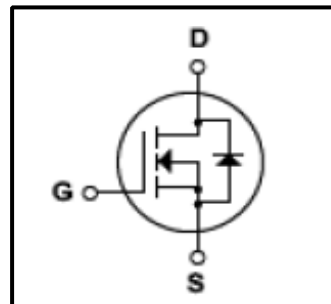


Silicon N-Channel MOSFET

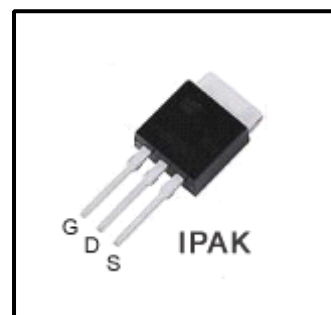
Features

- 4.5A,600V, $R_{DS(on)}$ (Max2.4 Ω)@ $V_{GS}=10V$
- Ultra-low Gate charge(Typical 15nC)
- 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 half bridge and full bridge resonant topology line a electronic lamp ballast, high efficiency switched mode power supplies, active power factor correction.



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain Source Voltage	600	V
I_D	Continuous Drain Current(@ $T_c=25^{\circ}C$)	4.5	A
	Continuous Drain Current(@ $T_c=100^{\circ}C$)	3.1	A
I_{DM}	Drain Current Pulsed (Note1)	16	A
V_{GS}	Gate to Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy (Note2)	240	mJ
E_{AR}	Repetitive Avalanche Energy (Note1)	10	mJ
dv/dt	Peak Diode Recovery dv/dt (Note3)	4.5	V/ns
P_D	Total Power Dissipation(@ $T_c=25^{\circ}C$)	50	W
	Derating Factor above $25^{\circ}C$	0.23	W/℃
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55~150	℃
T_L	Channel Temperature	300	℃

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	2.5	℃/W
R_{QJA}	Thermal Resistance , Junction-to -Ambient	-	-	62.5	℃/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} =600V,V _{GS} =0V	-	-	10	μA
			V _{DS} =480V,Tc=125℃	-	-	100	μA
Breakdown voltage Temperature coefficient		ΔBV _{DSS} / ΔT _J	ID=250 μA,Referenced to 25℃	-	0.6	-	V/℃
Drain -source breakdown voltage		V _{(BR)DSS}	I _D =250 μA,V _{GS} =0V	600	-	-	V
Gate threshold voltage		V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250 μA	2	-	4	V
Drain -source ON resistance		R _{DS(ON)}	V _{GS} =10V,I _D =2.2A	-	2.0	2.4	Ω
Forward Transconductance		g _{fs}	V _{DS} =50V,I _D =2.2A	-	4.0	-	S
Input capacitance		C _{iSS}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	520	670	pF
Reverse transfer capacitance		C _{rSS}		-	8	11	
Output capacitance		C _{oSS}		-	70	90	
Switching time	Turn-on Rise time	tr	V _{DD} =300V, I _D =4.5A R _G =25Ω (Note4,5)	-	49	111	ns
	Turn-on delay time	Td(on)		-	16	42	
	Turn-off Fall time	tf		-	37	84	
	Turn-off delay time	Td(off)		-	46	102	
Total gate charge(gate-source plus gate-drain)		Qg	V _{DD} =480V, V _{GS} =10V, I _D =4.4A (Note,5)	-	15	20	nC
Gate-source charge		Qgs		-	3.4	-	
Gate-drain("miller") Charge		Qgd		-	7.1	-	

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

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I _{DR}	-	-	-	4.5	A
Pulse drain reverse current	I _{DRP}	-	-	-	17.6	A
Forward voltage(diode)	V _{DSF}	I _{DR} =4.4A,V _{GS} =0V	-	-	1.4	V
Reverse recovery time	trr	I _{DR} =4.4A,V _{GS} =0V,	250	-	-	ns
Reverse recovery charge	Q _{rr}	dI _{DR} /dt =100 A /μs	1.5	-	-	μC

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

2.L=25mH I_{AS}=4.4A,V_{DD}=50V,R_G=25Ω,Starting T_J=25℃

3.I_{SD}≤4.5A,di/dt≤200A/us,V_{DD}<BV_{DSS},STARTING T_J=25℃

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

5. Essentially independent of operating temperature.

This transistor is an electrostatic sensitive device

Please handle with caution

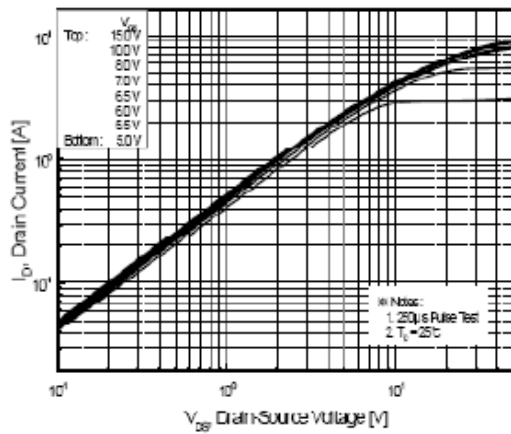


Fig.1 On-State characteristics

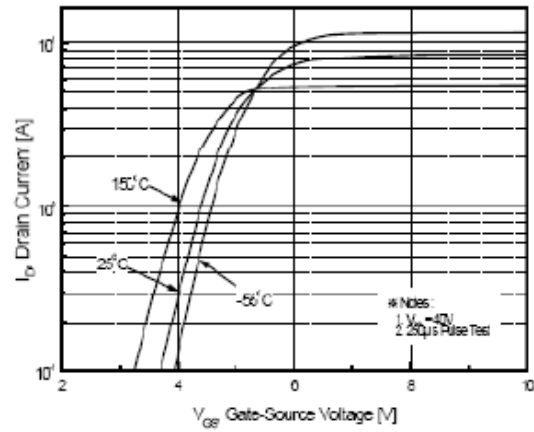


Fig.2 Transfer Current characteristics

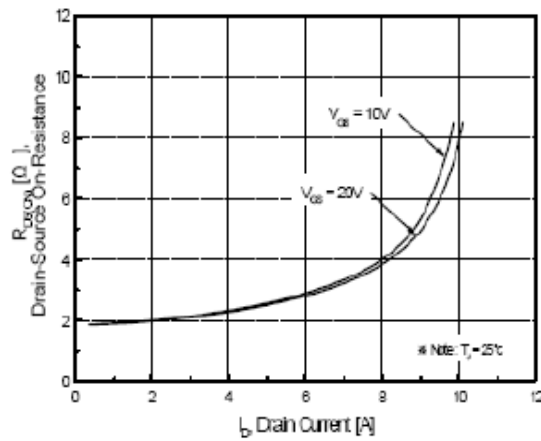


Fig.3 On-Resistance Variation vs Drain Current

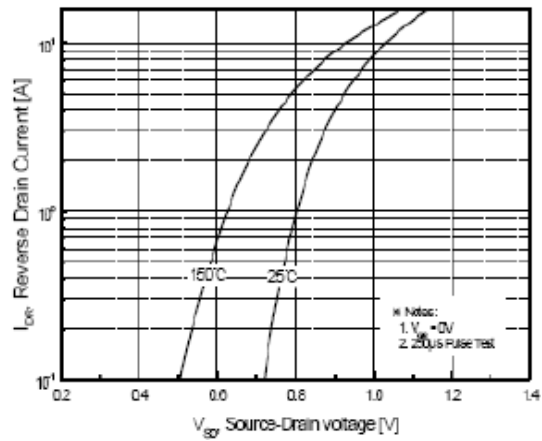


Fig.4 Body Diode Forward Voltage Variation with Source Current and Temperature

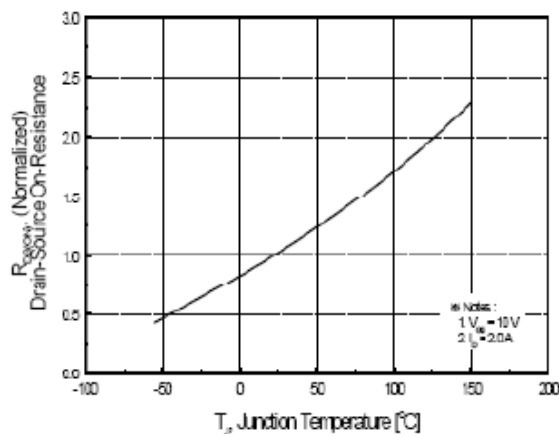


Fig.5 On-Resistance Variation vs Junction Temperature

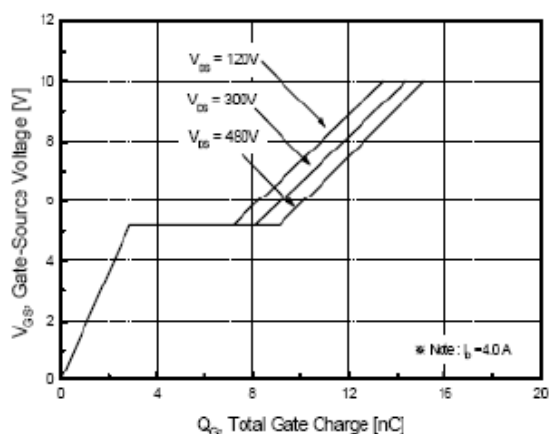


Fig.6 Gate Charge Characteristics

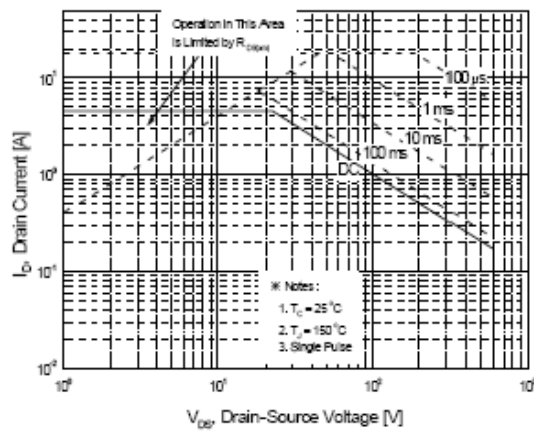
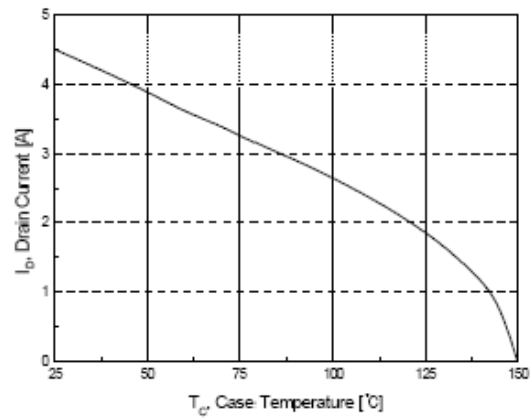


Fig.7 Maximum Safe Operation Area



**Fig.8 Maximum Drain Current vs
Case Temperature**

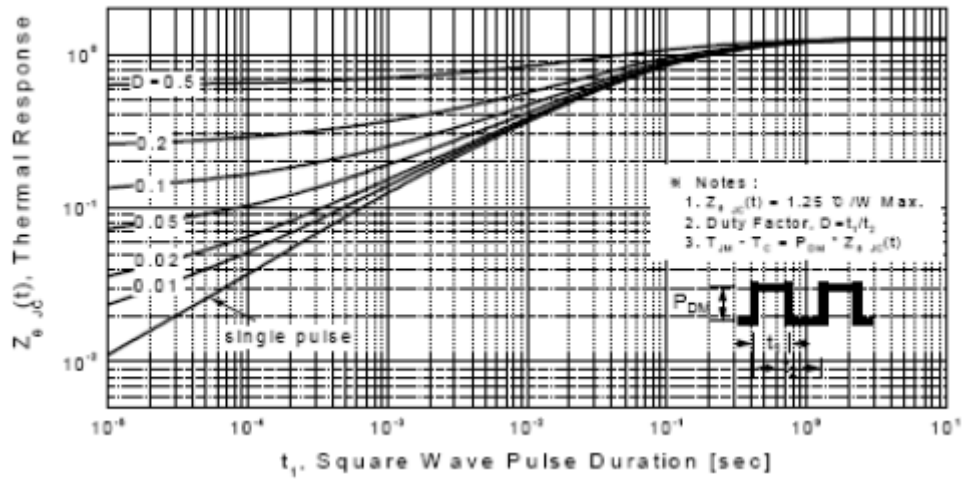


Fig.9 Transient Thermal Response Curve

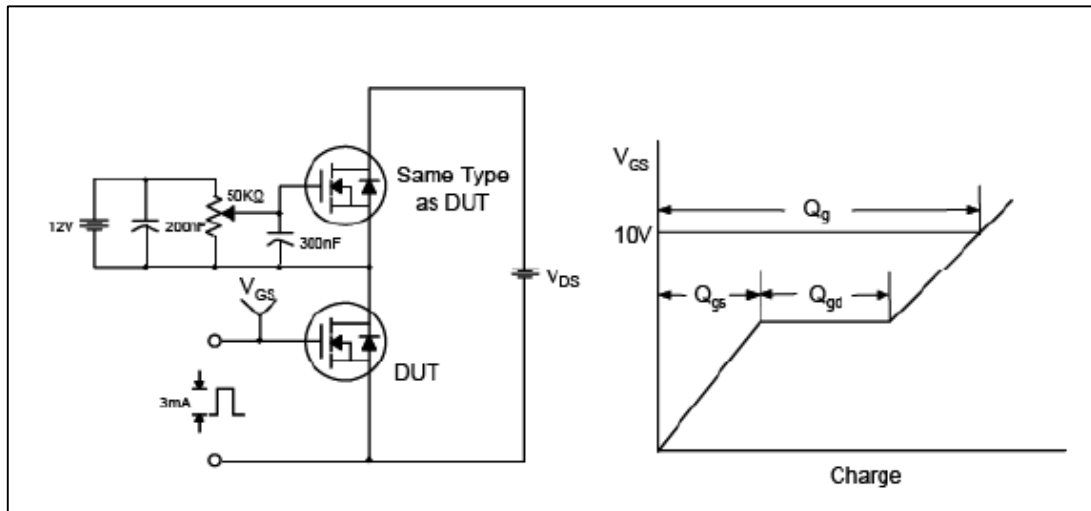


Fig.10 Gate Test Circuit & Waveform

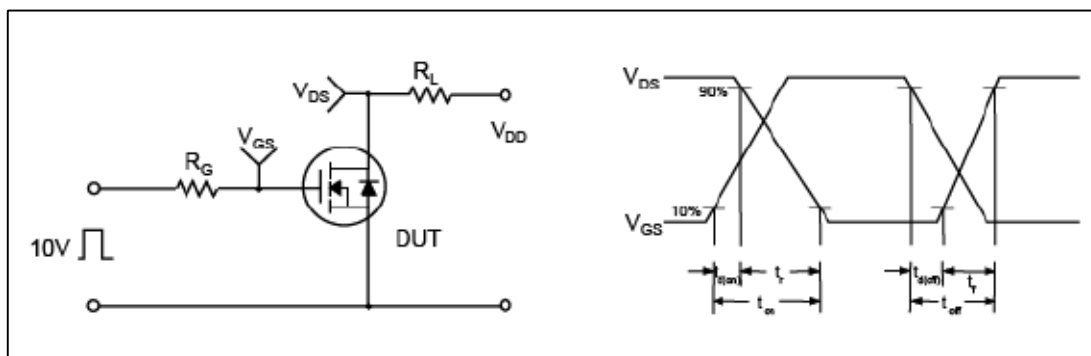


Fig.11 Resistive Switching Test Circuit & Waveform

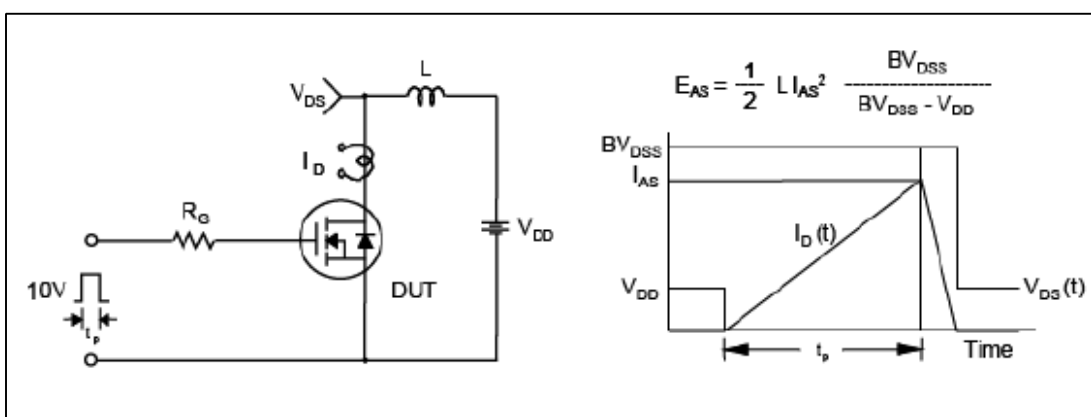


Fig.12 Unclamped Inductive Switching Test Circuit & Waveform

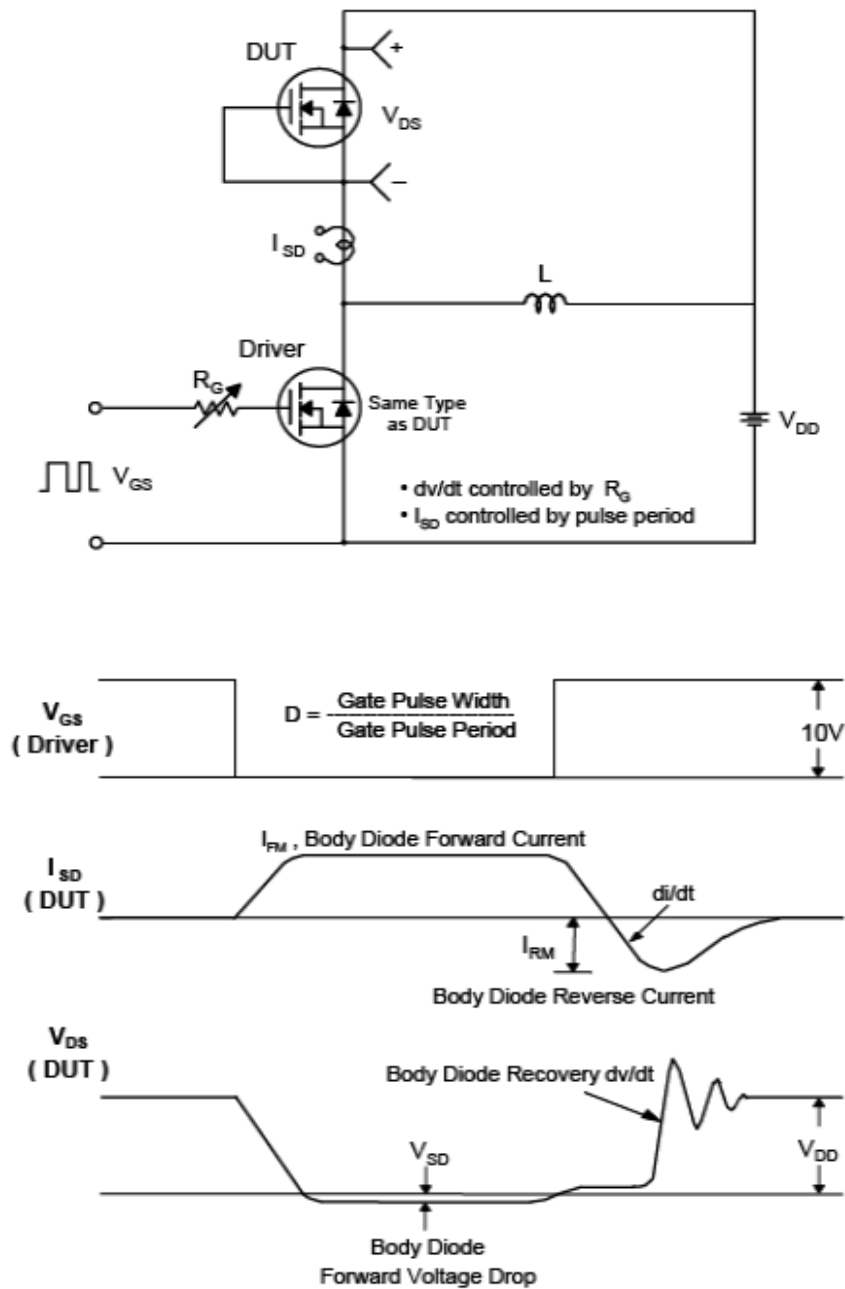


Fig.13 Peak Diode Recovery dv/dt Test Circuit & Waveform

IPAK Package Dimension

Unit:mm

