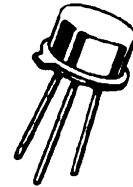


## NSFJ9110

### POWER MOSFET - P CHANNEL

TO-39



- REPETITIVE AVALANCHE RATINGS
- SWITCHING POWER SUPPLIES
- CERAMIC LEADLESS CHIP CARRIER
- HIGH RELIABILITY

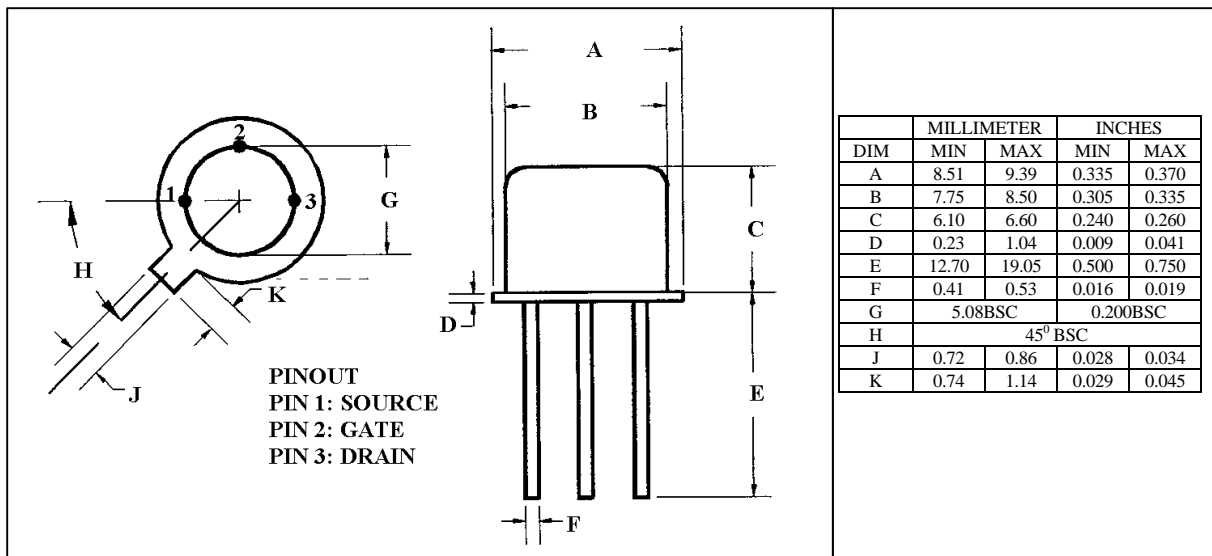
#### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Parameters / Test Conditions		Symbol	Value	Units
Drain-Source Voltage		$V_{DS}$	100	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C = 25^{\circ}\text{C}$	$I_D$	2.5	A
Pulsed Drain Current (1)		$I_D$	10	A
Power Dissipation	$T_C = 25^{\circ}\text{C}$	$P_D$	15	W
Operating Junction & Storage Temperature Range		$T_J, T_{stg}$	-55 to +150	$^{\circ}\text{C}$

#### THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		Symbol	Typ.	Max.	Units
Junction-to-Case		$R_{thJC}$		8.3	K/W
Junction-to-Ambient		$R_{thJA}$		175	K/W

(1) Pulse width limited by maximum junction temperature.



POWER MOSFET – N-CHANNEL – NSFJ9110

**ELECTRICAL CHARACTERISTICS ( $T_j = 25^{\circ}\text{C}$  unless otherwise noted)**

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Drain-Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 1.0\ \mu\text{A}$		$V_{(BR)DSS}$	-100			V
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$		$V_{GS(th)}$	-2.0			V
Gate-Body Leakage $V_{GS} = -20\text{ V}$		$I_{GSS}$			-4.0	nA
Zero Gate Voltage Drain Current $V_{DS} = 0.8\text{ max Rating}, V_{GS} = 0\text{ V}$		$I_{DSS}$			-100	$\mu\text{A}$
Zero Gate Voltage Drain Current $V_{DS} = 80\% V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_j = 125^{\circ}\text{C}$		$I_{DSS}$			-25	$\mu\text{A}$
Drain-Source On-State Resistance (2) $V_{GS} = -10\text{ V}, I_D = 1.6\text{ A}$		$r_{DS(on)}$			-250	$\Omega$
Drain-Source On-State Resistance (2) $V_{GS} = -10\text{ V}, I_D = 2.5\text{ A}$		$r_{DS(on)}$			1.2	$\Omega$
Forward Transconductance (2) $V_{DS} = 15\text{ V}, I_D = 11\text{ A}$		$g_{fs}$	6.2		1.38	S( $\Omega$ )
Input Capacitance	$V_{GS} = 0\text{ V}$	$C_{iss}$		200		pF
Output Capacitance	$V_{DS} = 25\text{ V}$	$C_{oss}$		85		
Reverse Transfer Capacitance	$f = 1.0\text{ MHz}$	$C_{rss}$		30		
Total Gate Charge	$V_{DS} = 50\% V_{(BR)DSS}$ $V_{GS} = -10\text{ V}, I_D = -2.5\text{ A}$ (Gate charge is essentially independent of operating temperature.)	$Q_g$		4.0	9.8	nC
Gate-Source Charge		$Q_{gs}$		0.8	1.8	
Gate -Drain Charge		$Q_{gd}$		1.9	4.3	
Turn-On Delay Time	$V_{dd} = -50\text{ V}_{DS},$ $I_D = 2.5\text{ A},$ $R_G = 7.5\ \Omega$  (Switching time is essentially independent of operating temperature.)	$t_{d(on)}$			30	ns
Rise Time		$t_r$			60	
Turn-Off Delay Time		$t_{d(off)}$			40	
Fall Time		$t_f$			40	

**SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS ( $T_j = 25^{\circ}\text{C}$  unless otherwise noted)**

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Continuous Current		$I_S$			-2.5	A
Pulsed Current (1)		$I_{SM}$			-10	A
Forward Voltage (2) $I_F = I_S, V_{GS} = 0\text{ V}$		$V_{SD}$			5.5	V
Reverse Recovery Time $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{s}, V_{DD} = -50\text{ V}$		$t_{rr}$			200	ns
Reverse Recovered Charge $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{s}, V_{DD} = -50\text{ V}$		$Q_{rr}$			4.0	$\mu\text{C}$

(1) Pulsed width limited by maximum junction temperature.

(2) Pulse Test: Pulse width < 300  $\mu\text{sec}$ . Duty cycle  $\leq 2\%$ .