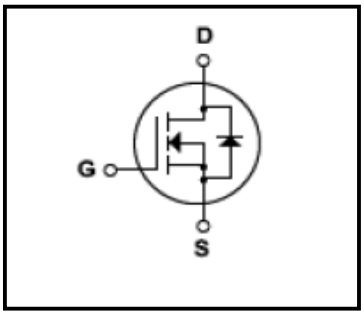
Silicon N-Channel MOSFET

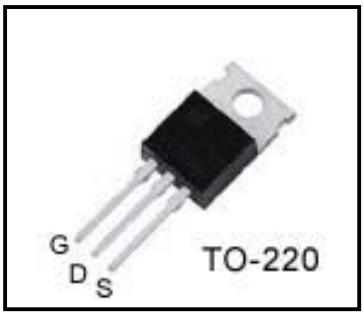
Features

- ☐ 33A,100V,$R_{DS(on)}$(Max0.044Ω)@V_{GS}=10V
- ☐ Ultra-low Gate charge(Typical 25nC)
- ☐ Fast Switching Capability
- ☐ 100%Avalanche Tested
- ☐ Isolation Voltage (V_{ISO}=4000V AC)
- ☐ Maximum Junction Temperature Range(150℃)



General Description

This Power MOSFET is produced using Winsemi's advanced planar stripe, DMOS 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		100	V
I_D	Continuous Drain Current(@Tc=25℃)		33*	A
	Continuous Drain Current(@Tc=100℃)		23*	A
I_{DM}	Drain Current Pulsed	(Note1)	132	A
V_{GS}	Gate to Source Voltage		±30	V
E_{AS}	Single Pulsed Avalanche Energy	(Note2)	435	mJ
E_{AR}	Repetitive Avalanche Energy	(Note1)	12.7	mJ
dv/dt	Peak Diode Recovery dv /dt	(Note3)	6.0	V/ ns
P_D	Total Power Dissipation(@Tc=25℃)		127	W
	Derating Factor above 25℃		0.85	W/℃
T_J,T_{stg}	Junction and Storage Temperature		-40~150	℃
T_L	Channel Temperature		300	℃

*Drain current limited by junction temperature

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
R_{QJC}	Thermal Resistance , Junction -to -Case	-	-	1.18	℃/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}=100V,V_{GS}=0V,Tc=25℃	-	-	1	μA
			V_{DS}=80V,Tc=150℃	-	-	10	μA
Drain -source breakdown voltage		$V_{(BR)DSS}$	I_D=250 μA,V_{GS}=0V	100	-	-	V
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	I_D=250 μA, referenced to 25℃	-	0.11	-	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=16.5A	-	-	0.044	Ω
Forward Transconductance		gfs	V_{DS}=40V,I_D=16.5A	-	22	-	S
Input capacitance		C_{iss}	V_{DS}=25V,	-	1150	1500	pF
Reverse transfer capacitance		C_{rss}	V_{GS}=0V,	-	62	80	
Output capacitance		C_{oss}	f=1MHz	-	320	420	
Switching time	Turn-On Rise time	tr	V_{DD}=50V,	-	195	400	ns
	Turn-On time	T_d(on)	I_D=33A	-	15	40	
	Turn-Off Fall time	tf	R_G=25Ω	-	110	230	
	Turn-Off time	T_d(off)	(Note4,5)	-	80	170	
Total gate charge(gate-source plus gate-drain)		Qg	V_{DD}=80V,	-	38	51	nC
Gate-source charge		Qgs	V_{GS}=10V,	-	7.5	-	
Gate-drain("miller") Charge		Qgd	I_D=33A (Note4,5)	-	18	-	

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

Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I_{DR}	-	-	-	33	A
Pulse drain reverse current	I_{DRP}	-	-	-	132	A
Forward voltage(diode)	V_{DSF}	I_{DR}=7.5A,V_{GS}=0V	-	-	1.4	V
Reverse recovery time	trr	I_{DR}=7.5A,V_{GS}=0V,	-	80	-	ns
Reverse recovery charge	Qrr	dI_{DR} / dt =100 A / μs	-	0.22	-	μC

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

2.L=0.6mH I_{AS}=33A,V_{DD}=25V,R_G=25Ω,Starting T_J=25℃

3.I_{SD}≤33.A,di/dt≤300A/us,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

Typical Characteristics

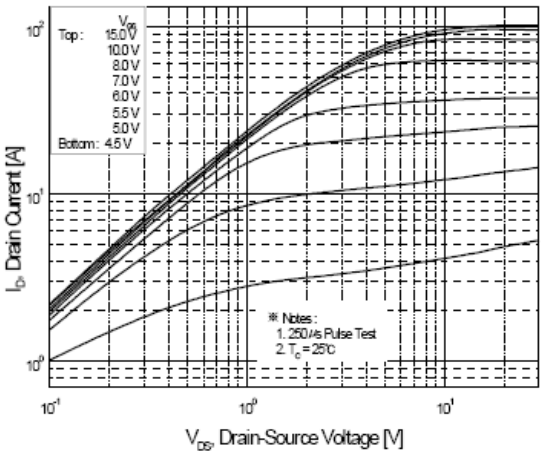


Figure 1. On-Region Characteristics

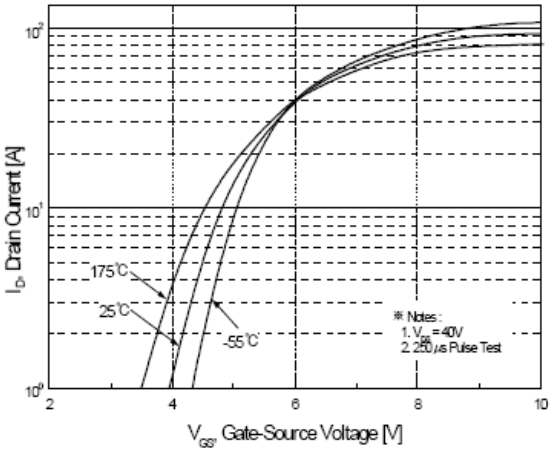


Figure 2. Transfer Characteristics

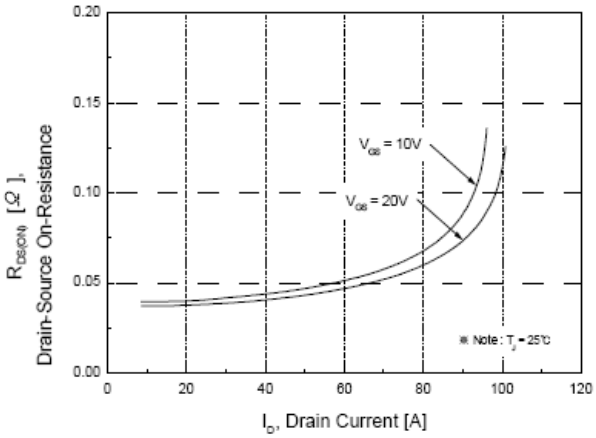


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

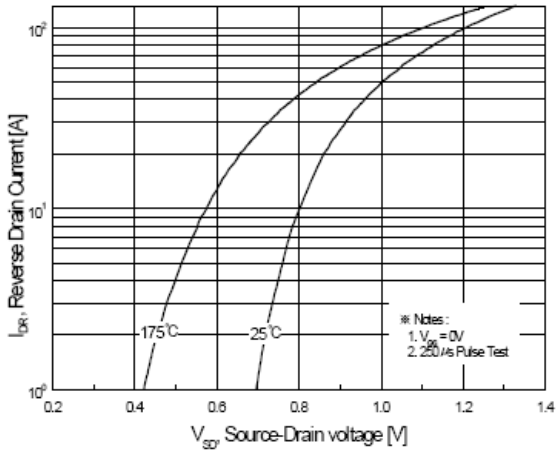


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

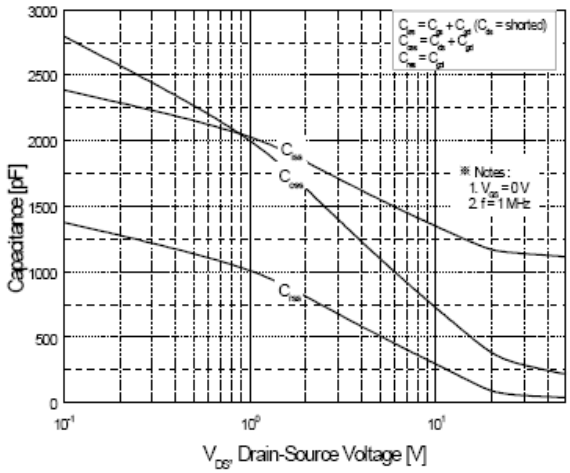


Figure 5. Capacitance Characteristics

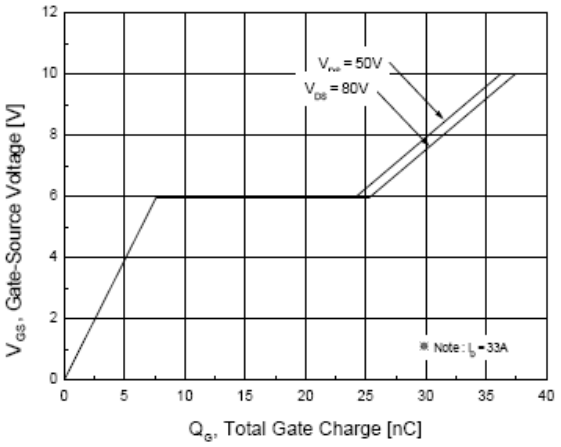


Figure 6. Gate Charge Characteristics

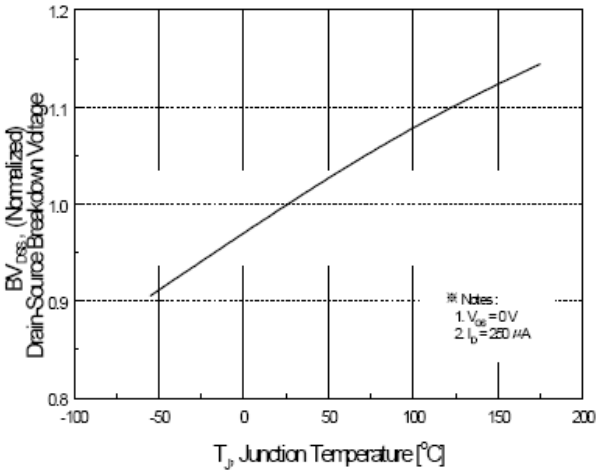


Figure 7. Breakdown Voltage Variation vs. Temperature

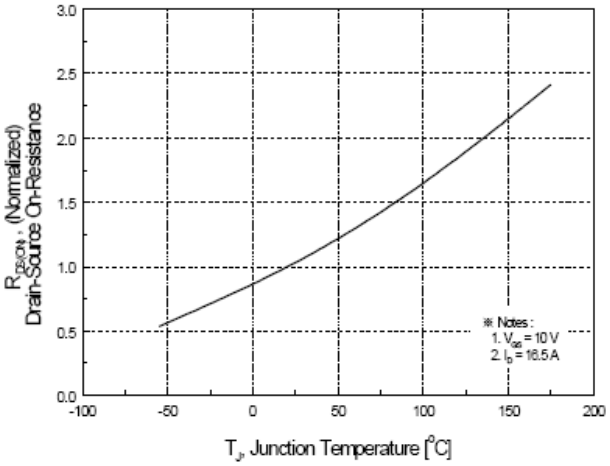


Figure 8. On-Resistance Variation vs. Temperature

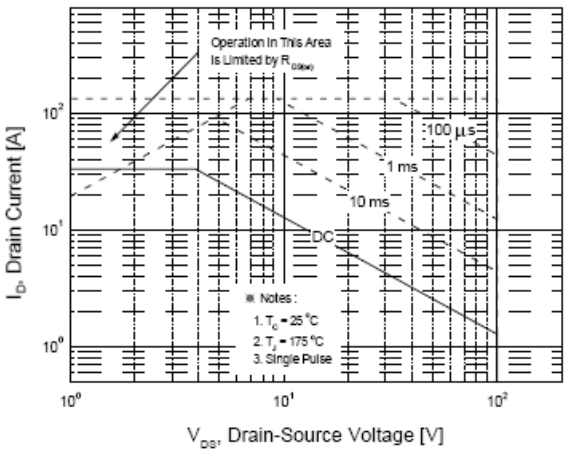


Figure 9. Maximum Safe Operating Area

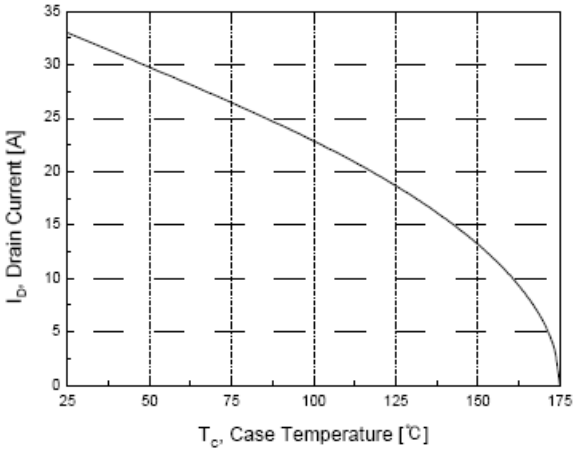


Figure 10. Maximum Drain Current vs. Case Temperature

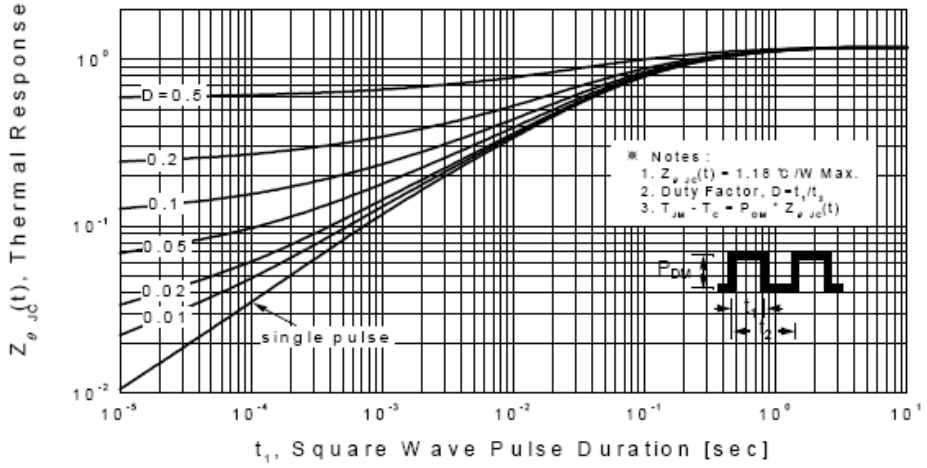


Figure 11. Transient Thermal Response Curve

TO-220 Package Dimension

Unit:mm