JINSANE

HUIZHOU JINSANE ELECTRONICS CO., LTD

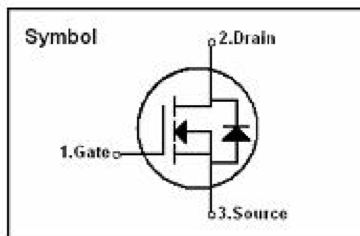
TO-220F Plastic-Encapsulate Mosfet

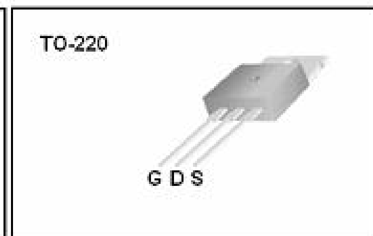
7N60

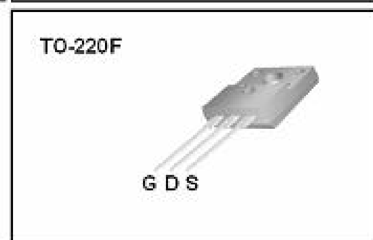
600V N-Channel MOSFET

Features

- 7.4A,600v,RDS(on)=1.2Ω@VGS=10V
- Gate charge (Typical 40nC)
- High ruggedness
- Fast switching
- 100% AvalancheTested
- Improved dv/dt capability







General Description

This Power MOSFET is produced using Truesemi's advanced planar stripe, DMOS technology. This latest technology has been especially designed to minimize on-state resistance, have a high rugged avalanche characteristics. These devices are well suited for high efficiency switch mode power supplies, active power factor correction, electronic lamp ballasts based on half bridge topology.

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
VDSS	Drain to Source Voltage	600	V
ID	Continuous Drain Current(@TC=25℃)	7.4	A
	Continuous Drain Current(@TC=100℃)	4.4	A
IDM	Drain Current Pulsed	29.6	A
VGS	Gate to Source Voltage	±30	V
EAS	Single Pulsed Avalanche Energy	560	mJ
EAR	Repetitive Avalanche Energy	13	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
PD	Total Power Dissipation	135	W
	Derating Factor above 25℃	1.1	W/℃
TSTG,TJ	Operating Junction Temperature & Storage Temperature	-55-150	℃
TL	Maximum Lead Temperature for soldering purpose,1/8 from Case for 5 seconds	300	℃

Thermal Characteristics

Symbol	Parameter	Value	Units
RθJC	Thermal Resistance,Junction-to-Case	0.85	℃/W
RθCS	Thermal Resistance,Case-to-Sink Typ	0.5	℃/W
RθJA	Thermal Resistance,Junction-to-Ambient	62.5	℃/W

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Electrical Characteristics (TC = 25 °C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	600	-	-	V
$\Delta BV_{DSS} / \Delta T_J$	Breakdown Voltage Temperature coefficient	I_D = 250uA, referenced to 25 °C	-	0.68	-	V/°C
I_{DSS}	Drain-Source Leakage Current	V_{DS} = 600V, V_{GS} = 0V	-	-	10	uA
		V_{DS} = 480V, T_C = 125 °C	-	-	100	uA
I_{GSS}	Gate-Source Leakage, Forward	V_{GS} = 30V, V_{DS} = 0V	-	-	100	nA
	Gate-source Leakage, Reverse	V_{GS} = -30V, V_{DS} = 0V	-	-	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-state Resistance	V_{GS} =10 V, I_D = 4.5A	-	0.85	1.2	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} =0 V, V_{DS} =25V, f = 1MHz	-	820	980	pF
C_{oss}	Output Capacitance		-	140	170	
C_{rss}	Reverse Transfer Capacitance		-	43	50	
Dynamic Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} =300V, I_D =7.4A, R_G =25Ω (Note 4, 5)	-	32	70	ns
t_r	Rise Time		-	85	160	
$t_{d(off)}$	Turn-off Delay Time		-	70	145	
t_f	Fall Time		-	65	120	
Q_g	Total Gate Charge	V_{DS} =480V, V_{GS} =10V, I_D =7.4A (Note 4, 5)	-	48	55	nC
Q_{gs}	Gate-Source Charge		-	6.8	-	
Q_{gd}	Gate-Drain Charge(Miller Charge)		-	25	-	

Source-Drain Diode Ratings and Characteristics

Symbl	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
I_S	Continuous Source Current	Integral Reverse p-n Junction	-	-	7.4	A
I_{SM}	Pulsed Source Current	Diode in the MOSFET	-	-	30	
V_{SD}	Diode Forward Voltage	I_S=7.4A, V_{GS} =0V	-	-	1.4	V
t_{rr}	Reverse Recovery Time	I_S=7.4A, V_{GS}=0V,dI_F/dt=100A/us	-	400	-	ns
Q_{rr}	Reverse Recovery Charge	I_S=7.4A, V_{GS}=0V,dI_F/dt=100A/us	-	2.9	-	uC

※ NOTES

1. Repeatitivity rating : pulse width limited by junction temperature
2. L = 22.3mH, I_{AS} =7.4A, V_{DD} = 50V, R_G = 25Ω , Starting T_J = 25°C
3. I_{SD} ≤ 7.4A, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse Width ≤ 300us, Duty Cycle ≤ 2%
5. Essentially independent of operating temperature