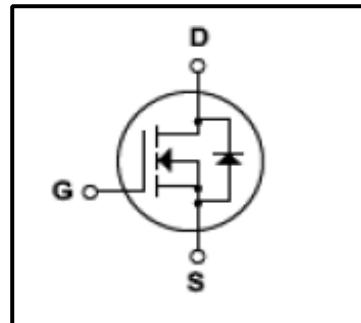
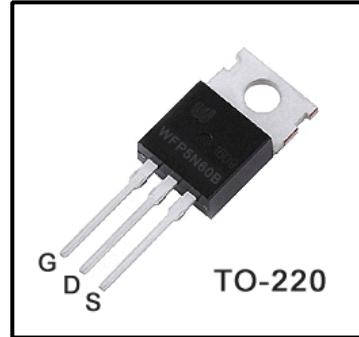


**Silicon N-Channel MOSFET**
**Features**

- 4.5A,600V, $R_{DS(on)}$ (Max2.4Ω)@ $V_{GS}=10V$
- Ultra-low Gate charge(Typical 15nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Maximum Junction Temperature Range(150°C)


**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)	A
$V_{GS}$	Gate to Source Voltage	$\pm 30$	V
$E_{AS}$	Single Pulsed Avalanche Energy	(Note2)	mJ
$E_{AR}$	Repetitive Avalanche Energy	(Note1)	mJ
$dv/dt$	Peak Diode Recovery $dv/dt$	(Note3)	V/ns
$P_D$	Total Power Dissipation(@ $T_c=25^\circ C$ )	96	W
	Derating Factor above 25°C	0.95	W/°C
$T_J, T_{stg}$	Junction and Storage Temperature	-55~150	°C
$T_L$	Channel Temperature	300	°C

**Thermal Characteristics**

Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{QJC}$	Thermal Resistance , Junction -to -Case	-	-	1.3	°C/W
$R_{QJA}$	Thermal Resistance , Junction-to -Ambient	-	-	62.5	°C/W

**Electrical Characteristics(Tc=25°C)**

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit	
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V,V <sub>DS</sub> =0V	-	-	±100	nA	
Gate-source breakdown voltage	V <sub>(BR)GSS</sub>	I <sub>G</sub> =±10 μA,V <sub>DS</sub> =0V	±30	-	-	V	
Drain Cut -off current	I <sub>DSS</sub>	V <sub>DS</sub> =600V,V <sub>GS</sub> =0V	-	-	10	μA	
		V <sub>DS</sub> =480V,Tc=125°C	-	-	100	μA	
Breakdown voltage Temperature coefficient	△BV <sub>DSS</sub> /△T <sub>J</sub>	ID=250 μA,Referenced to 25°C	-	0.6	-	V/°C	
Drain -source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =250 μA,V <sub>GS</sub> =0V	600	-	-	V	
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =250 μA	2	-	4	V	
Drain -source ON resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V,I <sub>D</sub> =2.2A	-	2.0	2.4	Ω	
Forward Transconductance	g <sub>fS</sub>	V <sub>DS</sub> =50V,I <sub>D</sub> =2.2A	-	4.0	-	S	
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	-	490	642	pF	
Reverse transfer capacitance	C <sub>rss</sub>		-	9	12		
Output capacitance	C <sub>oss</sub>		-	95	124		
Switching time	Rise time	tr	V <sub>DD</sub> =300V, I <sub>D</sub> =4.4A R <sub>G</sub> =25Ω (Note4,5)	-	49	111	ns
	Turn-on time	t <sub>on</sub>		-	16	42	
	Fall time	t <sub>f</sub>		-	37	84	
	Turn-off time	t <sub>off</sub>		-	46	102	
Total gate charge(gate-source plus gate-drain)	Q <sub>g</sub>	V <sub>DD</sub> =480V, V <sub>GS</sub> =10V, I <sub>D</sub> =4.4A (Note,5)	-	15	20	nC	
Gate-source charge	Q <sub>gs</sub>		-	3.4	-		
Gate-drain("miller") Charge	Q <sub>gd</sub>		-	7.1	-		

**Source-Drain Ratings and Characteristics(Ta=25°C)**

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

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

2.L=25mH I<sub>AS</sub>=4.4A,V<sub>DD</sub>=50V,R<sub>G</sub>=25Ω,Starting T<sub>J</sub>=25°C

3.I<sub>SD</sub>≤4.5A,di/dt≤200A/us,V<sub>DD</sub><BV<sub>DSS</sub>,STARTING T<sub>J</sub>=25°C

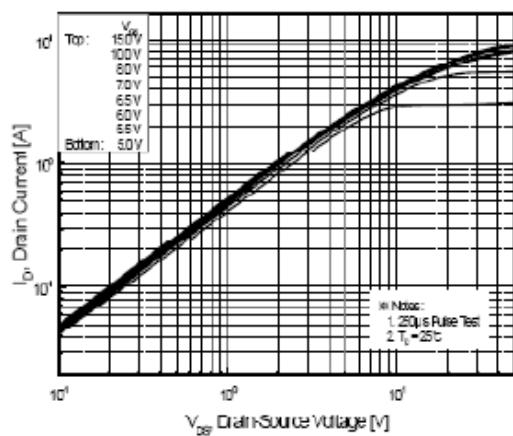
4.Pulse Test:Pulse Width≤300us,Duty Cycle≤2%

5. Essentially independent of operating temperature.

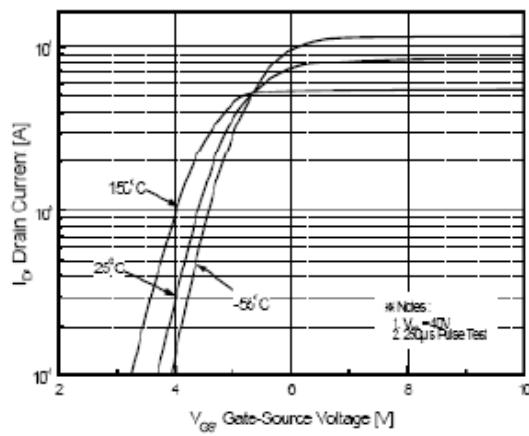
This transistor is an electrostatic sensitive device

Please handle with caution

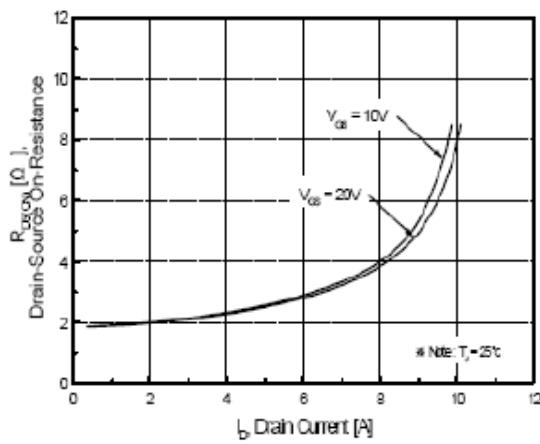




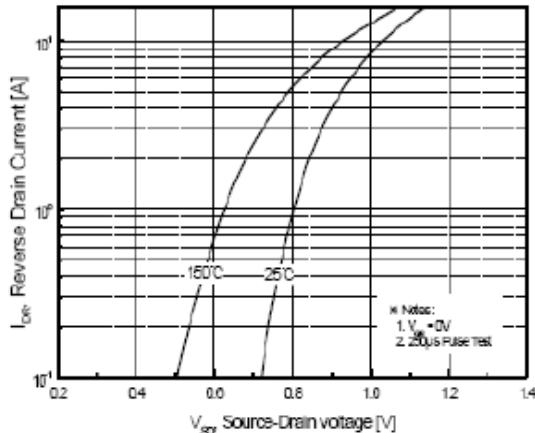
**Fig.1 On-State characteristics**



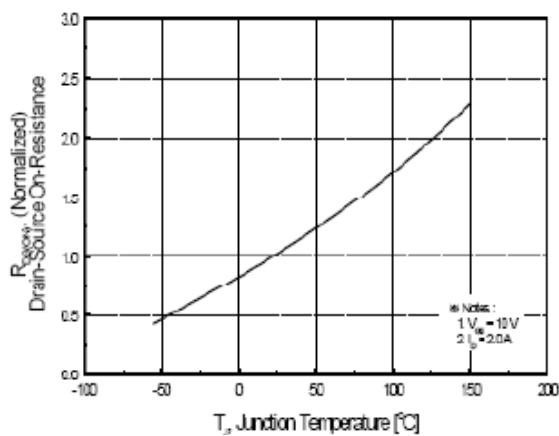
**Fig.2 Transfer Current characteristics**



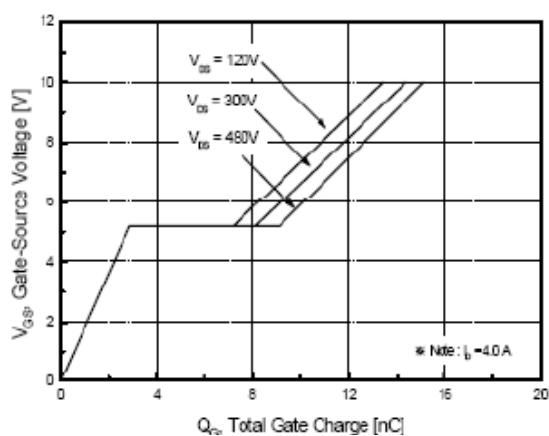
**Fig.3 On-Resistance Variation vs  
Drain Current**



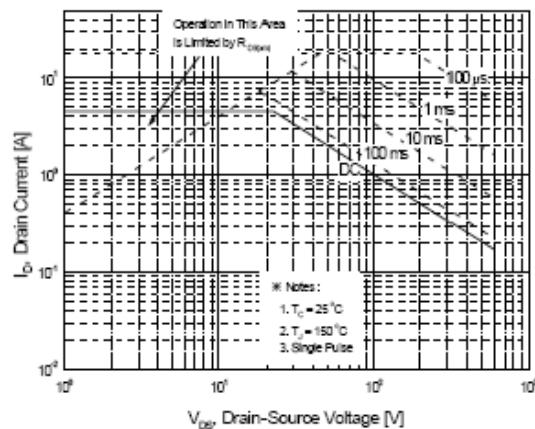
**Fig.4 Body Diode Forward Voltage  
Variation with Source Current  
and Temperature**



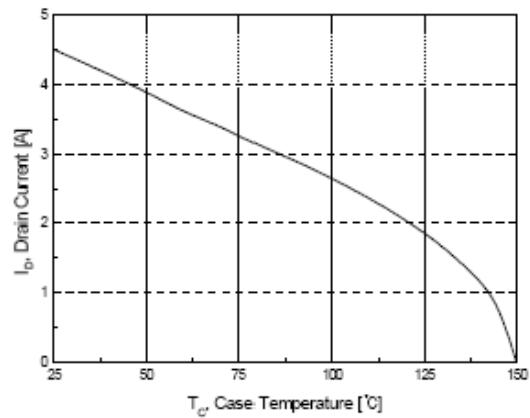
**Fig.5 On-Resistance Variation vs  
Junction Temperature**



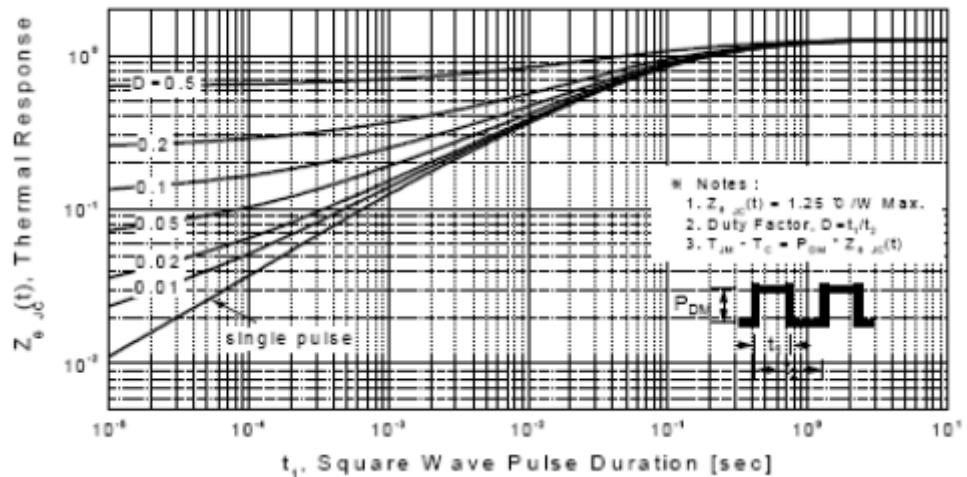
**Fig.6 Gate Charge Characteristics**



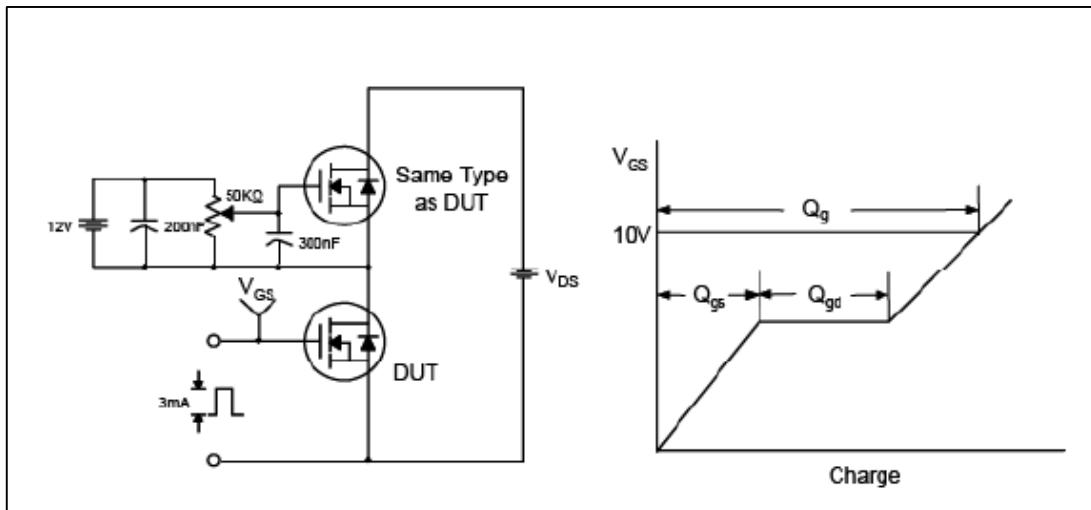
**Fig.7 Maximum Safe Operation Area**



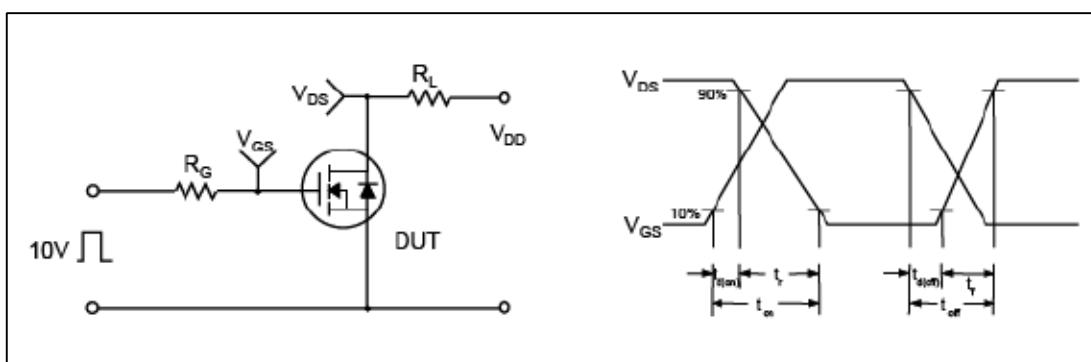
**Fig.8 Maximum Drain Current vs Case Temperature**



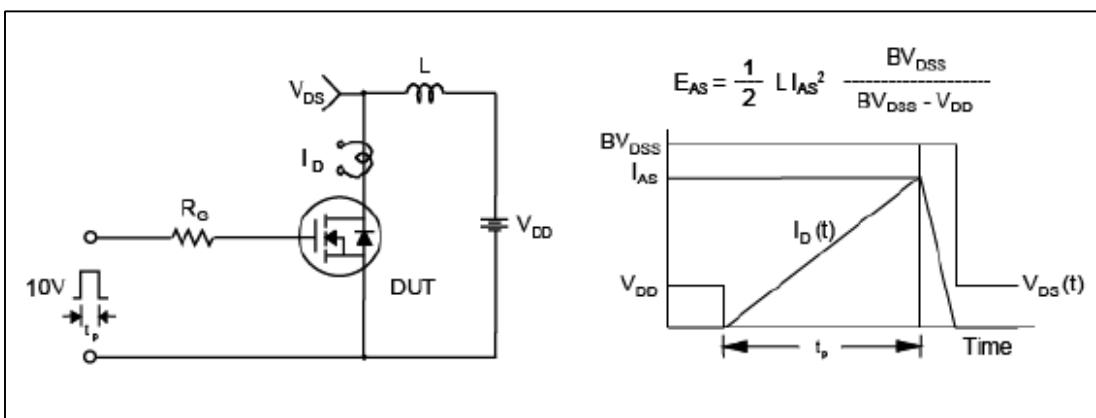
**Fig.9 Transient Thermal Response Curve**



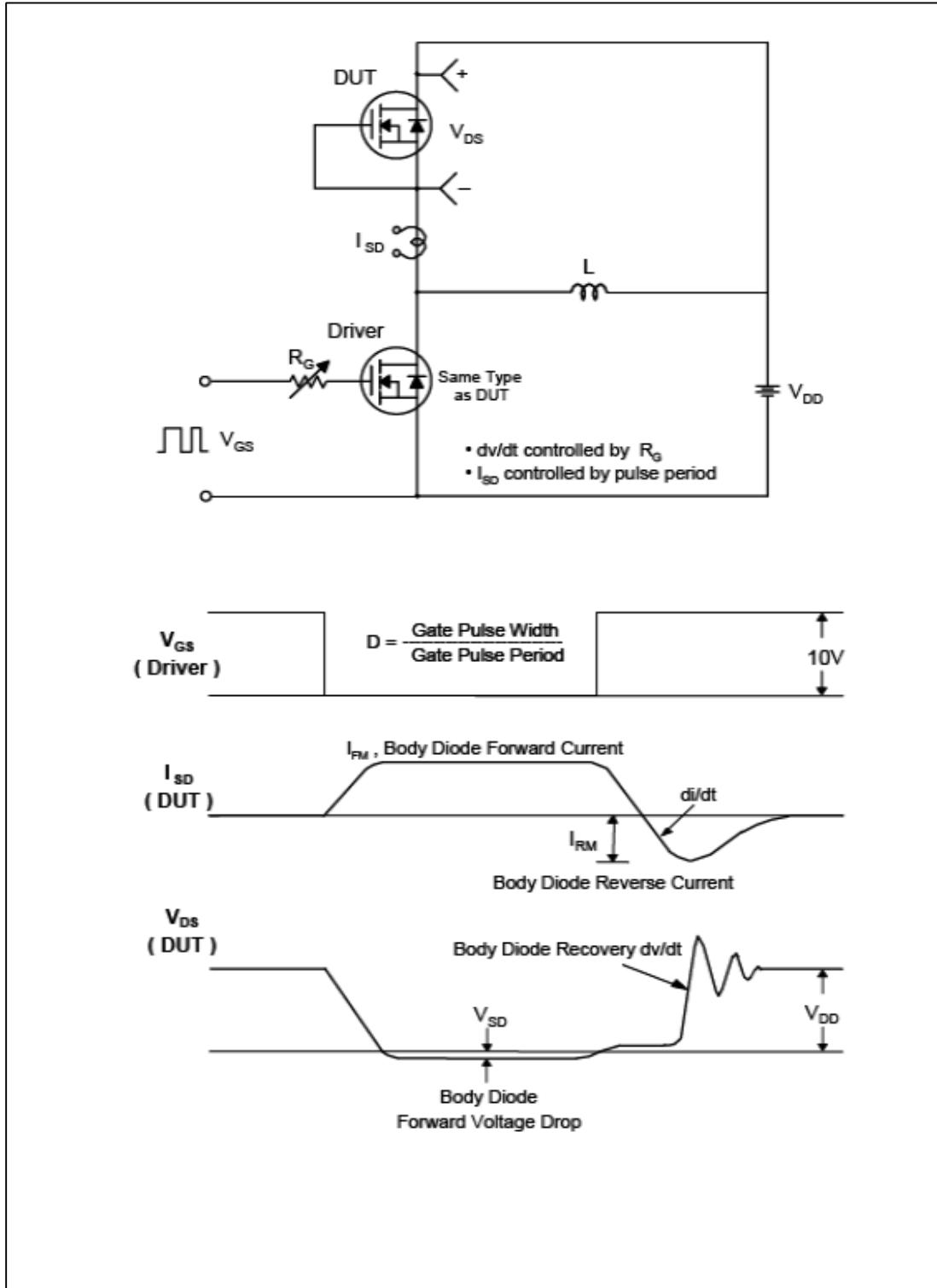
**Fig.10 Gate Test Circuit & Waveform**



**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**

**TO-220 Package Dimension**

