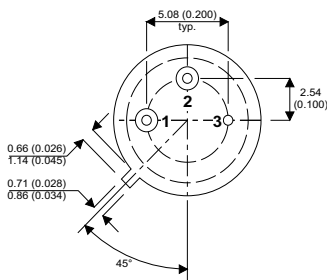
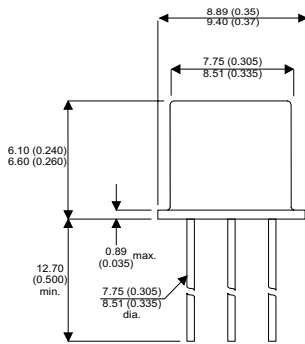


**MECHANICAL DATA**

Dimensions in mm (inches)

**PNP SILICON EPITAXIAL TRANSISTOR**



**TO39 PACKAGE**

Pin 1 = Emitter Pin 2 = Base Pin 3 = Collector

**APPLICATIONS**

- General Purpose Industrial Applications

**DESCRIPTION**

The BFX38-41 are silicon planar epitaxial PNP transistors in JEDEC TO39 metal case, designed for a wide variety of applications.

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{case} = 25^{\circ}C$ unless otherwise stated)		<b>BFX38</b> <b>BFX39</b>	<b>BFX40</b> <b>BFX41</b>
$V_{CBO}$	Collector – Base Voltage	-55V	-75V
$V_{CEO}$	Collector – Emitter Voltage	-55V	-75V
$V_{EBO}$	Emitter – Base Voltage		-5V
$I_C$	Collector Current		-1A
$P_{tot}$	Total Power Dissipation $T_{amb} < 25^{\circ}C$ $T_{case} < 25^{\circ}C$		0.8W 4W
$T_{stg}, T_j$	Storage and Junction Temperature		-55 to 200°C

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$ Collector Cutoff Current	<b>BFX38</b> $V_{CB} = -40\text{V}$ $I_E = 0$		-0.2	-50	nA
	<b>BFX39</b> $T_{amb} = 125^\circ\text{C}$		-0.25	-50	$\mu\text{A}$
	<b>BFX40</b> $V_{CB} = -50\text{V}$ $I_E = 0$		-0.2	-50	nA
	<b>BFX41</b> $T_{amb} = 125^\circ\text{C}$		-0.25	-50	$\mu\text{A}$
$V_{(BR)CBO}$ Collector-Base Breakdown Voltage	<b>BFX38</b> $I_C = -10\mu\text{A}$ $I_E = 0$	-55			V
	<b>BFX39</b>				
	<b>BFX40</b> $I_C = -10\mu\text{A}$ $I_E = 0$	-75			V
	<b>BFX41</b>				
$V_{CEO(SUS)*}$ Collector Emitter Sustaining Voltage	<b>BFX38</b> $I_C = -10\text{mA}$ $I_E = 0$	-55			V
	<b>BFX39</b>				
	<b>BFX40</b> $I_C = -10\text{mA}$ $I_E = 0$	-75			V
	<b>BFX41</b>				
$V_{(BR)EBO}$ Emitter - Base Breakdown Voltage	<b>ALL</b> $I_E = 10\mu\text{A}$ $I_C = 0$	-5			V
$V_{CE(SAT)*}$ Collector- Emitter Saturation Voltage	<b>ALL</b> $I_C = -150\text{mA}$ $I_E = -15\text{mA}$		-0.12	-0.15	V
	$I_C = -500\text{mA}$ $I_E = -50\text{mA}$		-0.3	-0.5	
$V_{BE(SAT)*}$ Base - Emitter Saturation Voltage	<b>ALL</b> $I_C = -150\text{mA}$ $I_E = -15\text{mA}$		-0.8	-0.9	V
	$I_C = -500\text{mA}$ $I_E = -50\text{mA}$		-0.9	-1.1	
$h_{FE}$ DC Current Gain	<b>BFX38 BFX40</b> $I_C = -100\mu\text{A}$ $V_{CE} = -5\text{V}$	60	90		—
	* $I_C = -100\text{mA}$ $V_{CE} = -5\text{V}$	85	130		
	* $I_C = -500\text{mA}$ $V_{CE} = -5\text{V}$	60	120		
	<b>BFX39 BFX41</b> $I_C = -100\mu\text{A}$ $V_{CE} = -5\text{V}$	30	45		—
	* $I_C = -100\text{mA}$ $V_{CE} = -5\text{V}$	40	70		
	* $I_C = -500\text{mA}$ $V_{CE} = -5\text{V}$	25	65		
	* $I_C = -1\text{A}$ $V_{CE} = -5\text{V}$				—
	<b>BFX38</b>	30			
	<b>BFX39</b>	15			
	<b>BFX40</b>	25			
<b>BFX41</b>	10				
* $I_C = -100\text{mA}$ $V_{CE} = -5\text{V}$ $T_{amb} = -55^\circ\text{C}$				—	
<b>BFX38 BFX40</b>	30				
<b>BFX39 BFX41</b>	15				

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
$f_T$	Transitions Frequency	$I_C = -50\text{mA}$ $f = 100\text{MHz}$	$V_{CE} = -10\text{V}$	100	150		MHz
$C_{EBO}$	Emitter - Base Capacitance	$I_C = 0$ $f = 1\text{MHz}$	$V_{EB} = -0.5\text{V}$		75	120	pF
$C_{CBO}$	Collector - Base Capacitance	$I_E = 0$ $f = 1\text{MHz}$	$V_{CB} = -10\text{V}$		15	20	
$t_{on}$	Turn-on time	$I_C = -500\text{mA}$ $I_{B1} = -50\text{mA}$	$V_{CC} = -30\text{V}$		33	100	ns
$t_s$	Storage Time	$I_C = -500\text{mA}$ $I_{B1} = -I_{B2} = -50\text{mA}$	$V_{CC} = -30\text{V}$		160	350	
$t_f$	Fall Time	$I_C = -500\text{mA}$ $I_{B1} = -I_{B2} = -50\text{mA}$	$V_{CC} = -30\text{V}$		27	50	

\* Pulsed: pulse duration = 300 $\mu$ s, duty cycle = 1%

### THERMAL CHARACTERISTICS

$R_{\theta th(j-case)}$	Thermal Resistance Junction to case			44	$^{\circ}\text{C/W}$
$R_{\theta th(j-amb)}$	Thermal Resistance Junction to ambient			219	$^{\circ}\text{C/W}$