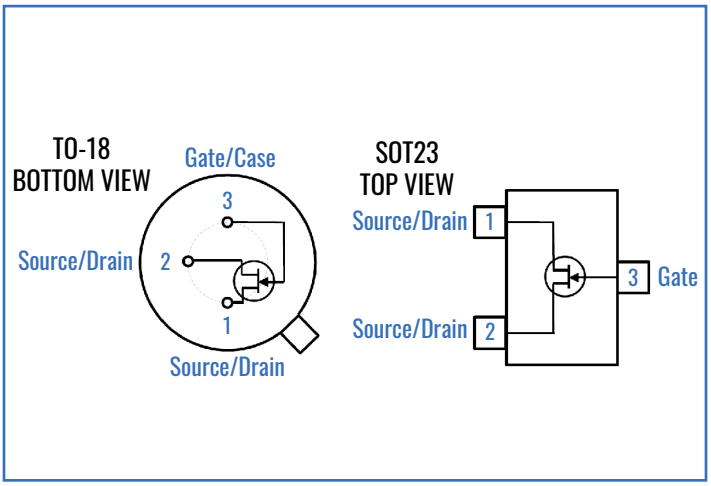
2N4338 | 2N4339
N-Channel JFET - 1

FEATURES

- LOW NOISE: 4.2NV/√HZ TYPICAL
- HIGH GAIN: 1.6MS TYPICAL (2N4339)
- LOW CUTOFF VOLTAGE: 2N4338 < 1.0V



DESCRIPTION

The -50V 2N4338 and 2N4339 are targeted for sensitive amplifier stages for mid-frequencies designs. Gate leakages are typically less than 10pA at room temperatures.

The 2N4338 has a cutoff voltage of less than 1.0V ideal for low-level power supplies.

The TO-18 package is hermetically sealed and suitable for military applications.

TX, TXV, and S-Level Screening Available - Consult Factory.

ORDERING GUIDE

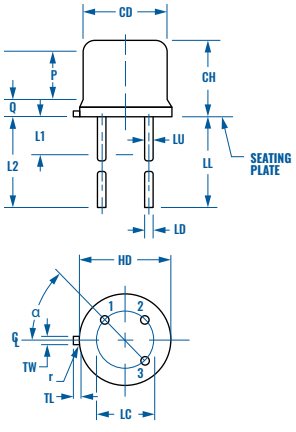
Part Number 2N4338, 2N4339

Description -50V N-Channel JFET

ABSOLUTE MAXIMUM RATINGS

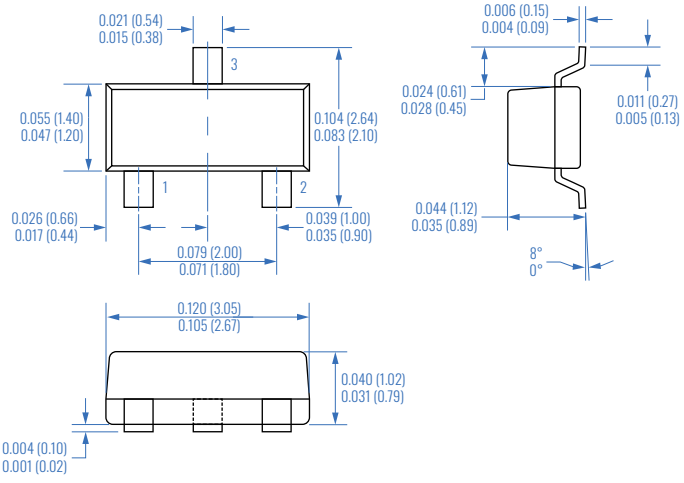
PARAMETER	SYMBOL	VALUE	UNIT
Reverse Gate Source and Gate Drain Voltage	V_{RGS}	-50	V
Continuous Forward Gate Current	I_{FG}	50	mA
Continuous Device Power Dissipation	P_D	300	mW
Power Derating	P	12	mW/°C
Operating Junction Temperature	T_J	-55 to 125	°C
Storage Temperature	T_{STG}	-65 to 150	°C

TO-18 OUTLINE



Ltr	Dimensions			
	Inches		mm	
	Min.	Max.	Min.	Max.
CD	0.178	0.195	4.52	4.95
CH	0.170	0.210	4.32	5.33
HD	0.209	0.230	5.31	5.84
LC	0.100 TP		2.54 TP	
LD	0.016	0.021	0.41	0.53
LL	0.500	0.750	2.70	19.05
LU	0.016	0.019	0.41	0.48
L1		0.050		1.27
L2	0.250		6.35	
P	0.100		2.54	
Q		0.030		0.76
TL	0.028	0.048	0.71	1.22
TW	0.036	0.046	0.91	1.17
r		0.010		0.25
α	45° TP			

SOT23 OUTLINE



STATIC CHARACTERISTICS

Typical @ 25°C unless otherwise noted, highlighted values = A version.

Parameter		Symbol	2N4338		2N4339		Unit
			Min.	Max.	Min.	Max.	
Gate to Source Breakdown Voltage	V_{DS} = 0V, I_G = -1µA	$V_{(BR)GSS}$	-50		-50		V
Gate to Source Reverse Current	V_{GS} = -30V, V_{DS} = 0V, T_A = 25°C V_{GS} = -30V, V_{DS} = 0V, T_A = 150°C	I_{GSS}		-0.1 -100		-0.1 -100	nA
Gate to Source Cutoff Voltage	V_{DS} = 15V, I_D = 0.1µA	$V_{GS(OFF)}$	-0.3	-1	-0.6	-1.8	V
Drain to Source Saturation Current	V_{GS} = 0V, V_{DS} = 15V (Pulsed)	I_{DSS}	0.2	0.6	0.5	1.5	mA
Drain Cutoff Current	VDS= 15V, VGS= -5V	$I_{D(OFF)}$		0.05		0.05	nA
Forward Diode Voltage	VDS= 0V, IGS= 10µA	I_{DF}	0.4	0.8	0.4	0.8	V

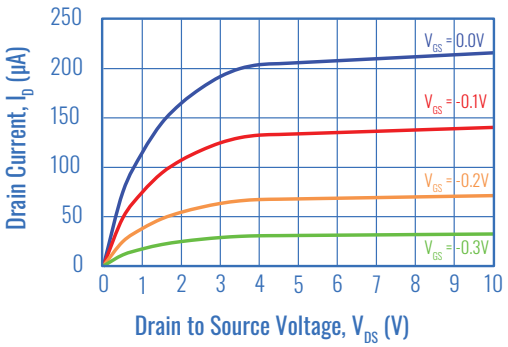
DYNAMIC CHARACTERISTICS

Typical @ 25°C unless otherwise noted

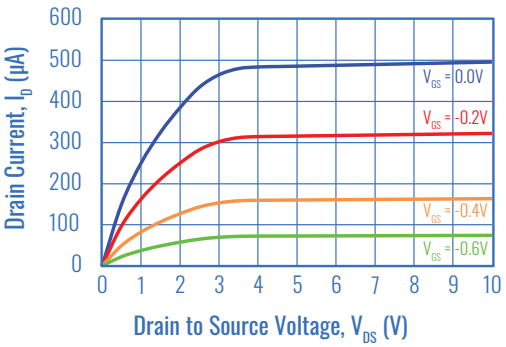
Parameter		Symbol	2N4338		2N4339		Unit
			Min.	Max.	Min.	Max.	
Forward Transconductance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	G_{FS}	600	1800	800	2400	µs
OutputConductance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	G_{OS}		5		15	µs
Drain to Source ON Resistance	V_{GS} = 0V, I_D = 0A, f = 1kHz	$R_{DS(ON)}$		2500		1700	Ω
Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	C_{iss}		7		7	pF
Reverse Transfer Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz	C_{rss}		3		3	pF
Noise Figure	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz, R_G = 1MΩ, BW = 200Hz	NF		1		1	dB

TYPICAL PERFORMANCE CHARACTERISTICS

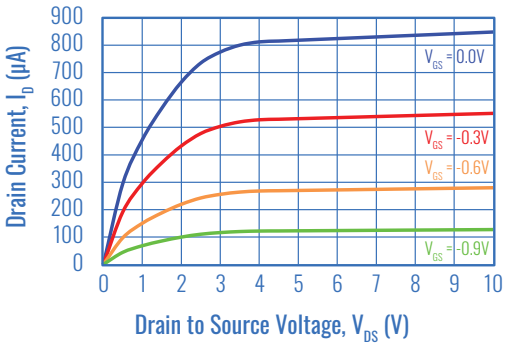
2N4338 Output @ $V_{GS(OFF)}$ = -0.5V



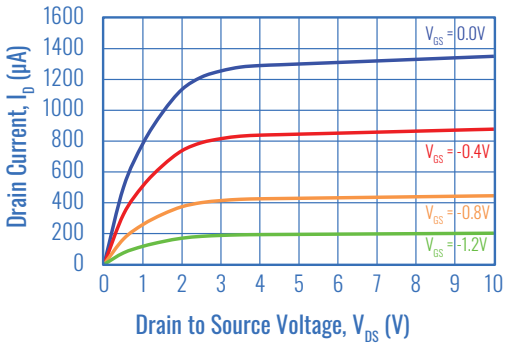
2N4338 Output @ $V_{GS(OFF)}$ = -0.8V



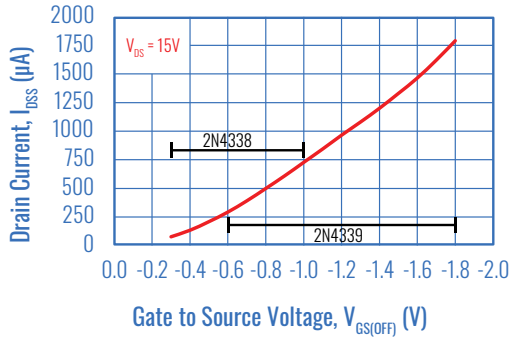
2N4338 Output @ $V_{GS(OFF)}$ = -1.1V



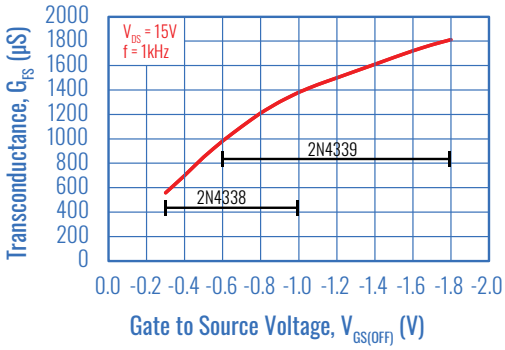
2N4338 Output @ $V_{GS(OFF)}$ = -1.5V



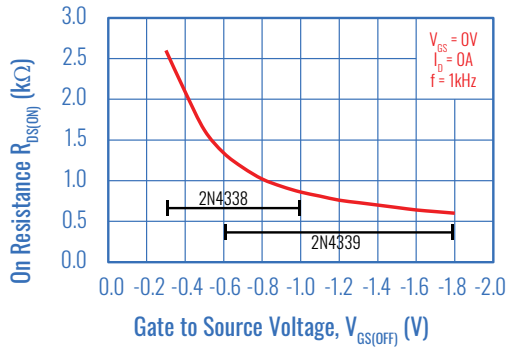
Typical I_{DSS} - $V_{GS(OFF)}$



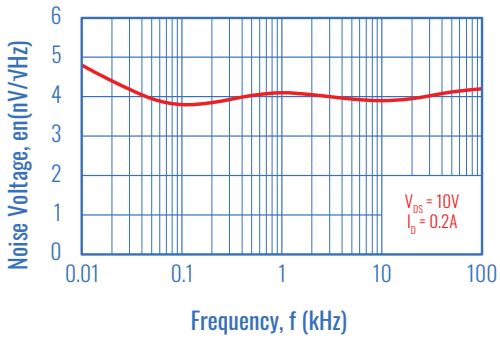
Typical G_{FS} - $V_{GS(OFF)}$



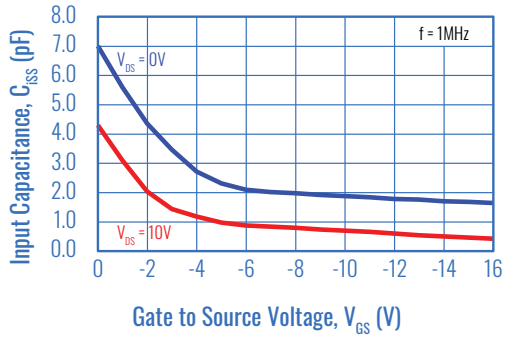
Typical $R_{DS(ON)}$ - $V_{GS(OFF)}$



Typical Noise (nV/√Hz)



Typical C_{iss} - V_{GS}



Typical C_{rss} - V_{GS}