

# J110

## JFET - General Purpose

### N-Channel – Depletion

N-Channel Junction Field Effect Transistors, depletion mode (Type A) designed for general purpose audio amplifiers, analog switches and choppers.

- N-Channel for Higher Gain
- Drain and Source Interchangeable
- High AC Input Impedance
- High DC Input Resistance
- Low  $R_{DS(on)} < 18 \Omega$
- Fast Switching  $t_{d(on)} + t_r = 8.0 \text{ ns (Typ)}$
- Low Noise  $\overline{e_n} = 6.0 \text{ nV}/\sqrt{\text{Hz}} @ 10 \text{ Hz (Typ)}$

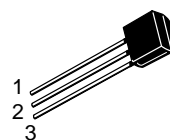
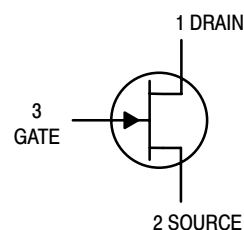
#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Gate-Source Voltage	$V_{GS}$	-25	Vdc
Drain-Gate Voltage	$V_{DG}$	-25	Vdc
Gate Current	$I_G$	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	310 2.82	mW mW/ $^\circ\text{C}$
Operating Junction Temp Range	$T_J$	135	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$



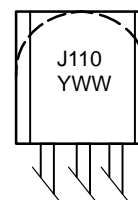
ON Semiconductor™

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TO-92  
CASE 29  
STYLE 5

#### MARKING DIAGRAMS



Y = Year  
WW = Work Week

#### ORDERING INFORMATION

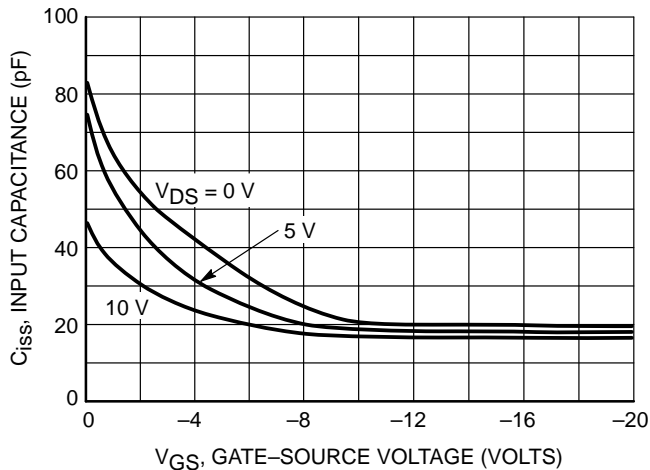
Device	Package	Shipping
J110	TO-92	5000 Units/Box
J110RLRA	TO-92	2000/Tape & Reel

**Preferred** devices are recommended choices for future use and best overall value.

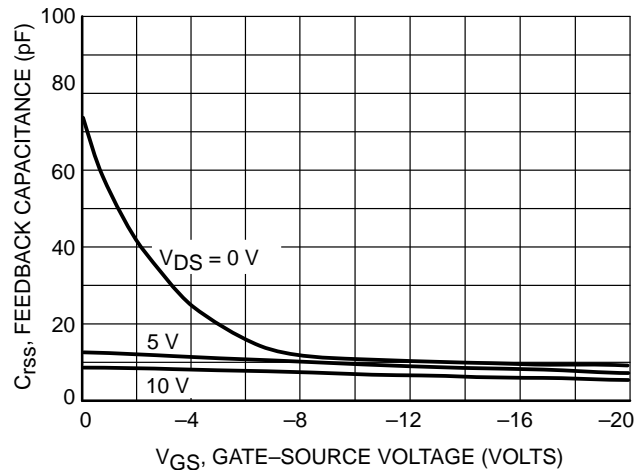
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>STATIC CHARACTERISTICS</b>				
Gate–Source Breakdown Voltage ( $I_G = -1.0\ \mu\text{A}$ )	$V_{(BR)GSS}$	-25	–	Vdc
Gate Reverse Current ( $V_{GS} = -15\ \text{Vdc}$ , $V_{DS} = 0$ ) ( $V_{GS} = -15\ \text{Vdc}$ , $V_{DS} = 0$ , $T_A = 100^\circ\text{C}$ )	$I_{GSS}$	–	-3.0 -200	nAdc
Gate–Source Cutoff Voltage ( $V_{DS} = 5.0\ \text{Vdc}$ , $I_D = 1.0\ \mu\text{A}$ )	$V_{GS(off)}$	-0.5	-4.0	Vdc
Drain Source On–Resistance ( $V_{DS} < 1.0\ \text{V}$ , $V_{GS} = 0\ \text{V}$ )	$R_{DS(on)}$	10	–	mAdc
Zero–Gate–Voltage Drain Current (Note 1.) ( $V_{DS} = 15\ \text{Vdc}$ )	$I_{DSS}$	10	–	mAdc
<b>DYNAMIC CHARACTERISTICS</b>				
Drain–Gate and Source–Gate On–Capacitance ( $V_{DS} = V_{GS} = 0$ , $f = 1.0\ \text{MHz}$ )	$C_{dg(on)} + C_{sg(on)}$	–	85	pF
Drain–Gate Off–Capacitance ( $V_{GS} = -10\ \text{Vdc}$ , $f = 1.0\ \text{MHz}$ )	$C_{dg(off)}$	–	15	pF
Source–Gate Off–Capacitance ( $V_{GS} = -10\ \text{Vdc}$ , $f = 1.0\ \text{MHz}$ )	$C_{sg(off)}$	–	15	pF

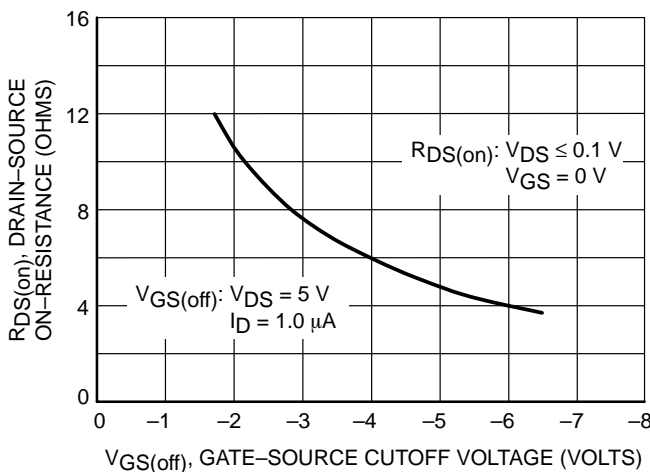
1. Pulse Width = 300  $\mu\text{s}$ , Duty Cycle = 3.0%.



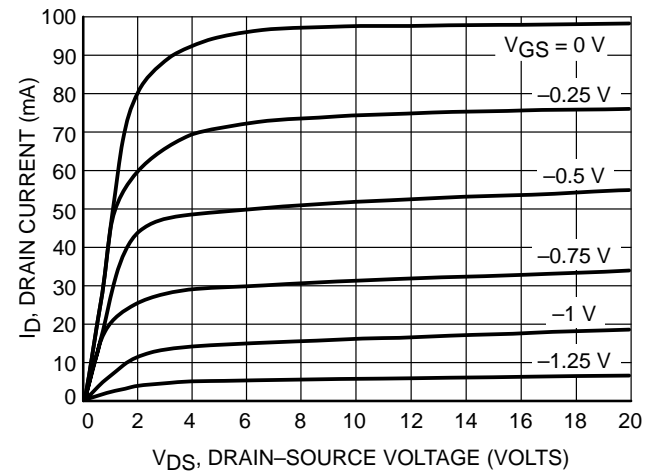
**Figure 1. Common Source Input Capacitance versus Gate–Source Voltage**



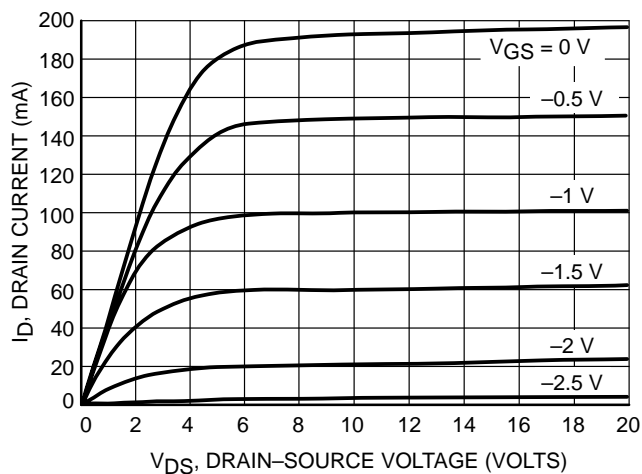
**Figure 2. Common Source Reverse Feedback Capacitance versus Gate–Source Voltage**



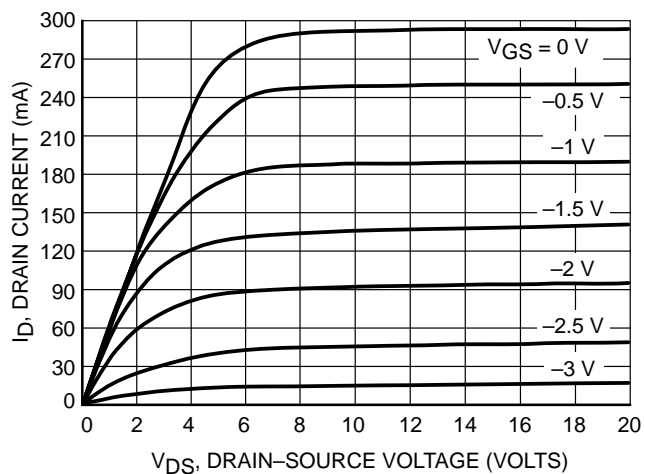
**Figure 3. On–Resistance versus Gate–Source Cutoff Voltage**



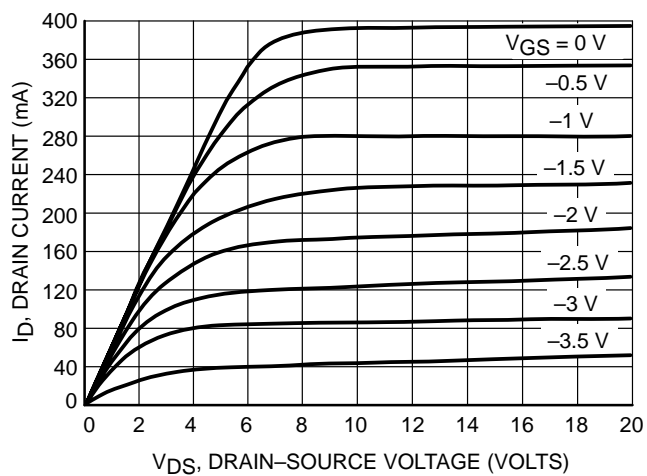
**Figure 4. Output Characteristic**  
 $V_{GS(off)} = -2\ \text{V}$



**Figure 5. Output Characteristic**  
 $V_{GS(off)} = -3 \text{ V}$



**Figure 6. Output Characteristic**  
 $V_{GS(off)} = -4 \text{ V}$

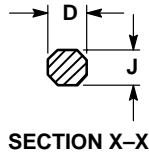
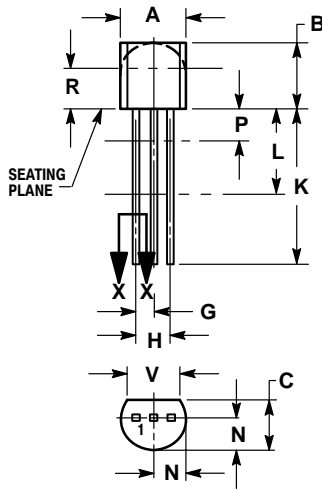


**Figure 7. Output Characteristic**  
 $V_{GS(off)} = -5 \text{ V}$

## PACKAGE DIMENSIONS

# J110


## TO-92 (TO-226) CASE 29-11 ISSUE AL



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

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