

## N-CHANNEL POWER MOSFET

### Features

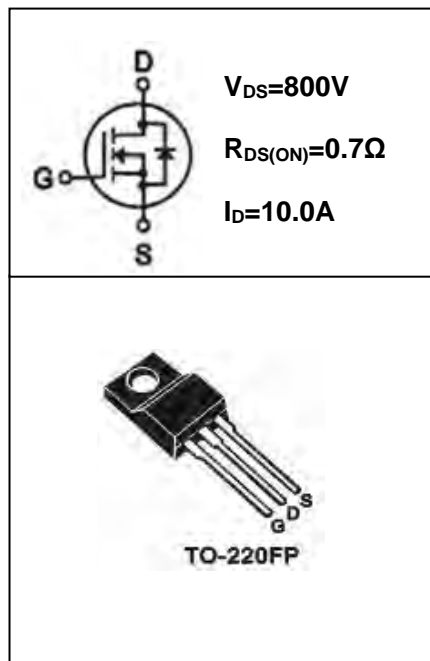
- LOW THERMAL RESISTANCE
- FAST SWITCHING
- HIGH INPUT RESISTANCE
- RoHS COMPLIANT

### Applications

- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

### ● Absolute Maximum Ratings (Tc=25°C) TO-220FP

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V <sub>DS</sub>	800	V
gate-source Voltage	V <sub>GS</sub>	± 30	V
Continuous Drain Current (TC=25°C)	I <sub>D</sub>	10.0*	A
Continuous Drain Current TC=100°C	I <sub>D</sub>	6.3*	A
Drain Current — Pulsed ①	I <sub>DM</sub>	40*	A
Power Dissipation	P <sub>tot</sub>	80	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55-150	°C
Single Pulse Avalanche Energy ②	E <sub>AS</sub>	700	mJ



\*Drain current limited by maximum junction temperature

### ● Electronic Characteristics (Tc=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	800			V
Breakdown Voltage Temperature Coefficient	Δ BV <sub>DSS</sub> /Δ T <sub>J</sub>	I <sub>D</sub> =250uA, Referenced to 25°C		0.93		V/°C
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	3.0		5.0	V
Drain-source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =800V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C			10	μA
		V <sub>DS</sub> =640V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C			100	μA
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =40V, I <sub>D</sub> =5.0A ③		9.0		S



# SIF10N80CF

## ● Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gate-body Leakage Current ( $V_{DS} = 0$ )	$I_{GSS}$	$V_{GS} = \pm 30V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 5.0A$ ③		0.7	1.0	$\Omega$
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 25V$ $F = 1.0MHz$		2260		pF
Output Capacitance	$C_{oss}$			200		
Reverse transfer Capacitance	$C_{rss}$			28		
Turn -Off Delay Time	$T_d(off)$	$V_{DD} = 400V, I_D = 10.0A$ $R_G = 25\Omega$ ③		90		ns
Total Gate Charge	$Q_g$	$I_D = 10.0A, V_{DS} = 640V$ $V_{GS} = 10V$ ③		59		nC
Gate-to-Source Charge	$Q_{gs}$			12		nC
Gate-to-Drain Charge	$Q_{gd}$			19		nC
Continuous Diode Forward Current	$I_s$				10.0	A
Diode Forward Voltage	$V_{SD}$	$T_j = 25^\circ C, I_s = 10.0A$ $V_{GS} = 0V$ ③			1.4	V
Reverse Recovery Time	$t_{rr}$	$T_j = 25^\circ C, I_f = 10.0A$ $di/dt = 100A/\mu s$ ③		730		ns
Reverse Recovery Charge	$Q_{rr}$			10.9		$\mu C$

## ● Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
		TO-220FP	
Thermal Resistance Junction-case	$R_{thJC}$	1.79	$^\circ C/W$
Thermal Resistance Junction-ambient	$R_{thJA}$	62.5	$^\circ C/W$

### (Notes):

- ① Repetitive rating: Pulse width limited by maximum junction temperature
- ② Starting  $T_j = 25^\circ C, V_{DD} = 50V, L = 10mH, R_G = 25\Omega, I_{AS} = 10.0A$
- ③ Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$

## Typical Performance Characteristics

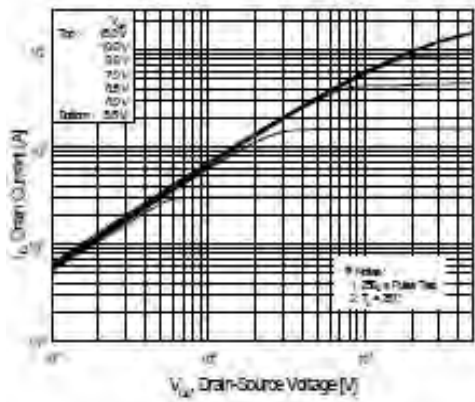


Fig1 Typical Output Characteristics,  $T_c=25^\circ\text{C}$

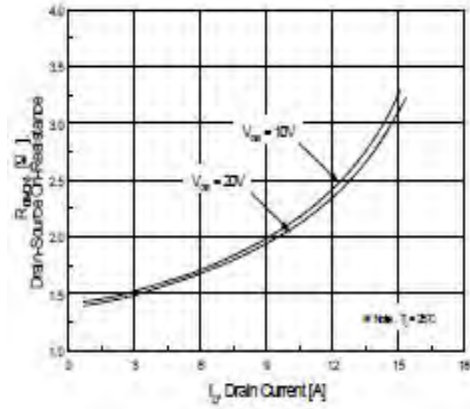


Fig2 On-Resistance Vs. Drain Current and Gate Voltage

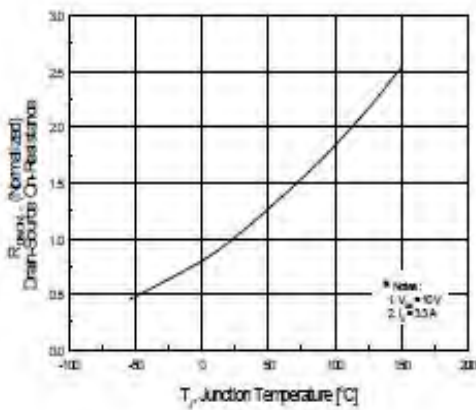


Fig3 Normalized On-Resistance Vs. Temperature

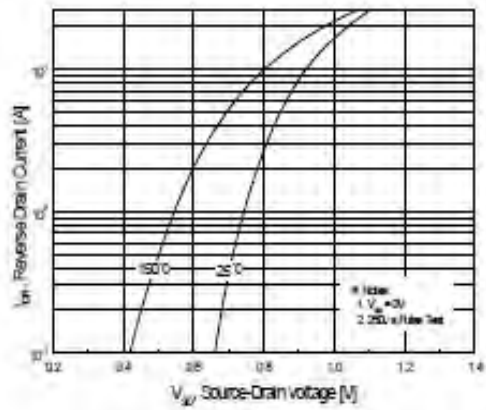


Fig4 Typical Source-Drain Diode Forward Voltage

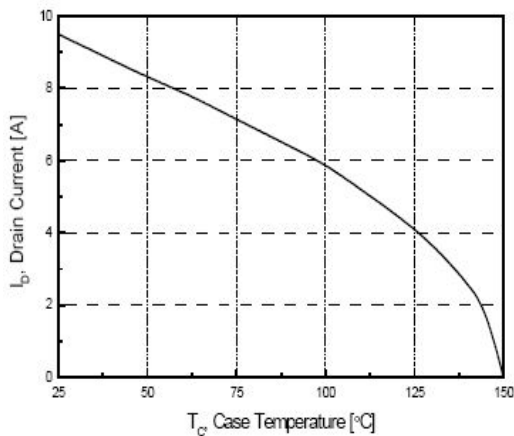


Fig5 Maximum Drain Current Vs. Case Temperature

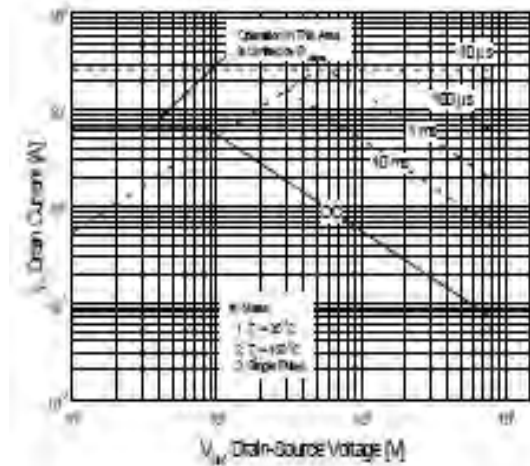


Fig6 Maximum Safe Operating Area

## TO-220FP MECHANICAL DATA

UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.40		4.95	E	9.60		10.30
A <sub>1</sub>	2.30		2.90	e		2.54	
<b>b</b>	<b>0.70</b>		<b>0.90</b>	<b>L</b>	<b>12.40</b>		<b>14.00</b>
b <sub>1</sub>	<b>1.18</b>		<b>1.45</b>	L <sub>2</sub>	<b>2.30</b>		<b>2.60</b>
<b>c</b>	<b>0.40</b>		<b>0.70</b>	L <sub>3</sub>	3.00		4.00
D	14.50		17.00	øp	3.00		3.50
D1	6.10		9.00	Q	2.30		2.80

