

ASI, AP Series of PIN Switching Diodes are passivated epitaxial silicon devices. PIN Switching Diodes are designed to provide two impedance states, one approaching an open circuit (reverse bias), and a short circuit (forward bias). These devices are designed to cover a wide range of control applications that are in the category of RF switching, phase shifting modulation, duplexing, limiting and pulse forming. The diodes in this series are housed in hermetically sealed packages. This series can also be obtained in dice form.

ABSOLUTE MAXIMUM RATINGS:

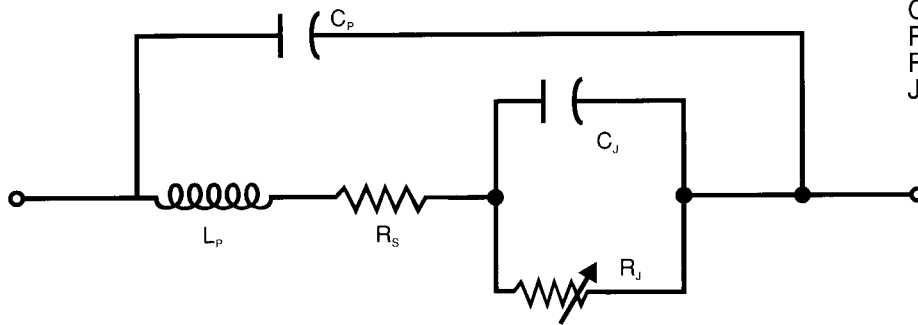
Storage Temperature:
-65°C to +175°C

Operating Temperature:
-65°C to +175°C

All of the PIN Switching diodes meet or exceed the military environmental specifications of MIL-S-19500, MIL-STD-202 and methods of MIL-STD-750 that specify mechanical, electrical, thermal and environmental tests.

PIN JUNCTION EQUIVALENT CIRCUITS

The equivalent circuit for a PIN JUNCTION is as follows:



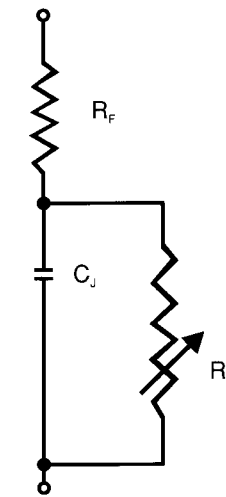
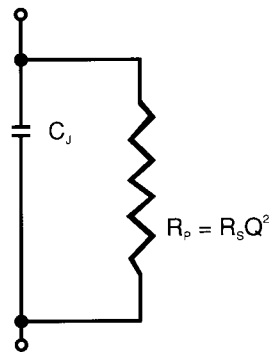
C_p = Package Capacitance
 L_p = Package Inductance
 C_j = Junction Capacitance
 R_s = Series Resistance
 R_j = Conductivity Modulated Junction Resistance

The reverse and forward biased equivalent circuits for a PIN JUNCTION are as follows:

HIGH Q CAPACITOR



REVERSE BIAS



FORWARD BIAS

CURRENT CONTROLLED RESISTOR



HIGH BIAS

PIN SWITCHING DIODES

PART NUMBER	$V_{B,MIN}^1$ @10 μ A (volts)	$C_{J,6}^2$ max. (PF)	$R_{S,max}^3$ @20mA (Ohms)	$R_{S,max}$ @100mA (Ohms)	$T_L^{4typ.}$ (nsec)	T_S^5 10-90%, 90-10%	O_R^{6max} ($^{\circ}$ C/W)
FAST SWITCHING							
AP700A	70	0.05	2.8	2.5	50	5	60
AP700B	70	0.10	2.0	1.8	50	5	60
AP700C	70	0.20	1.7	1.5	50	5	50
AP700D	70	0.30	1.2	1.0	50	5	50
AP1000A	100	0.05	2.6	2.0	100	10	50
AP1000B	100	0.10	2.0	1.7	100	10	45
AP1000C	100	0.20	1.5	1.2	100	10	45
AP1000D	100	0.30	1.2	1.0	100	10	40
AP2000A	200	0.10	2.4	1.8	200	20	40
AP2000B	200	0.20	1.4	0.9	200	20	35
AP2000C	200	0.30	1.0	0.8	200	20	35
ULTRA FAST SWITCHING							
AP0300A	30	0.15	1.5		10	1 5	40
AP0300B	30	0.20	1.2		10	1 5	40
AP0300C	30	0.25	1.0		10	1 5	35
PRECISION ATTENUATOR		$C_{J,50typ.}$	$R_{S,min}$ @0.01 mA	$R_{S,typ}$ @20 mA	$R_{S,max}$ @100 mA	$T_{L,min}$	
AP1500A	150	0.05	1000	2.5	2.0	500	25
AP1500B	150	0.10	600	2.0	1.5	500	20
AP1500C	150	0.15	500	1.7	1.2	500	15
AP1500D	150	0.20	400	1.5	1.0	500	12
AP1500E	150	0.25	350	1.2	0.8	500	10
AP1500F	150	0.30	300	1.0	0.6	500	9
MEDIUM POWER SWITCHING		$C_{J,50typ}$	$R_{S,typ}$ @20 mA	$R_{URS,max}$ @100 mA	$T_{L,min}$		
AP3000A	300	0.05	3.0	1.7	600	300	25
AP3000B	300	0.10	2.0	1.2	800	400	200
AP3000C	300	0.30	1.5	0.6	1000	500	12
AP3000D	300	0.50	1.0	0.5	1000	500	10
AP5000A	500	0.10	2.0	1.2	1200	600	18
AP5000B	500	0.30	1.5	0.6	1200	600	10
AP5000C	500	0.50	1.0	0.5	1200	600	9

NOTES:

- Breakdown voltage (V_B) is measured at 10 μ A of reverse bias current.
- Junction capacitance is measured on a 1 MHz Boonton capacitance bridge.
- Series resistance is measured at 1 GHz using transmission loss techniques
- Minority carrier lifetime is measured with $I_F=10$ mA and $I_R=6$ mA at the 90% recovery point.
- Switching time is measured between $I_F=10$ mA and $V_R=10$ V.
- Thermal resistance is measured using ΔV_F versus T_{IME} in a thermal impedance meter and an infinite heat sink.
- Available in package styles 01, 15, 51, 52, 53. Other styles available on request.

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