

DIGITRON SEMICONDUCTORS

2N2417 - 2N2422, A, B

SILICON UNIJUNCTION TRANSISTOR

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|------------|------------|-------|
| Power dissipation ⁽¹⁾ | P_D | 350 | mW |
| RMS emitter current | I_E | 70 | mA |
| Peak pulse emitter current ⁽²⁾ | i_e | 2 | Amps |
| Emitter reverse voltage | V_{B2E} | 60 | Volts |
| Interbase voltage | V_{B2B1} | 65 | Volts |
| Operating junction temperature range | T_J | -65 to 175 | °C |
| Storage temperature range | T_{stg} | -65 to 175 | °C |

Note 1: Derate 2.33mW/°C increase in ambient temperature. The total power dissipation must be limited by the external circuitry.

Note 2: Capacitor discharge - 10µF or less, 30 volts or less.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | | Symbol | Min | Typ | Max | Unit |
|--|--|----------------|------|-----|------|---------|
| Intrinsic standoff ratio ($V_{B2B1} = 10V$) ⁽¹⁾ | 2N2417, 2N2417A, 2N2417B | η | 0.51 | - | 0.62 | - |
| | 2N2418, 2N2418A, 2N2418B | | 0.51 | - | 0.62 | - |
| | 2N2419, 2N2419A, 2N2419B | | 0.56 | - | 0.68 | - |
| | 2N2420, 2N2420A, 2N2420B | | 0.56 | - | 0.68 | - |
| | 2N2421, 2N2421A, 2N2422B | | 0.62 | - | 0.75 | - |
| | 2N2422, 2N2422A, 2N2422B | | 0.62 | - | 0.75 | - |
| Interbase resistance ($V_{B2B1} = 3V, I_E = 0$) | 2N2417, 2N2417A, 2N2417B | r_{BB} | 4.7 | - | 6.8 | kohms |
| | 2N2418, 2N2418A, 2N2418B | | 6.2 | - | 9.1 | |
| | 2N2419, 2N2419A, 2N2419B | | 4.7 | - | 6.8 | |
| | 2N2420, 2N2420A, 2N2420B | | 6.2 | - | 9.1 | |
| | 2N2421, 2N2421A, 2N2422B | | 4.7 | - | 6.8 | |
| | 2N2422, 2N2422A, 2N2422B | | 6.2 | - | 9.1 | |
| Emitter saturation voltage ($V_{B2B1} = 10V, I_E = 50mA$) ⁽²⁾ | | $V_{EB1(sat)}$ | - | 3.5 | - | Volts |
| Modulated interbase current ($V_{B2B1} = 10V, I_E = 50mA$) | | $I_{B2(mod)}$ | - | 15 | - | mA |
| Emitter reverse current ($I_{B1} = 0$) | $V_{B2E} = 60V$ | I_{EB2O} | - | - | 2 | μA |
| | $V_{B2E} = 60V$ | | - | - | 2 | |
| | $V_{B2E} = 30V$ | | - | - | 0.2 | |
| Peak point emitter current ($V_{B2B1} = 25V$) | 2N2417, 2N2418, 2N2419, 2N2420, 2N2421, 2N2422 | I_{EB2O} | - | - | 12 | μA |
| | 2N2417A, 2N2418A, 2N2419A, 2N2420A, 2N2421A, 2N2422A | | - | - | 12 | |
| | 2N2417B, 2N2418B, 2N2419B, 2N2420B, 2N2421B, 2N2422B | | - | - | 6 | |
| | | | - | - | | |
| Valley point current ($V_{B2B1} = 20V, R_{B2} = 100ohms$) ⁽²⁾ | | I_V | 8 | - | - | mA |
| Base-one peak pulse voltage ⁽³⁾ | 2N2417, 2N2418, 2N2419, 2N2420, 2N2421, 2N2422 | V_{OB1} | - | - | - | V |
| | 2N2417A, 2N2418A, 2N2419A, 2N2420A, 2N2421A, 2N2422A | | 3 | - | - | |
| | 2N2417B, 2N2418B, 2N2419B, 2N2420B, 2N2421B, 2N2422B | | 3 | - | - | |
| | | | | | | |

Note 1: Intrinsic standoff voltage: $\eta = V_P - V_F / V_{B2B1}$, where V_P = peak point emitter voltage, V_{B2B1} = interbase voltage, V_F = emitter to base one junction diode drop ($\approx 0.45V @ 10\mu A$).

Note 2: PW $\approx 300\mu s$, duty cycle $\leq 2\%$ to avoid internal heating due to interbase modulation which may result in erroneous readings

Note 3: Base one peak pulse voltage is used to ensure minimum pulse amplitude for applications in SCR firing circuits and other types of pulse circuits.

DIGITRON SEMICONDUCTORS

2N2646, 2N2647

SILICON UNIJUNCTION TRANSISTOR

FIGURE 1
UNIUNION TRANSISTOR SYMBOL AND NOMENCLATURE

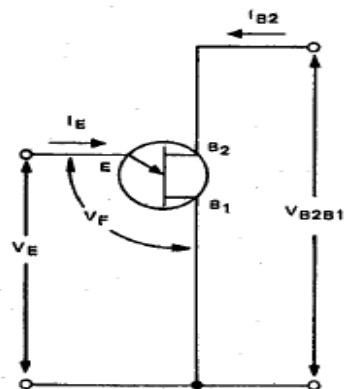


FIGURE 2
STATIC EMITTER CHARACTERISTIC CURVES
(Exaggerated to Show Details)

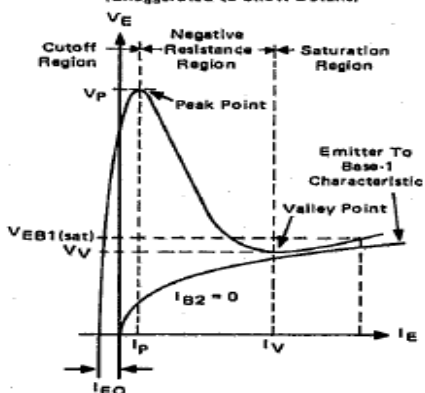
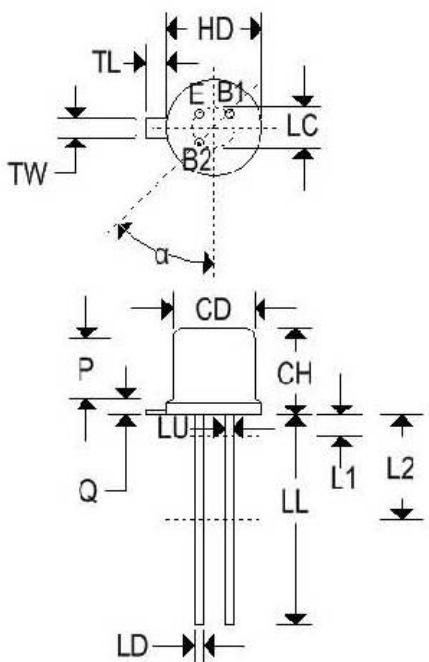
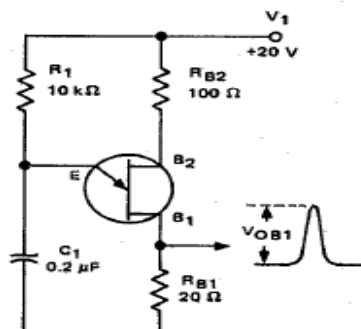


FIGURE 3 - V_{OB1} TEST CIRCUIT
(Typical Relaxation Oscillator)



| Dim | TO-18 | | | |
|----------------|----------|-------|-------------|--------|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| CD | 0.178 | 0.195 | 4.520 | 4.950 |
| CH | 0.170 | 0.210 | 4.320 | 5.330 |
| HD | 0.209 | 0.230 | 5.310 | 5.840 |
| LC | 0.100 TP | | 2.540 TP | |
| LD | 0.016 | 0.021 | 0.410 | 0.530 |
| LL | 0.500 | 0.750 | 12.700 | 19.050 |
| LU | 0.016 | 0.019 | 0.410 | 0.480 |
| L ₁ | - | 0.050 | - | 1.270 |
| L ₂ | 0.250 | - | 6.350 | - |
| P | 0.100 | - | 2.540 | - |
| Q | - | 0.040 | - | 1.020 |
| TL | 0.028 | 0.048 | 0.710 | 1.220 |
| TW | 0.036 | 0.046 | 0.910 | 1.170 |
| α | 45° TP | | 45° TP | |

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).
Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com