NTE907
Integrated Circuit
Diode Array

Description:

The NTE907 consists of six ultra–fast, low capacitance diodes on a common monolithic substrate. Five of the diodes are independently accessible, with the sixth sharing a common terminal with the substrate. The NTE907 comes in a 12–Lead TO5 type package.

Features:

● Excellent Reverse Recovery Time: 1ns typ.

● Matched Monolithic Construction: V_F matched within 5mV

● Low Diode Capacitance: C_D = 0.65pF typical at V_R = −2V

Applications:

● Balanced Modulators or Demodulators

● Ring Modulators

● High Speed Diode Gates

● Analog Switches

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Power Dissipation, P_D
 Any one diode unit 100mW
 Total for device 600mW
 For T_A > 55°C . . . . derate linearly 5.7mW/°C
Operating Temperature Range, T_{opr} . . . . −55° to +125°C
Storage Temperature Range, T_{stg} . . . . −65° to +150°C
Peak Inverse Voltage, P_{IV}
 $D_1 − D_5$ 5V
 D_6 . . . . 0.5V
Peak Diode–to–Substrate Voltage, V_{DI}
 for $D_1–D_5$ (Pin1, 4, 5, 8, or 12 to Pin10) . . . . +20V, −1V
DC Forward Current, I_F 25mA
Peak Recurrent Forward Current, I_F 100mA
Peak Forward Surge Current, I_F (Surge) 100mA
Lead Temperature, T_L
 (During soldering 1/16 ±1/32" (1.59 ± 0.79mm) from case for 10sec Max) . . . . +265°C

Electrical Characteristics: (T_A = +25°C, Note 1 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Forward Voltage Drop	V_F	I_F = 50µA	–	0.65	0.69	V
		I_F =1 mA	–	0.73	0.78	
		I_F = 3mA	–	0.76	0.80	
		I_F = 10mA	–	0.81	0.90	
DC Reverse Breakdown Voltage	$V_{(BR)R}$	I_R = −10µA	5	7	–	V
DC Reverse Breakdown Voltage Between any Diode Unit and Substrate	$V_{(BR)R}$	I_R = −10µA	20	–	–	V
DC Reverse (Leakage) Current	I_R	V_R = −4V	–	0.016	100	nA
DC Reverse (Leakage) Current Between any Diode Unit and Substrate	I_R	V_R = −10V	–	0.022	100	nA
Magnitude of Diode Offset Voltage (Difference in DC Forward Voltage Drops of any Two Diode Units)	$|V_{F1}-V_{F2}|$	I_F = 1mA	–	0.5	5	mV
Temperature Coefficient of $|V_{F1}-V_{F2}|$	$\dfrac{\Delta|V_{F1}-V_{F2}|}{\Delta T}$	I_F = 1mA	–	1	–	µV/°C
Temperature Coefficient of Forward Drop	$\dfrac{\Delta V_F}{\Delta T}$	I_F = 1mA	–	−1.9	–	mV/°C
DC Forward Voltage Drop for Anode–to–Substrate Diode (D_S)	V_F	I_F = 1mA	–	0.65	–	V
Reverse Recovery Time	t_{rr}	I_F = 10mA, I_R = 10mA	–	1	–	ns
Diode Resistance	R_D	f = 1kHz, I_F = 1mA	25	30	45	Ω
Diode Capacitance	C_D	V_R = −2V, I_F = 0	–	0.65	–	pF
Diode–to–Substrate Capacitance	C_{D1}	V_{D1} = +4V, I_F = 0	–	3.2	–	pF

Note 1. Characteristics apply for each diode unit, unless otherwise specified.

Pin Connection Diagram
(Top View)

Anode D_1
8
Anode D_6 9   7 Cathode D_1
Cathode D_6/ Substrate & Case 10   6 Cathode D_2
Cathode D_5 11   5 Anode D_2
Anode D_5 12   4 Anode D_3
Anode D_4 1   3 Cathode D_3
2
Cathode D_4

.370 (9.4) Dia Max

.335 (8.5) Dia Max

.180
(4.57)
Max

.500
(12.7)
Min

.018 (0.48) Dia Typ

.245 (6.23) Dia

1
2
3
4
5
6
7
8
9
10
11
12