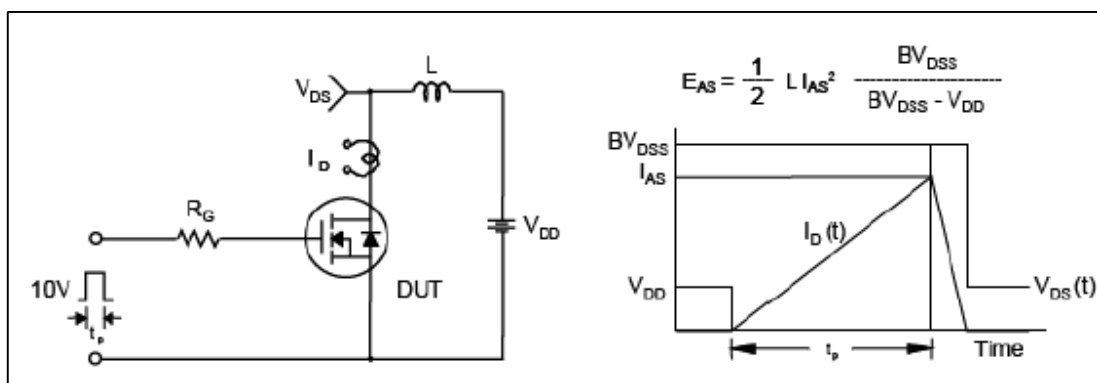


Fig.12 Uncamped Inductive Switching Test Circuit & Waveform

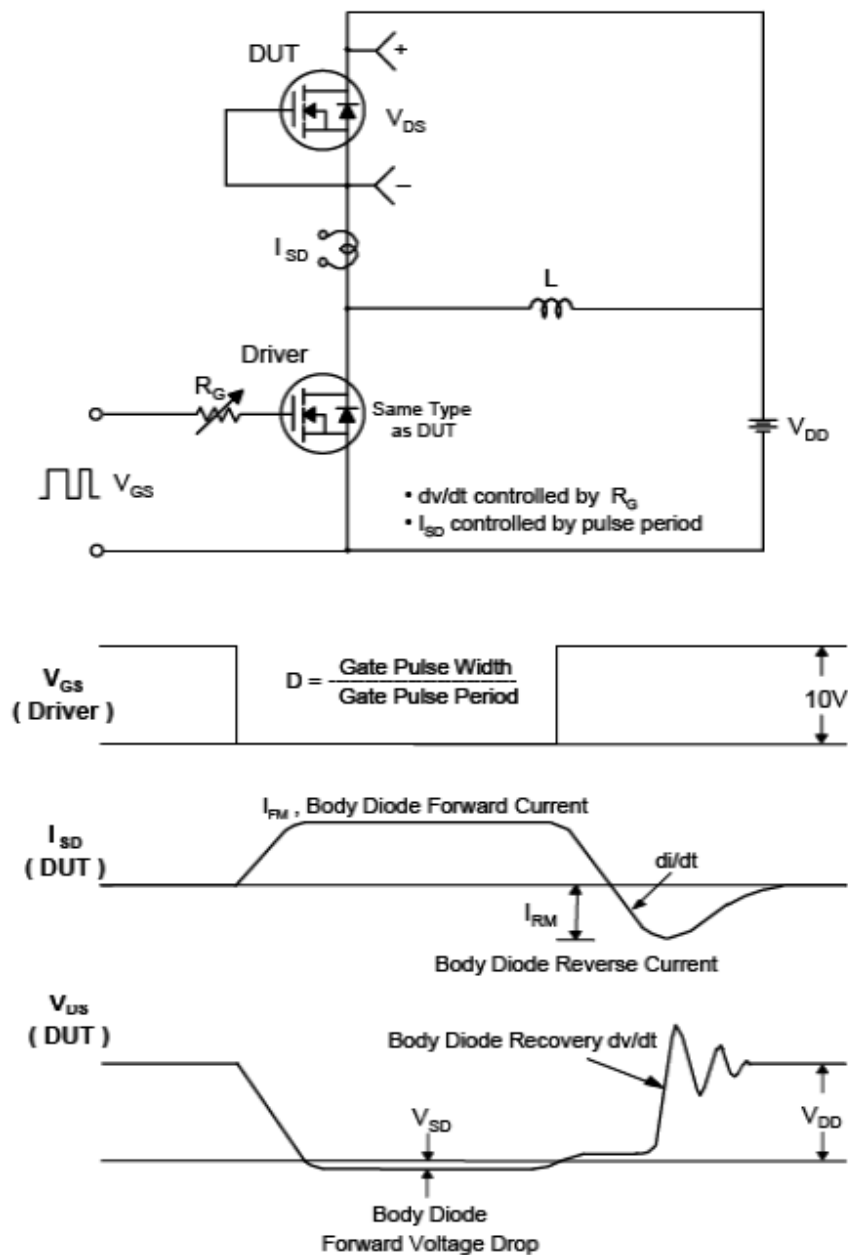


Fig.13 Peak Diode Recovery dv/dt Test Circuit & Waveform

TO-220 Package Dimension

Unit:mm

