

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

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Manufacturers of World Class Discrete Semiconductors

2N1613  
2N1711  
2N1893

NPN Silicon Transistor

JEDEC TO-39 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N1613, 2N1711, and 2N1893 are Silicon NPN Planar Epitaxial Transistors designed for small signal general purpose and switching applications.

MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

		<u>2N1613</u>	<u>2N1711</u>	<u>2N1893</u>	
Collector-Base Voltage	$V_{CB0}$	75	75	120	Vdc
Collector-Emitter Voltage	$V_{CE0}$	-	-	80	Vdc
Collector-Emitter Voltage	$V_{CER}$	50	50	100	Vdc
Emitter-Base Voltage	$V_{EB0}$	7.0	7.0	7.0	Vdc
Collector Current-Continuous	$I_C$		500		mAdc
Power Dissipation	$P_T$		0.8		watts
Power Dissipation, $T_C=25^{\circ}\text{C}$	$P_T$		3.0		watts
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to $+200^{\circ}\text{C}$			

## ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}\text{C}$ )

Symbol	Test Conditions	<u>2N1613</u>		<u>2N1711</u>		<u>2N1893</u>		Unit
		Min	Max	Min	Max	Min	Max	
$I_{CB0}$	$V_{CB}=60\text{V}$		10		10		-	nA
$I_{CB0}$	$V_{CB}=90\text{V}$		-		-		10	nA
$I_{EB0}$	$V_{EB}=5.0\text{V}$		10		5		10	nA
$BV_{CB0}$	$I_C=100\mu\text{A}$	75		75		120		V
$BV_{CE0}$	$I_C=10\text{mA}$					80		V
$BV_{CER}$	$I_C=10\text{mA}$ , $R_{BE}=10\ \Omega$	50		50		100		V
$BV_{EB0}$	$I_E=100\mu\text{A}$	7.0		7.0		7.0		V
$V_{CE}(s)$	$I_C=50\text{mA}$ , $I_B=5\text{mA}$		-		-		1.2	V
$V_{CE}(s)$	$I_C=150\text{mA}$ , $I_B=15\text{mA}$		1.5		1.5		5.0	V
$V_{BE}(s)$	$I_C=50\text{mA}$ , $I_B=5\text{mA}$		-		-		0.9	V
$V_{BE}(s)$	$I_C=150\text{mA}$ , $I_B=15\text{mA}$		1.3		1.3		1.3	V
hFE	$V_{CE}=10\text{V}$ , $I_C=10\mu\text{A}$		-		20		-	-
hFE	$V_{CE}=10\text{V}$ , $I_C=100\mu\text{A}$		20		35		20	-
hFE	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$		35		75		35	-
hFE	$V_{CE}=10\text{V}$ , $I_C=150\text{mA}$		40	120	100	300	40	120
hFE	$V_{CE}=10\text{V}$ , $I_C=500\text{mA}$		20		40		-	-
fT	$V_{CE}=10\text{V}$ , $50\text{mA}$ , $f=20\ \text{MHz}$		60		70		50	MHz
$C_{ob}$	$V_{CB}=10\text{V}$ , $f=100\ \text{KHz}$		25		25		15	pF
$C_{ib}$	$V_{BE}=0.5\text{V}$ , $f=100\ \text{KHz}$		80		80		85	pF
NF	$V_{CE}=10\text{V}$ , $I_C=300\mu\text{A}$ , $f=1.0\ \text{KHz}$		12		8.0		-	dB