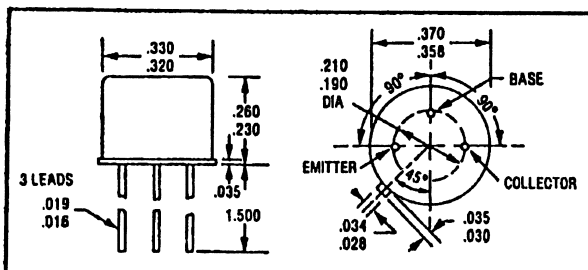


**2N5013 THRU 2N5015**  
**500 mA**  
**HIGH VOLTAGE NPN TRANSISTOR**  
**800-1000 VOLTS**

**JEDEC TO-5**



**FEATURES**

- BV<sub>CER</sub> AND BV<sub>CBO</sub> TO 1000 VOLTS
- LOW SATURATION VOLTAGE
- LOW LEAKAGE AT HIGH TEMPERATURE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- 2N5010 THRU 2N5012 ALSO AVAILABLE

**MAXIMUM RATINGS**

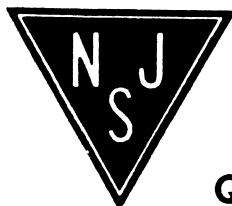
Rating	Symbol	Value	Unit
Collector - Emitter Voltage, R <sub>BE</sub> = 1K Ohms	V <sub>CER</sub>	800	Volts
2N5013		900	
2N5014		1000	
Collector - Base Voltage	V <sub>CBO</sub>	1000	
Emitter - Base Voltage	V <sub>EBO</sub>	5	Volts
Collector Current	I <sub>C</sub>	500	m Amps
Base Current	I <sub>B</sub>	50	m Amps
Total Device Dissipation @ TC = 100°C	P <sub>D</sub>	2	Watts
Derate above 100 °C		20	mW/°C
Operating and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	-65 to +200	°C

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	50	°C/W

**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage*	BV <sub>CER</sub> *	800		V <sub>dc</sub>
2N5013		900		
2N5014		1000		
(I <sub>C</sub> = 200 μ Adc, R <sub>BE</sub> = 1 K ohms)				
Collector - Base Breakdown Voltage	BV <sub>CBO</sub>	800		V <sub>dc</sub>
2N5013		900		
2N5014		1000		
(I <sub>C</sub> = 200 μ Adc)				
Emitter - Base Breakdown Voltage	BV <sub>EBO</sub>	5		V <sub>dc</sub>
(I <sub>E</sub> = 50 μ Adc)				



## ELECTRICAL CHARACTERISTICS

Characteristics		Symbol	Min.	Max.	Unit
Collector Cutoff Current	( $V_{CB} = 650 \text{ Vdc}$ ) ( $V_{CB} = 700 \text{ Vdc}$ ) ( $V_{CB} = 750 \text{ Vdc}$ )	2N5013 2N5014 2N5015	$I_{CBO}$	12**	$\mu\text{Adc}$
Collector Cutoff Current	( $V_{CB} = 650 \text{ Vdc}$ , $T_A=100^\circ\text{C}$ ) ( $V_{CB} = 700 \text{ Vdc}$ , $T_A=100^\circ\text{C}$ ) ( $V_{CB} = 750 \text{ Vdc}$ , $T_A=100^\circ\text{C}$ )	2N5013 2N5014 2N5015	$I_{CBO}$	100**	$\mu\text{Adc}$
DC Current Gain*	( $I_C = 5 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ ) ( $I_C = 20 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ )		$h_{FE}$	25 30	180
Collector - Emitter Saturation Voltage*	( $I_C = 20 \text{ mAdc}$ , $I_B = 5 \text{ mAdc}$ )	2N5013 2N5014 2N5015	$V_{CE(SAT)}$	1.6 1.6 1.8	Vdc
Base - Emitter Saturation Voltage*	( $I_C = 20 \text{ mAdc}$ , $I_B = 5 \text{ mAdc}$ )		$V_{BE(SAT)}$	1.0	Vdc
Current - Gain - Bandwidth Product	( $I_C = 20 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 1 \text{ MHz}$ )		$f_T$	25	MHz
Output Capacitance	( $V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $f = 5 \text{ MHz}$ )		$C_{ob}$	25	pf
Delay Time	$V_{CC} = 125 \text{ Vdc}$ , $I_C = 100 \text{ mAdc}$ , $I_{B1} = I_{B2} = 10 \text{ mAdc}$		$t_d$	200	ns
Rise Time			$t_r$	1200	ns
Storage Time			$t_s$	3.0	us
Fall Time			$t_f$	800	ns

\*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

\*\*Typically 1 uA