

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: $C_D = 0.65\text{pF}$ typical at $V_R = -2\text{V}$

Applications:

- Balanced Modulators or Demodulators
- Ring Modulators
- High Speed Diode Gates
- Analog Switches

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

Power Dissipation, P_D	
Any one diode unit	100mW
Total for device	600mW
For $T_A > 55^\circ\text{C}$	derate linearly 5.7mW/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-55° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$
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 $\pm$ 1/32" (1.59 $\pm$ 0.79mm) from case for 10sec Max)	+265 $^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^{\circ}\text{C}$, Note 1 unless otherwise specified)

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

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

Pin Connection Diagram
(Top View)



