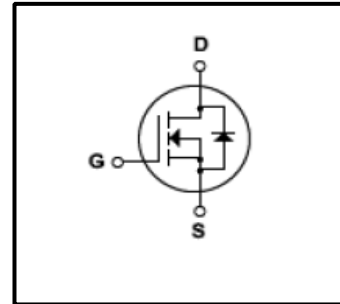


***Silicon N-Channel MOSFET***

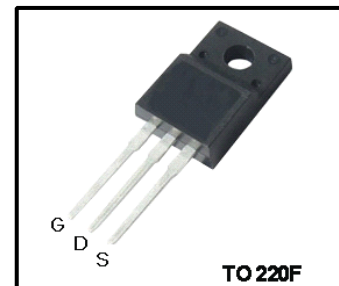
**Features**

- 20A,600V, $R_{DS(on)}$ (Max0.20 $\Omega$ )@ $V_{GS}=10V$
- Ultra-low Gate charge(Typical 84.4nC)
- Fast Switching Capability
- 100%Avalanche Tested
- Maximum Junction Temperature Range(150 $^{\circ}C$ )



**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 device is specially well suited for AC-DC switching power supplies, DC-DC power converters, high voltage H-bridge motor drive PWM.



**Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain Source Voltage	600	V
$I_D$	Continuous Drain Current (@ $T_c=25^{\circ}C$ )	20	A
$I_{DM}$	Drain Current Pulsed (Duration is limited by $T_{jmax}$ .)	50	A
$V_{GS}$	Gate to Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulse Avalanche Energy	800	mJ
$I_{AR}$	Single Pulse Avalanche Current	20	A
$E_{AR}$	Repetitive Avalanche Energy (Frequency is limited by $T_{jmax}$ .)	1	mJ
$P_D$	Total Power Dissipation (@ $T_c=25^{\circ}C$ )	34.5	W
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{stg}$	Storage Temperature	-55~150	$^{\circ}C$

**Thermal Characteristics**

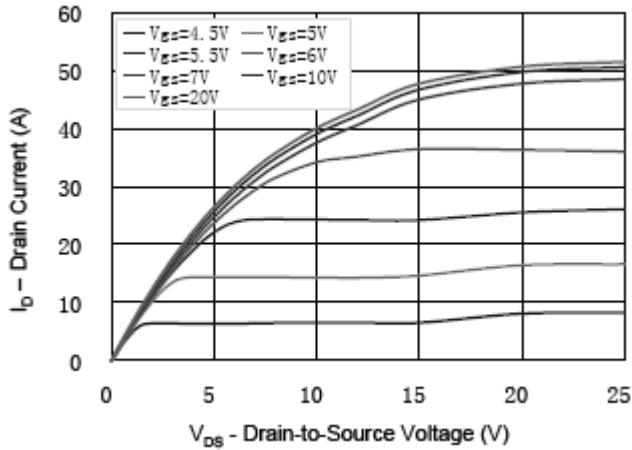
Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{QJC}$	Thermal Resistance , Junction -to -Case	-	-	3.6	$^{\circ}C/W$
$R_{QJA}$	Thermal Resistance , Junction -to -Ambient	-	-	60	$^{\circ}C/W$

## Electrical Characteristics(Tc=25°C)

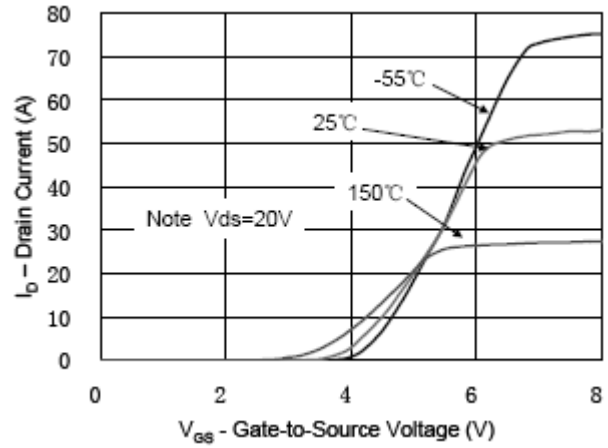
Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±30V,V <sub>DS</sub> =0V	-	-	±100	nA
Gate-source breakdown voltage	V <sub>(BR)GSS</sub>	I <sub>G</sub> =±10 μA,V <sub>DS</sub> =0V	±30	-	-	V
Drain cut -off current	I <sub>DSS</sub>	V <sub>DS</sub> =600V,V <sub>GS</sub> =0V	-	-	1	μA
		V <sub>DS</sub> =600V,T <sub>J</sub> =150°C	-	-	100	μA
Drain -source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =250μA,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> =250uA	2.5	-	3.5	V
Drain -source ON resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V,I <sub>D</sub> =13.1A	-	0.16	0.20	Ω
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> ≥30V,I <sub>D</sub> =20A	-	18.8	-	S
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =70V, V <sub>GS</sub> =0V, f=1MHz	-	2140		pF
Reverse transfer capacitance	C <sub>rss</sub>		-	18		
Output capacitance	C <sub>oss</sub>		-	300		
Total gate charge(gate-source plus gate-drain)	Q <sub>g</sub>	V <sub>DS</sub> =480V, V <sub>GS</sub> =10V, I <sub>D</sub> =20.7A	-	84.4	-	nC
Gate -source charge	Q <sub>gs</sub>		-	9.1	-	
Gate-drain("miller") Charge	Q <sub>gd</sub>		-	14.6	-	

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

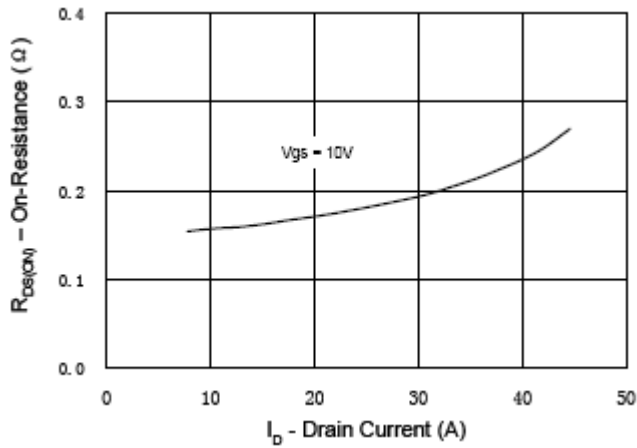
Characteristics	Symbol	Test Condition	Min	Type	Max	Unit
Continuous drain reverse current	I <sub>S</sub>	T <sub>C</sub> =25°C	-	-	20	A
Pulse Diode Forward Current	I <sub>SM</sub>		-	-	60	
Body Diode Voltage	V <sub>DSF</sub>	T <sub>J</sub> =25 I <sub>SD</sub> =20A,V <sub>GS</sub> =0V	-	0.96	1.2	V



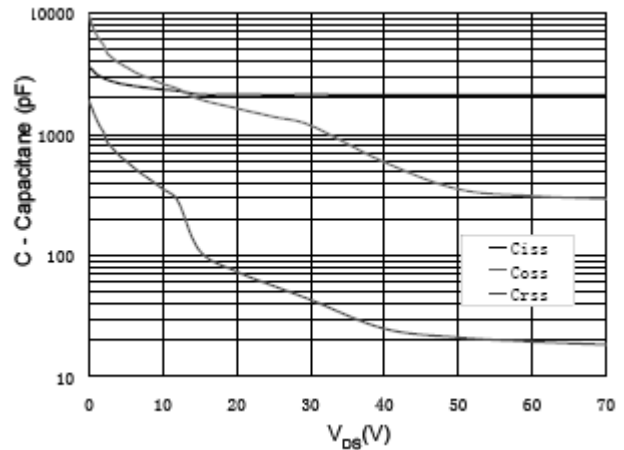
**Fig.1 Output Characteristics**



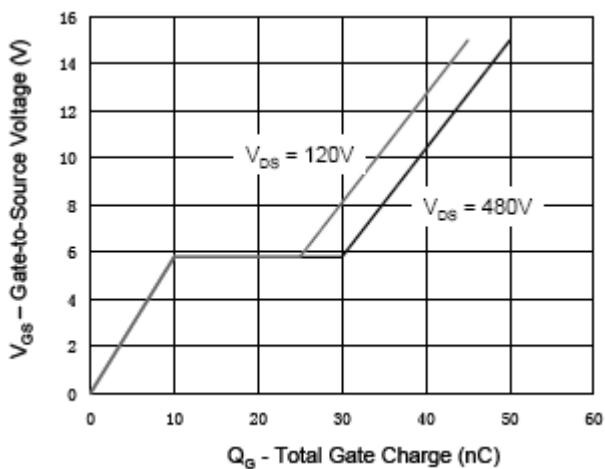
**Fig.2 Transfer Characteristics**



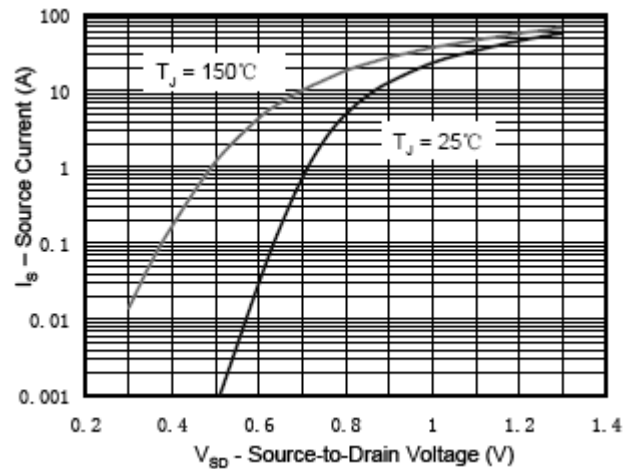
**Fig.3 On-Resistance Variation vs Drain Current**



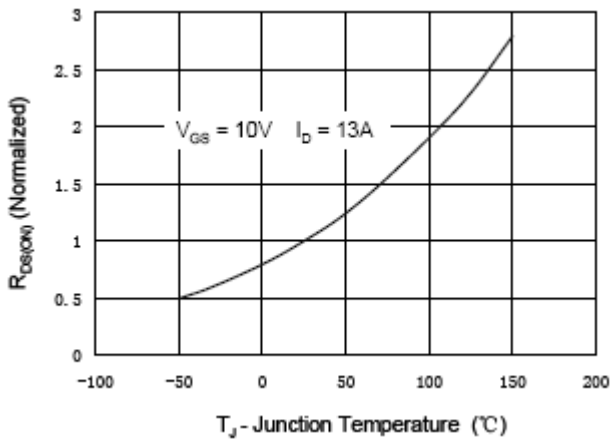
**Fig.4 Capacitance**



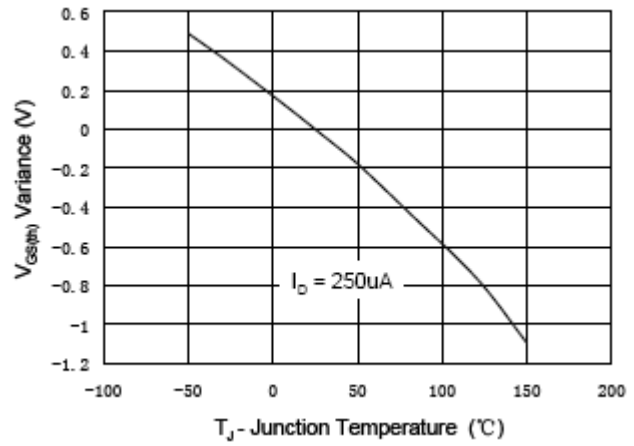
**Fig.5 Gate Charge Characteristics**



**Fig.6 Source-Drain Diode Forward Voltage**



**Fig.7 On-Resistance vs.Junction Temperature**



**Fig.8 Threshold Voltage vs.Junction Temperature**

**TO-220F Package Dimension**

