DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MU2646, MU2647

SILICON UNIJUNCTION TRANSISTOR

FEATURES:

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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power dissipation(1)	P_D	300	mW
RMS emitter current	$I_{E(RMS)}$	50	mA
Peak pulse emitter current (2)	I_E	2	Amps
Emitter reverse voltage	V_{B2E}	30	Volts
Interbase voltage	V_{B2B1}	35	Volts
Operating junction temperature range	T_J	-65 to 125	°C
Storage temperature range	T_{stg}	-65 to 150	°C

Note 1: Derate 3mW/°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°C unless otherwise specified)

Parameter		Symbol	Min	Typ	Max	Unit
Intrinsic standoff ratio (V_{B2B1} = 10V) (1)	MU2646 MU2647	η	0.56 0.68	- -	0.75 0.82	-
Interbase resistance (V_{B2B1} = 3V, I_E = 0)		r_{BB}	4.7	7	9.1	kohms
Interbase resistance temperature coefficient (V_{B2B1} = 3V, I_E = 0, T_A = -55° to 125°C)		αr_{BB}	0.1	-	0.9	%/°C
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 (V_{B2E} = 30V, I_{B1} = 0)	MU2646 MU2647	I_{EB2O}	- -	0.005 0.005	12 0.2	µA
Peak point emitter current (V_{B2B1} = 25V)	MU2646 MU2647	I_P	- -	1 1	5 2	µA
Valley point current (V_{B2B1} = 20V, R_{B2} = 100ohms)(2)	MU2646 MU2647	I_V	4 8	6 10	- 18	mA
Base-one peak pulse voltage(3)	MU2646 MU2647	V_{OB1}	3 6	5 7	- -	Volts

Note 1: Intrinsic standoff ratio: $\eta = (V_P - V_F)/V_{B2B1}$, where V_P = peak point emitter voltage , V_{B2B1} = interbase voltage, V_F = emitter to base one junction diode drop (≈ 0.45V @ 10µA).
Note 2: PW ≈ 300µs, duty cycle ≤ 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

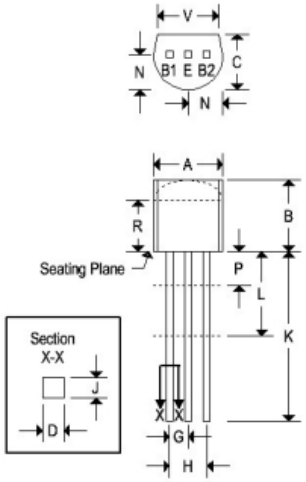
High-reliability discrete products
and engineering services since 1977

MU2646, MU2647

SILICON UNIJUNCTION TRANSISTOR

MECHANICAL CHARACTERISTICS

Case	TO-92
Marking	Alpha-numeric
Pinout	See below



Dim	TO-92			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.175	0.205	4.450	5.200
B	0.170	0.210	4.320	5.330
C	0.125	0.165	3.180	4.190
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.150	1.390
H	0.095	0.105	2.420	2.660
J	0.015	0.020	0.390	0.500
K	0.500	-	12.700	-
L	0.250	-	6.350	-
N	0.080	0.105	2.040	2.660
P	-	0.100	-	2.540
R	0.115	-	2.930	-
V	0.135	-	3.430	-

FIGURE 1
UNIJUNCTION TRANSISTOR SYMBOL AND NOMENCLATURE

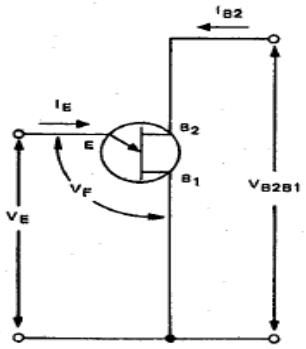


FIGURE 2
STATIC EMITTER CHARACTERISTIC CURVES
(Exaggerated to Show Details)

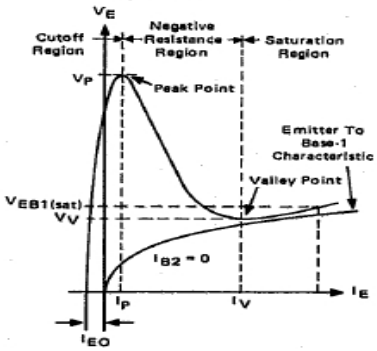


FIGURE 3 – V_{OB1} TEST CIRCUIT
(Typical Relaxation Oscillator)