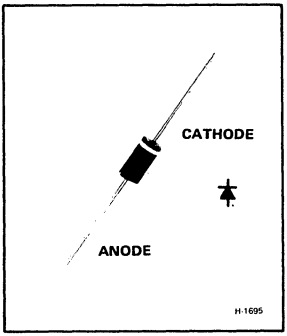
RCA Solid State Division

Rectifiers

D1201 Series



1-A, 50-to-1000-V Silicon Rectifiers

Plastic-Packaged, General-Purpose Types for Low-Power Applications

Features:

- **Electrically identical to JEDEC types 1N4001–1N4007**
- **High surge-current capability**
- **Low junction-to-lead thermal impedances**
- **–65 to +175°C operating temperature range**

RCA D1201 series† devices are diffused-junction type silicon rectifiers in an axial-lead plastic package. These devices differ only in their voltage ratings.

Their small size and plastic package of high insulation resistance make these rectifiers especially suited for those applications in which high packing densities are desirable.

† Types D1201A, B, C, D, M, and N were formerly RCA Dev. Nos. TA7996 and TA7802-TA7806, respectively.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

REVERSE VOLTAGE:		D1201F (44001)*	D1201A (44002)*	D1201B (44003)*	D1201D (44004)*	D1201M (44005)*	D1201N (44006)*	D1201P (44007)*	
REPETITIVE PEAK♦	V_{RRM}	50	100	200	400	600	800	1000	V
NON-REPETITIVE PEAK◆	V_{RSM}	100	150	300	525	800	1000	1200	V
WORKING PEAK▲	V_{RWM}	50	100	200	400	600	800	1000	V
DC BLOCKING	V_R	50	100	200	400	600	800	1000	V
RMS	$V_{R(RMS)}$	35	70	140	280	420	560	700	V

		All Types	
FORWARD CURRENT:			
AVERAGE-RECTIFIED:	I_O		A
Single-phase, half-wave operation with 60-Hz sinusoidal voltage and resistive load; with 1" leads. $T_A = 75°C$		1	
For other lead lengths		See Fig. 1	
PEAK-SURGE (NON-REPETITIVE):	I_{FSM}		
For one-half cycle of applied voltage, 50 Hz (10 ms)		28	A
60 Hz (8.3 ms)		30	A
400 Hz (1.25 ms)		60	A
For other durations		See Fig. 3	
TEMPERATURE RANGE:			
With 1-inch leads & infinite-heat-sink mounting (both leads):			
Storage & Operating		–65 to 175	°C
LEAD TEMPERATURE (During Soldering):	T_L		
Measured 3/8 in. (9.52 mm) from case for 10 s max.■		350	°C

* Number in parentheses is a former RCA type number.

♦ For single-phase, half-wave sinusoidal pulse of 100–μs duration and a repetition rate of 60 pulses per second.

◆ For one single-phase, half-wave, 60-Hz sinusoidal pulse with this peak value.

▲ Maximum input voltage that can be continuously applied (with the maximum current rating) over the normal operating-temperature range. For single-phase, half-wave operation with a 60-Hz sinusoidal supply and a resistive load.

■ Measured on anode or cathode lead.

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	LIMITS All Types Min.	Typ.	Max.	UNITS
Reverse Current:					
Static					
For V_R = rated value & T_J = 25°C	I_R	–	–	0.01	mA
For V_R = rated value & T_J = 100°C		–	–	0.05	
Dynamic					
Full-cycle average, for V_{RWM} = rated value, I_o = 1 A, T_A = 75°C	$I_{R(AV)}$	–	–	0.03	mA
Instantaneous Forward-Voltage Drop:					
At i_F = 1 A, T_J = 25°C, see Fig. 2	v_F	–	0.95	1.1	V
Reverse-Recovery Time:					
At I_{FSM} = 30 A, pulse duration = 3.1 μs, T_A = 25°C, see Fig. 6	t_{rr}	–	1.5	–	μs
For other conditions			See Fig. 7		
Thermal Impedance (Junction-to-Heat Sink):					
Steady-State					
Heat-sink mounting with 1-inch leads. For other mounting methods and other lead lengths, see Fig. 4	$\theta_{J\text{-}HS(t)}$	–	50	55	°C/W
Transient					
Heat-sink mounting with 0 to 1" leads, and with a pulse duration of 0.3 s. For other pulse durations, see Fig. 5	$\theta_{J\text{-}HS(t)}$	–	7.5	–	°C/W

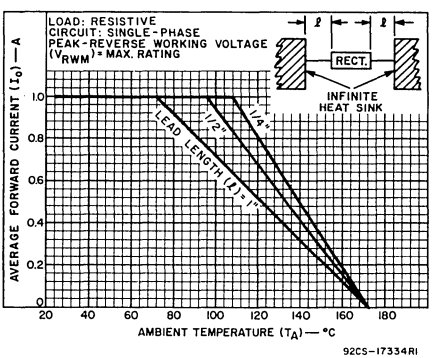


Fig. 1—Average-forward-current derating curves for several lead lengths.

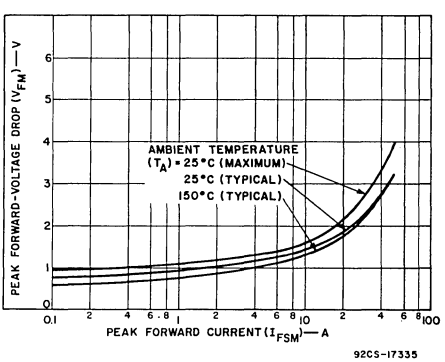


Fig. 2—Peak forward-voltage drop vs. peak forward current.

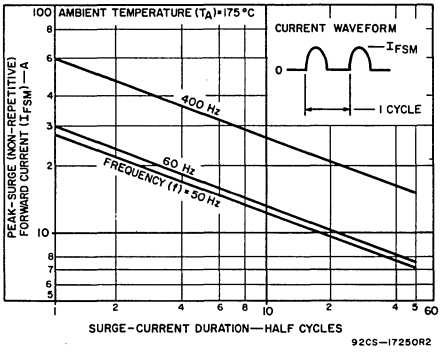


Fig. 3—Peak-surge (non-repetitive) forward current vs. surge-current duration.

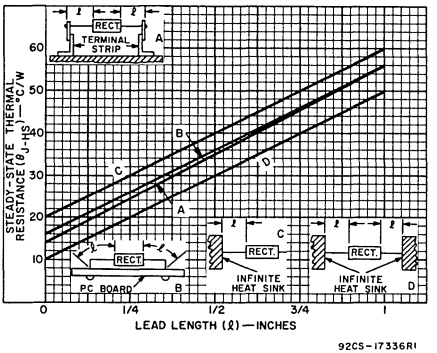


Fig. 4—Typical steady-state thermal resistance with lead length (for different mounting methods).

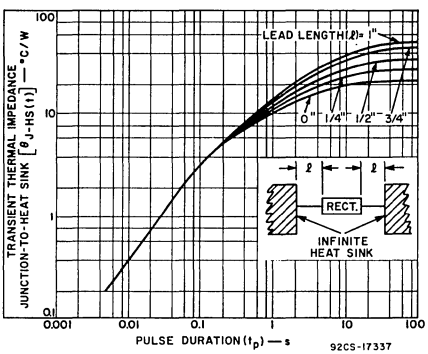


Fig. 5—Typical variation of transient thermal impedance with pulse duration for several lead lengths.

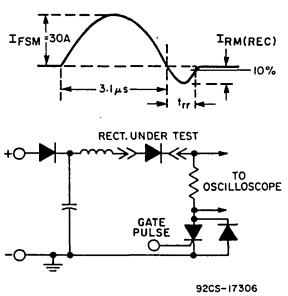


Fig. 6—Oscilloscope display and test circuit for measurement of reverse-recovery time.

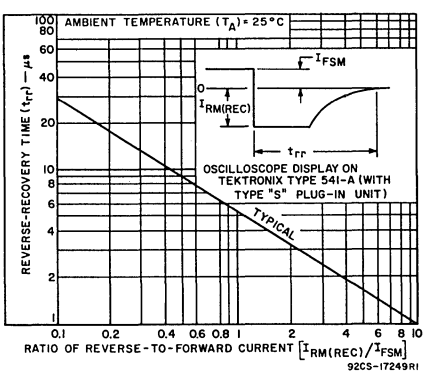


Fig. 7—Typical reverse-recovery time with ratio of reverse-to-forward current.