

# Silicon Complementary Unijunction Transistor

**NEP**

2N6114

2N6115

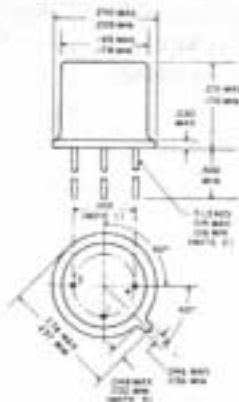
2N6218-24 SEE GES6218-24

## COMPLEMENTARY UNIUNCTION

The General Electric Complementary Unijunction Transistor is a silicon planar, monolithic integrated circuit. It has unijunction characteristics with superior stability, a much tighter intrinsic-standoff ratio distribution and lower saturation voltage.

absolute maximum ratings: (25° C free air)

<b>Voltage</b>		
* Interbase Voltage	30	V
* Emitter - Base 2 Voltage	8.0	V
<b>Current (Note 2)</b>		
* Average Emitter (Forward)	150	mA
* Peak Emitter (Forward) (Note 1)	2	A
* Peak Reverse Emitter	15	mA
<b>Power</b>		
* Average Total (Note 2)	300	mW
<b>Temperature</b>		
* Operating	-55 to +150	°C
* Storage	-55 to +200	°C



**DIMENSIONS WITHIN ABOVE OUTLINE TOLERANCES UNLESS OTHERWISE SPECIFIED**

**LEAD CONFIGURATION**

1. SEE LISTED LEAD PITCH AND NUMBER OF LEADS FOR THE CORRECT LEAD CONFIGURATION. THE LEADS SHALL BE SOLDERED TO THE BOARD AT AN ANGLE OF 45° TO THE BOARD.

2. LEAD LENGTHS SHALL BE CONTROLLED TO THE TOLERANCE SPECIFIED. THE LEAD LENGTHS SHALL BE MEASURED FROM THE CENTER OF THE LEAD TO THE CENTER OF THE BOARD.

3. CALCULATE BY MEASURING TO THE CENTER OF THE LEAD AND THE CENTER OF THE BOARD. THE LEAD LENGTHS SHALL BE MEASURED FROM THE CENTER OF THE LEAD TO THE CENTER OF THE BOARD.

4. THE LEAD LENGTHS SHALL BE MEASURED TO THE CENTER OF THE LEAD AND THE CENTER OF THE BOARD.

electrical characteristics: (25° C free air)

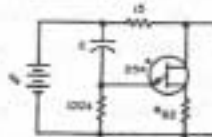
		Min.	Typ.	Max.	
* Intrinsic Standoff Ratio (Note 3)	$\eta$	0.58	0.60	0.62	
* Peak Point Voltage					
( $V_{BB} = 5V$ )	$V_P$	3.2	3.45	3.7	Volts
( $V_{BB} = 10V$ )	$V_P$	6.1	6.45	6.8	Volts
* Interbase Resistance	$R_{IB10}$	5.5	6.8	8.2	kohms
( $I_{EB1} = 0.1mA$ )	2N6114				
* Emitter Breakdown Voltage	$R_{IB10}$	5.0		15	kohms
( $I_{EB1} = 10\mu A$ )	2N6115				
* Peak Point Current					
( $V_{BB} = 10V$ )	$I_P$			5	$\mu A$
* Valley Point Current	$I_P$			15	$\mu A$
( $V_{BB} = 10V$ )	$I_V$	1	2		mA
* Emitter Reverse Current	$I_{EB10}$			0.1	nA
( $V_{EB1} = 5V$ )	2N6114				
* Emitter Saturation Voltage	$I_{EB10}$			100	nA
( $I_E = 50mA, V_{BB} = 10V$ )	2N6115				
* Modulated Interbase Current	$V_{E(OUT)}$	1.1	1.5		Volts
( $I_E = 50mA, V_{BB} = 10V$ )	$I_{B2(mod)}$	1.0	4	10	mA
* Peak Pulse Voltage	$V_{OUT}$	3.5	4.5		Volts
(Note 4)	$V_D$	.30	.45	.60	Volts
Diode Voltage Drop	$Q_t$		50		pC
(Note 3)	$t_{on}$			1	$\mu SEC.$
Minimum Charge to Trigger	$t_{rev}$			10	$\mu SEC.$
( $V_{BB} = 10V$ )					
Turn-on Time (See Figure 7)					
Recovery Time (See Figure 7)					
Relaxation Oscillator Frequency Shift from 25°C Value (See Figure 1,					
$C = 0.1\mu F, R_{B2} = 950\Omega, V_B = 12.5V$ )					
-15°C to +65°C		0.2	0.6	%	
-55°C to +150°C		0.4	1.0	%	

**Notes:**

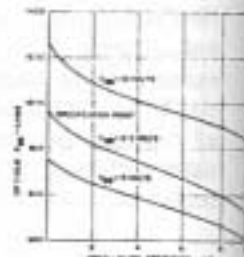
- For capacitor discharge, resistor current limiting is required for capacitors greater than 5  $\mu F$  and recommended for all cases (A minimum of 15 ohms is required for good temperature stability.)
- Derate power and currents linearly to zero at maximum operating temperature.
- The intrinsic-standoff ratio ( $\eta$ ) is essentially constant with temperature and interbase voltage. It and the associated diode drop of peak point voltage are defined by the equations:  

$$\eta = \frac{V_{P1} - V_{P2}}{V_{BB1} - V_{BB2}} \quad V_D = V_{P2} - \eta V_{BB2}$$

Where:  $V_{BB1} = 10V \pm .001V$   
 $V_{BB2} = 5V \pm .001V$
- The Base-One Peak Pulse Voltage is measured in the circuit shown in Figure 1. This specification is used to insure a minimum pulse amplitude for applications in SCR firing circuits and other types of firing circuits.



**FIGURE 1**  
\*CUT ONLY SUBJECTED TO TEMPERATURE CHANGE ALL RESISTORS 1%



**FIGURE 2**

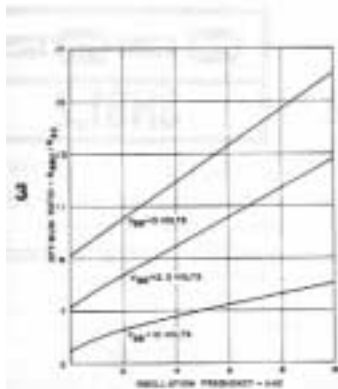
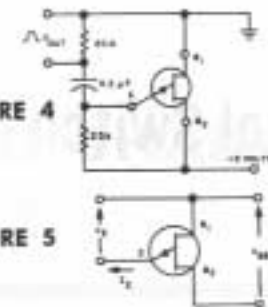


FIGURE 4

FIGURE 5



Complementary Unijunction Transistor symbol with nomenclature used for voltage and currents.

FIGURE 6

Static Emitter Characteristics curves showing important parameters and measurement points (exaggerated to show details).

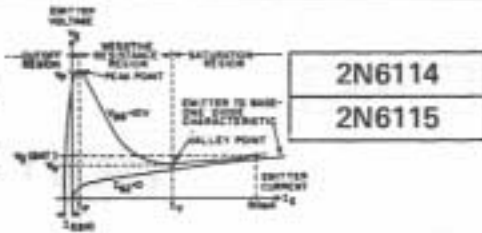
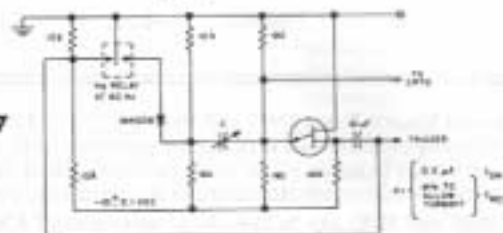


FIGURE 7



## TYPICAL CHARACTERISTICS

