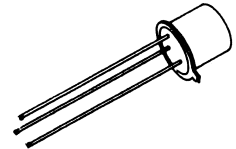


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# Silicon Unijunction Transistors

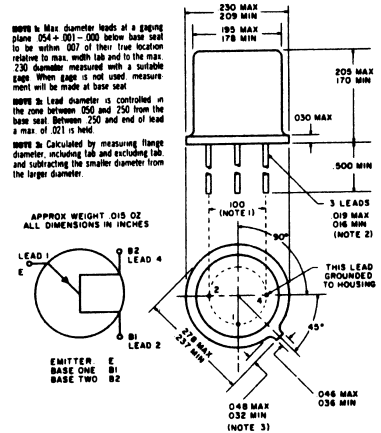


The General Electric 2N2646 and 2N2647 Silicon Unijunction Transistors have an entirely new structure resulting in lower saturation voltage, peak-point current and valley current as well as a much higher base-one peak pulse voltage. In addition, these devices are much faster switches. The 2N2646 is intended for general purpose industrial applications where circuit economy is of primary importance, and is ideal for use in firing circuits for Silicon Controlled Rectifiers and other applications where a guaranteed minimum pulse amplitude is required. The 2N2647 is intended for applications where a low emitter leakage current and a low peak point emitter current (trigger current) are required (i.e. long timing applications), and also for triggering high power SCR's.



## absolute maximum ratings: (25°C) (unless otherwise specified)

Power Dissipation (Note 1)	300 mw
RMS Emitter Current	50 ma
Peak Emitter Current (Note 2)	2 amperes
Emitter Reverse Voltage	30 volts
Interbase Voltage	35 volts
Operating Temperature Range	-65°C to +125°C
Storage Temperature Range	-65°C to +150°C



## electrical characteristics: (25°C) (unless otherwise specified)

**PARAMETER**

Intrinsic Standoff Ratio ( $V_{BB} = 10V$ )  
 Interbase Resistance ( $V_{BB} = 3V, I_E = 0$ )  
 Emitter Saturation Voltage ( $V_{BB} = 10V, I_E = 50 \text{ ma}$ )  
 Modulated Interbase Current ( $V_{BB} = 10V, I_E = 50 \text{ ma}$ )  
 Emitter Reverse Current ( $V_{B2E} = 30V, I_{B1} = 0$ )  
 Peak Point Emitter Current ( $V_{BB} = 25V$ )  
 Valley Point Current ( $V_{BB} = 20V, R_{B2} = 100\Omega$ )  
 Base-One Peak Pulse Voltage (Note 3)  
 SCR Firing Conditions (See Figure 26, back page)

	2N2646			2N2647			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
$\eta$	0.56	0.69	0.75	0.68	0.77	0.82	K $\Omega$
$R_{BB0}$	4.7	6.7	9.1	4.7	6.7	9.1	volts
$V_{RHAT}$		2			2		ma
$I_{B2(MOD)}$		.001	12		.001	.200	$\mu$ A
$I_{EO}$		0.8	5		1.0	2	$\mu$ A
$I_P$	4	5		8	9	18	ma
$V_{OB1}$	3.0	8.5		6.0	9.5		volts

- Derate 3.0 MW/°C increase in ambient temperature. The total power dissipation (available power to Emitter and Base-Two) must be limited by the external circuitry.
- Capacitor discharge—10 $\mu$ fd or less, 30 volts or less.
- The Base-One Peak Pulse Voltage is measured in the circuit below. This specification on the 2N2646 and 2N2647 is used to ensure a minimum pulse amplitude for applications in SCR firing circuits and other types of pulse circuits.
- The intrinsic standoff ratio,  $\eta$ , is essentially constant with temperature and interbase voltage.  $\eta$  is defined by the equation:  

$$V_P = \eta V_{BB} + V_D$$
 Where  $V_P$  = Peak Point Emitter Voltage  
 $V_{BB}$  = Interbase Voltage  
 $V_D$  = Junction Diode Drop (Approx. .5V)

