

# Central<sup>TM</sup> Semiconductor Corp.

145 Adams Avenue, Hauppauge, NY 11788 USA  
Tel: (631) 435-1110 • Fax: (631) 435-1824

Manufacturers of World Class Discrete Semiconductors

BSX59  
BSX60  
BSX61

NPN SILICON TRANSISTORS

JEDEC TO-39 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR BSX59 series types are NPN Silicon Transistors designed for high speed switching applications.

## MAXIMUM RATINGS (T<sub>C</sub>=25°C)

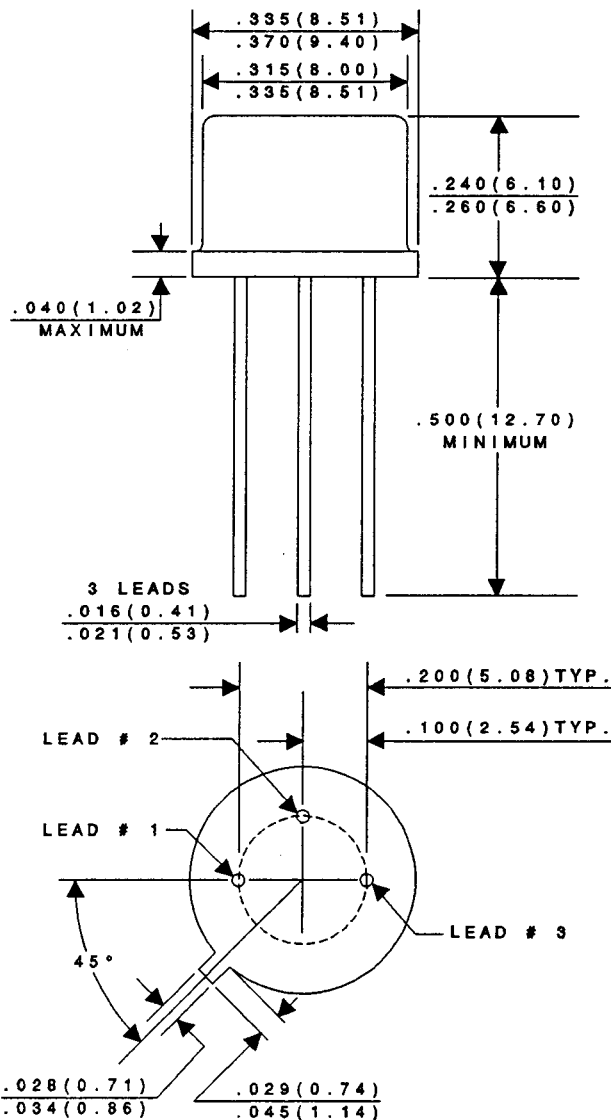
	SYMBOL	BSX59	BSX60	BSX61	UNITS
Collector-Base Voltage	V <sub>CBO</sub>	70	70	70	V
Collector-Emitter Voltage	V <sub>CEO</sub>	45	30	45	V
Emitter-Base Voltage	V <sub>EBO</sub>		5.0		V
Collector Current	I <sub>C</sub>		1.0		A
Collector Current (Peak)	I <sub>CM</sub>		1.0		A
Emitter Current (Peak)	I <sub>EM</sub>		1.0		A
Power Dissipation	P <sub>D</sub>		4.0		W
Power Dissipation (T <sub>A</sub> =25°C)	P <sub>D</sub>		0.8		W
Operating and Storage					
Junction Temperature	T <sub>J</sub> , T <sub>stg</sub>		-65 to +200		°C
Thermal Resistance	θ <sub>JC</sub>		43		°C/W
Thermal Resistance	θ <sub>JA</sub>		219		°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub>=25°C unless otherwise noted)

SYMBOL	TEST CONDITIONS	BSX59		BSX60		BSX61		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	
I <sub>CBO</sub>	V <sub>CE</sub> =40V		500		500		500	nA
I <sub>CBO</sub>	V <sub>CE</sub> =40V, T <sub>C</sub> =150°C		300		300		300	μA
I <sub>CEV</sub>	V <sub>CE</sub> =40V, V <sub>EB(off)</sub> =4.0V		500		500		1000	nA
I <sub>CEV</sub>	V <sub>CE</sub> =40V, V <sub>EB(off)</sub> =4.0V, T <sub>C</sub> =150°C		300		300		500	μA
I <sub>EBO</sub>	V <sub>EB</sub> =4.0V		300		300		500	nA
I <sub>EBO</sub>	V <sub>EB</sub> =4.0V, T <sub>C</sub> =150°C		50		50		50	μA
V <sub>CE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA		0.3		0.3		0.5	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA		0.5		0.5		0.7	V
V <sub>CE(SAT)</sub>	I <sub>C</sub> =1.0A, I <sub>B</sub> =100mA		1.0		1.0		1.3	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA		1.0		1.0		1.0	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	0.85	1.2	0.7	1.3	0.7	1.3	V
V <sub>BE(SAT)</sub>	I <sub>C</sub> =1.0A, I <sub>B</sub> =100mA		1.8		1.8		1.8	V
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =150mA	30		30		30		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =500mA	30	90	30	90	30	90	
h <sub>FE</sub>	V <sub>CE</sub> =5.0V, I <sub>C</sub> =1.0A	20		25		20		
f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =50mA, f=1.0MHz	250		250		250		MHz
C <sub>c</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0		10		10		10	pF
C <sub>e</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> =0		50		50		50	pF

SYMBOL	TEST CONDITIONS	BSX59		BSX60		BSX61		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	
$t_{on}$	$V_{CC}=50V, I_C=500mA, I_{B1}=50mA$		35	-		50		ns
$t_{on}$	$V_{CC}=30V, I_C=500mA, I_{B1}=50mA$		-	40		-		ns
$t_{off}$	$V_{CC}=50V, I_C=500mA, I_{B1}=I_{B2}=50mA$		60	-		100		ns
$t_{off}$	$V_{CC}=30V, I_C=500mA, I_{B1}=I_{B2}=50mA$		-	70		-		ns

### JEDEC TO-39 CASE - MECHANICAL OUTLINE



All Dimensions in Inches (mm).

Lead Code:

1. Emitter
2. Base
3. Collector

**Central**<sup>TM</sup>  
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## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.  
145 Adams Avenue  
Hauppauge, NY 11788 USA  
Main Tel: (631) 435-1110  
Main Fax: (631) 435-1824  
Support Team Fax: (631) 435-3388  
[www.centrasemi.com](http://www.centrasemi.com)

**Worldwide Field Representatives:**  
[www.centrasemi.com/wwreps](http://www.centrasemi.com/wwreps)

**Worldwide Distributors:**  
[www.centrasemi.com/wwdistributors](http://www.centrasemi.com/wwdistributors)

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