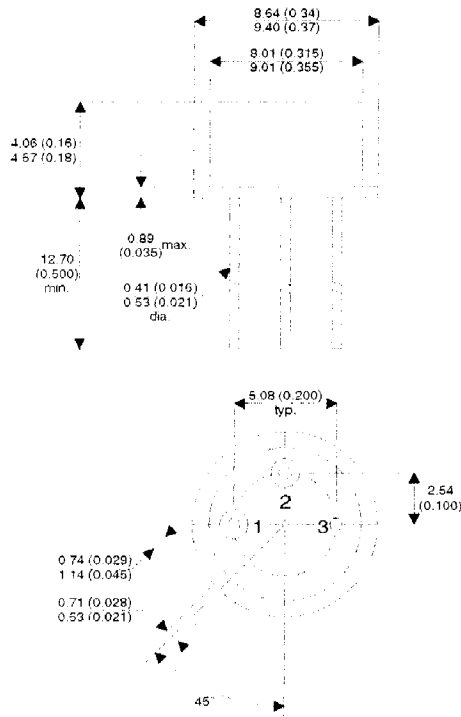


**MECHANICAL DATA**

Dimensions in mm (inches)



**P-CHANNEL  
ENHANCEMENT MODE  
HIGH VOLTAGE  
POWER MOSFETS**

$V_{DSS}$       -100V  
 $I_{D(cont)}$     -4.0A  
 $R_{DS(on)}$      0.60Ω

**FEATURES**

- HERMETICALLY SEALED TO-39 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE

**TO-39**

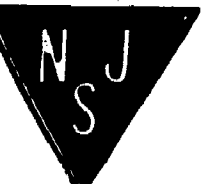
PIN 1 – Source      PIN 2 – Gate      PIN 3 – Drain

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 25^{\circ}C$ )	-4.0A
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 100^{\circ}C$ )	-2.6A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-16A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	20 W
	Linear Derating Factor	0.16 W/°C
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to 150°C
$T_L$	Package Mounting Surface Temperature (for 5 sec)	300°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	6.25°C/W


**Notes**

- 1) Repetitive Rating – Pulse width limited by maximum junction temperature.



# 2N6845 IRFF9120

## ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	V <sub>GS</sub> = 0	I <sub>D</sub> = - 1mA	- 100	V
ΔBV <sub>DSS</sub>	Temperature Coefficient of Breakdown Voltage	Reference to 25°C		- 0.10	V/°C
R <sub>DS(on)</sub>	Static Drain – Source On–State Resistance <sup>1</sup>	V <sub>GS</sub> = - 10V	I <sub>D</sub> = - 2.6A	0.60	Ω
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> = - 10V	I <sub>D</sub> = - 4.0A	0.69	V
g <sub>fs</sub>	Forward Transconductance <sup>1</sup>	V <sub>DS</sub> = V <sub>GS</sub>	I <sub>D</sub> = -250μA	- 2	S
I <sub>DSS</sub>	Drain-to-Source Leakage Current	V <sub>DS</sub> > -15V	I <sub>D</sub> = -2.6A	1.25	S
I <sub>GSS</sub>	Forward Gate – Source Leakage	V <sub>DS</sub> = - 80V	V <sub>GS</sub> = 0	- 25	μA
I <sub>GSS</sub>	Reverse Gate – Source Leakage		T <sub>J</sub> = 125°C	-250	nA
<b>DYNAMIC CHARACTERISTICS</b>					
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0		380	pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = - 25V		170	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz		45	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = -10V	I <sub>D</sub> = -4.0A	4.3	nC
Q <sub>gs</sub>	Gate – Source Charge	V <sub>DS</sub> = -50V		1.3	nC
Q <sub>gd</sub>	Gate – Drain (“Miller”) Charge			1.0	nC
t <sub>d(on)</sub>	Turn–On Delay Time	V <sub>DD</sub> = -50V		60	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> = - 4.0A		100	ns
t <sub>d(off)</sub>	Turn–Off Delay Time	R <sub>G</sub> = 7.5Ω		50	ns
t <sub>f</sub>	Fall Time			70	ns
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
I <sub>S</sub>	Continuous Source Current	MOSFET symbol showing the integral reverse p-n junction diode 		- 4.0	A
I <sub>SM</sub>	Pulse Source Current			- 16	A
V <sub>SD</sub>	Diode Forward Voltage <sup>1</sup>	I <sub>S</sub> = - 4.0A	T <sub>J</sub> = 25°C	- 4.8	V
t <sub>rr</sub>	Reverse Recovery Time <sup>1</sup>	V <sub>GS</sub> = 0V		200	ns
Q <sub>rr</sub>	Reverse Recovery Charge <sup>1</sup>	I <sub>F</sub> = -4.0A	T <sub>J</sub> = 25°C	3.1	μC
t <sub>on</sub>	Forward Turn–On Time	d <sub>1</sub> / d <sub>t</sub> ≤ -100A/μs	V <sub>DD</sub> ≤ -50V	Negligible	

### Notes

1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%