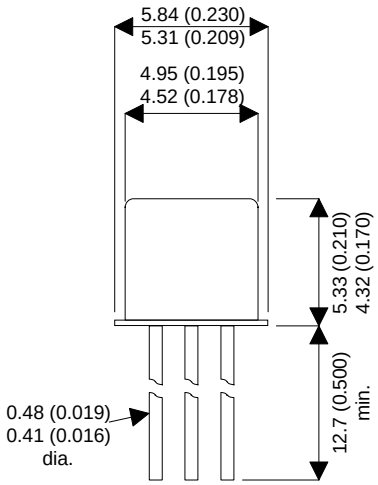
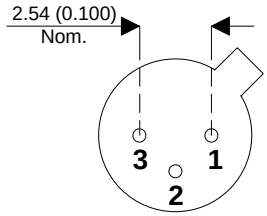
2N3799X

MECHANICAL DATA

Dimensions in mm (inches)





TO–18 METAL PACKAGE

Underside View

PIN 1 – Emitter PIN 2 – Base PIN 3 – Collector

PNP, LOW NOISE AMPLIFIER TRANSISTOR

FEATURES

- **SILICON PLANAR EPITAXIAL PNP TRANSISTOR**
- **CECC SCREENING OPTIONS**
- **LOW NOISE AMPLIFIER**

APPLICATIONS:

- **Low Level Amplifier**
- **Instrumentation Amplifiers**
- **General Purpose**

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{CBO}	Collector – Base Voltage	–60V
V_{CEO}	Collector – Emitter Voltage (I_B = 0)	–50V
V_{EBO}	Emitter – Base Voltage (I_B = 0)	–5V
I_C	Collector Current	–50mA
P_D	Total Device Dissipation @ T_A = 25°C	360mW
	Derate above 25°C	2.06mW / °C
P_D	Total Device Dissipation @ T_C = 25°C	1.2W
	Derate above 25°C	6.86mW / °C
T_J , T_{STG}	Operating and Storage Junction Temperature Range	–65 to +200°C
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	0.49°C/mW
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.15°C/mW

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SEME LAB

2N3799X

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage	I_C = –10mA	I_B = 0	–60			V
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	I_C = –10µA	I_E = 0	–50			
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	I_E = –10µA	I_C = 0	–5			
I_{CBO}	Collector Cut-off Current	V_{CB} = –50V				–0.01	µA
		I_E = 0	T_A = 150°C			–10	
I_{EBO}	Emitter Cut-off Current	V_{EB} = –4V	I_C = 0			–20	nA
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	I_C = –100µA	I_B = –10µA			–0.2	V
		I_C = –1mA	I_B = –100µA			–0.25	
$V_{BE(sat)}$	Base – Emitter Saturation Voltage	I_C = –100µA	I_B = –10µA			–0.7	V
		I_C = –1mA	I_B = –100µA			–0.8	
$V_{BE(on)}$	Base – Emitter On Voltage	I_C = –100µA	V_{CE} = –5V			–0.7	V
h_{FE}	DC Current Gain (V_{CE} = –5V)	I_C = –1µA		75			—
		I_C = –10µA		225			
		I_C = –100µA		300			
		I_C = –100µA	T_A = –55°C	150			
		I_C = –500µA		300			
		I_C = –1mA		300			
		I_C = –10mA *		250			

* Pulse Test: $t_p \leq 300\mu s$, $\delta \leq 2\%$.

SMALL SIGNAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

Parameter		Test Conditions			Min.	Typ.	Max.	Unit
f_t	Current Gain Bandwidth Product [1]	V_{CE} = –5V	I_C = –500µA	f = 20MHz	30			MHz
		V_{CE} = –5V	I_C = –1mA	f = 100MHz	100		500	
C_{ob}	Output Capacitance	V_{CB} = –5V	I_E = 0	f = 1MHz			4	pF
C_{ib}	Input Capacitance	V_{EB} = –0.5V	I_C = 0	f = 1MHz			8	
h_{ie}	Input Impedance	V_{CE} = –10V I_C = –1mA f = 1kHz			10		40	kΩ
h_{oe}	Output Admittance				5		60	µhmos
h_{re}	Voltage Feedback Ratio						25	x 10^{-4}
h_{fe}	Small Signal Current Gain				300		900	—
N_F	Noise Figure	V_{CE} = –10V I_C = –100µA R_G = 3kΩ	f = 100Hz	B.W. = 20Hz		2.5	4	dB
			Spot:	f = 1kHz B.W. = 200Hz		0.8	1.5	
			Noise:	f = 10kHz B.W. = 2kHz		1.8	1.5	
				f = 1kHz		1.5	2.5	

1) f_t is defined as the frequency at which $|h_{fe}|$ extrapolates to untity.

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