



SILICON PLANAR FAST RECOVERY DIODES

6 AMP – DO-4 & TO-3

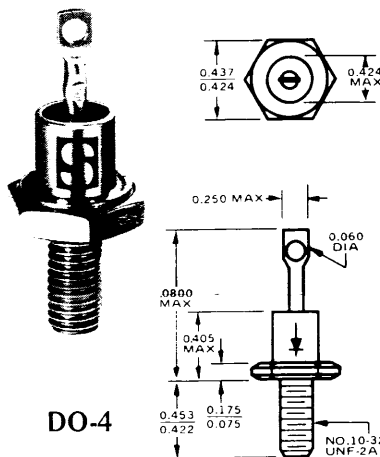
TYPES
SPD 605
thru
SPD 640

HIGH FREQUENCY, FAST RECOVERY

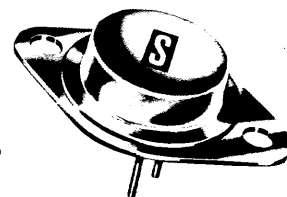
- 50 - 400 Volts, 6 Amps
- 125 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 2°C/Watt – DO-4
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-4 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

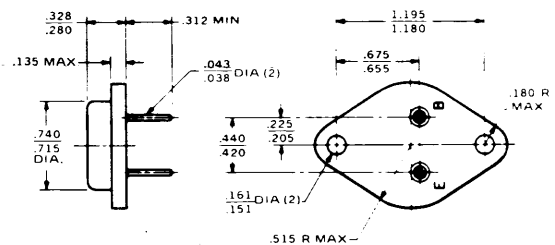
Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.



DO-4



TO-3



*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

SOLITRON PART NUMBER	SPD 605	SPD 610	SPD 620	SPD 630	SPD 640	UNIT
V_{BR} Peak Reverse Voltage Temp. range from -65°C to 150°C	60	120	240	360	480	V
V_R Rated Peak Reverse Voltage Temp. range from -65°C to 150°C	50	100	200	300	400	V
V_{RMS} Sinusoidal rated voltage Temp. range from -65°C to 150°C	35	70	140	210	280	V
I_o Peak rectified forward current Temp. range from -65°C to 100°C	6					A
t_{rr} Reverse recovery time	200					ns
T_{STG} Storage temperature Non-Operating	-65 to $+200$					$^{\circ}\text{C}$
T_{OP} Operating Temperature	-65 to $+150$					$^{\circ}\text{C}$
Θ_{J-C} Thermal Resistance (Junction to Case)	2 $^{\circ}\text{C}/\text{Watt}$ (DO-4) 1.2 $^{\circ}\text{C}/\text{Watt}$ (TO-3)					

*NOTE: For TO-3 package, designate using 'T' suffix as SPD 605T

6-74-ZB

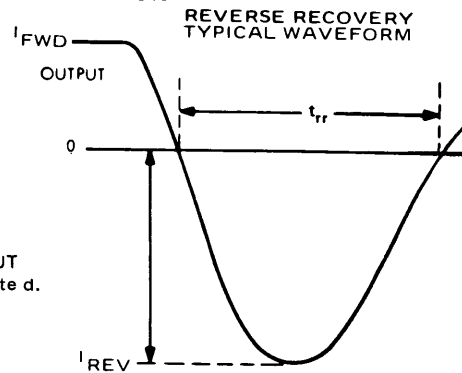
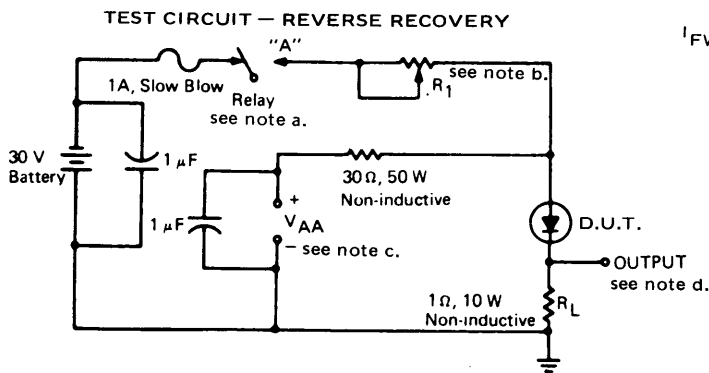


1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

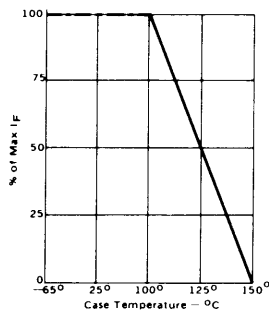
ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR} At Rated V_R	.1	1 .5	μA
I_R Reverse Current	At 80% V_R At 80% V_R 100°C At 80% V_R 150°C	.05 3 25	.250 10 50	μA
V_F Forward Voltage	At I_F (Max. 6 Amp)	.9	1.2	V
V_{FM} Peak Forward Voltage	At I_F (Max. 6 Amp) Pulse tested	1.2	1.4	V
I_S Max. Surge Capability I_S Capability	Operating at $I_{RMS}=4$ Amp, V_{RMS} = Rated Pulsed at 60 CPS half-sine wave Repeated after return to thermal equilibrium		150 (Min.)	A
I_{rr} Reverse Recovery t_{rr} Recovery	At $I_R = I_F = 1$ Amp	1.5 125	2.0 200	A ns
C_T Capacitance	At $V_R = 1V$, $f = 1$ MHz	100	150	pF

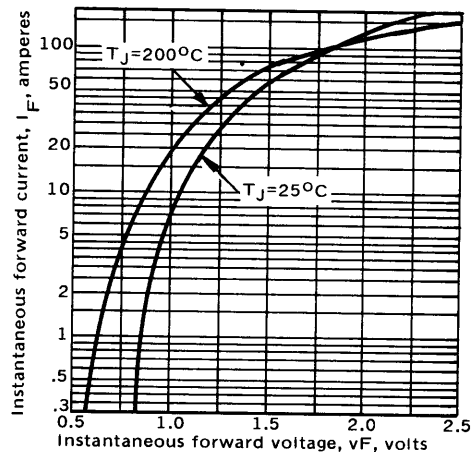
PARAMETER MEASUREMENT INFORMATION



FORWARD CURRENT DERATING vs CASE TEMPERATURE



MAXIMUM FORWARD CHARACTERISTICS



NOTES

- Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60 cps sine wave. The relay conducts for approximately 640 μ sec and is open for approximately 7.7 msec.
- Resistor R_1 is a 3 Ω , 25 W rheostat adjusted for a total resistance value of 1.4 Ω from anode to relay contact. A measured inductance between these points is $\approx 0.9 \mu$ H.
- VAA supply has an output impedance $Z_0 \leq 0.5 \Omega$ from 0 to 2 kc, and is adjusted for $I_F = 1$ A.
- Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 14$ nsec, $R_{in} = 9$ M Ω , $C_{in} \leq 12$ pF, $L_{in(serie)} \leq 0.5 \mu$ H.



SILICON PLANAR FAST RECOVERY DIODES

12 AMP – DO-4 & TO-3

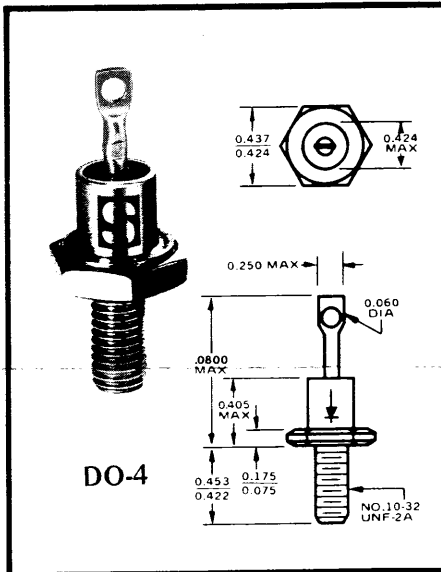
TYPES
SPD 1205
thru
SPD 1240

HIGH FREQUENCY, FAST RECOVERY

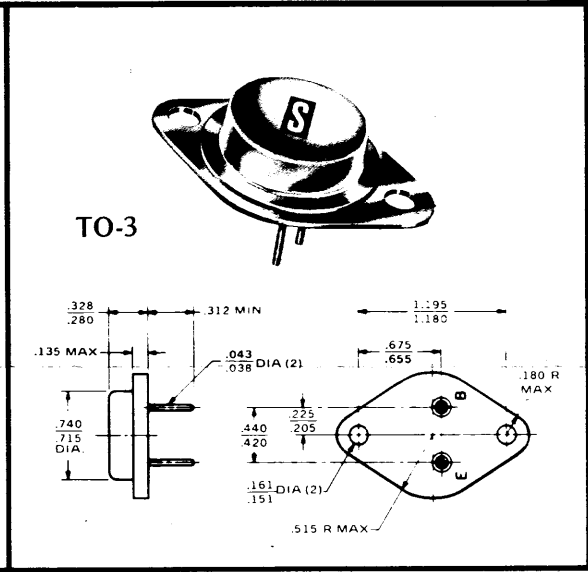
- 50 - 400 Volts, 12 Amps
- 150 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 2°C/Watt – DO-4
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-4 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.



DO-4



TO-3

*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

SOLITRON PART NUMBER	SPD 1205	SPD 1210	SPD 1220	SPD 1230	SPD 1240	UNIT
V_{BR} Peak reverse voltage Temp range from -65°C to 150°C	60	120	240	360	480	V
V_R Rated Peak Reverse Voltage Temp range from -65°C to 150°C	50	100	200	300	400	V
V_{RMS} Sinusoidal rated voltage Temp. range from -65°C to 150°C	35	70	140	210	280	V
I_o Peak rectified forward current Temp. range from -65°C to 100°C	12					A
T_{rr} Reverse Recovery Time	200					ns
T_{STG} Storage Temperature Non-Operating	-65 to +200					°C
T_{OP} Operating Temperature	-65 to +150					°C
θ_{JC} Thermal Resistance (Junction to Case)	2°C/Watt (DO-4) 1.2°C/Watt (TO-3)					

*NOTE: For TO-3 package, designate using 'T' suffix as SPD 1205T

6-74-ZC

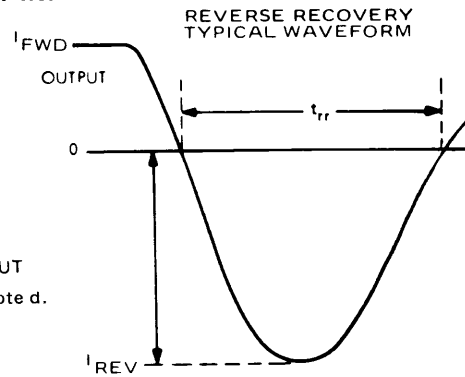
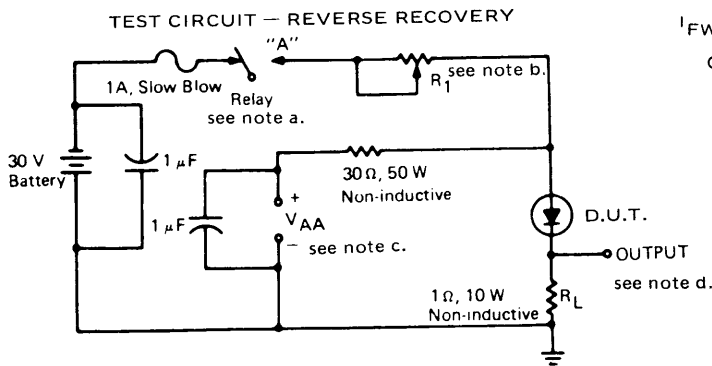


1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

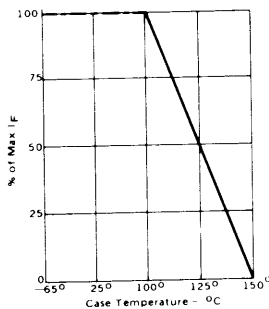
ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR} At Rated V_R	.1	1	μA
I_R Reverse Current	At 80% V_R At 80% $V_R - 100^\circ C$ At 80% $V_R - 150^\circ C$.100 5 10	.250 10 50	μA
V_F Forward Voltage	At I_F (Max. 12 Amp)	.9	1.2	V
V_{FM} Peak Forward Voltage	At I_F (Max. 12 Amp) Pulse Tested	1.2	1.4	V
I_S Max. Surge Capability	Operating at $I_{RMS} = 4$ Amp, $V_{RMS} =$ Rated Pulsed with 60 CPS half-sine wave. Repeated after return to thermal equilibrium		200 (Min.)	
t_{rr} Reverse Recovery	At $I_R = I_F = 1$ Amp	1.5 125	2.0 200	A ns
C_T Capacitance	At $V_B = 1V, f = 1$ MHz	200	300	pF

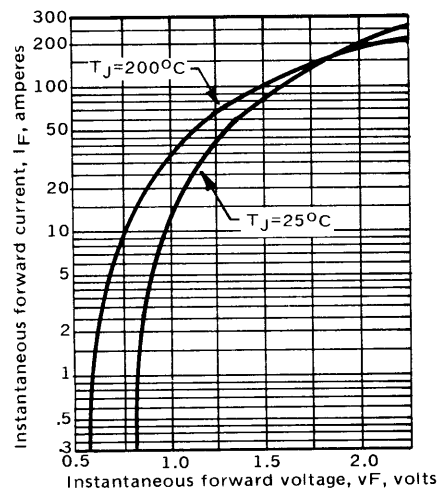
PARAMETER MEASUREMENT INFORMATION



FORWARD CURRENT DERATING vs CASE TEMPERATURE



MAXIMUM FORWARD CHARACTERISTICS



- NOTES:
- Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60-cps sine wave. The relay conducts for approximately 640 μ sec and is open for approximately 7.7 msec.
 - Resistor R_1 is a 3 Ω , 25 W rheostat adjusted for a total resistance value of 1.4 Ω from anode to relay contact A. Measured inductance between these points is $\approx 0.9 \mu H$.
 - V_{AA} supply has an output impedance $Z_0 \leq 0.5 \Omega$ from 0 to 2 kc, and is adjusted for $I_F = 1$ A.
 - Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 14$ nsec, $R_{in} = 9 M\Omega$, $C_{in} \leq 12$ pf, $L_{in(series)} \leq 0.5 \mu H$.



SILICON PLANAR FAST RECOVERY DIODES

20 AMP — DO-5 & TO-3

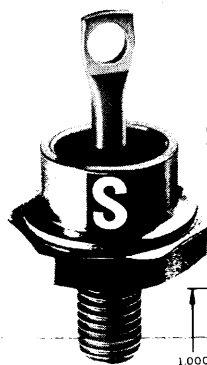
TYPES
SPD 2005
thru
SPD 2040

HIGH FREQUENCY, FAST RECOVERY

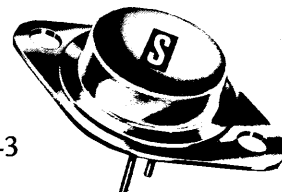
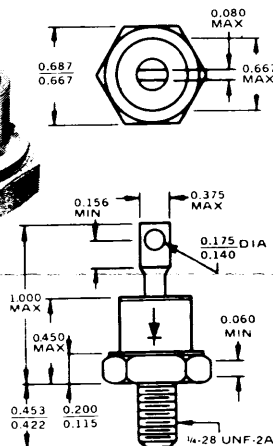
- 50 - 400 Volts, 20 Amps
- 150nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 1°C/Watt — DO-5
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-5 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

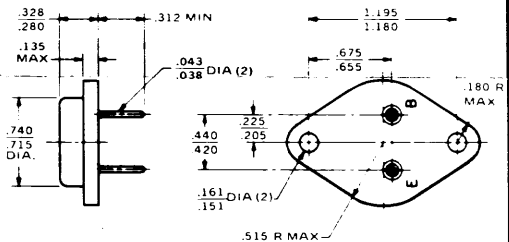
Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.



DO-5



TO-3



*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

SOLITRON PART NUMBER	SPD 2005	SPD 2010	SPD 2020	SPD 2030	SPD 2040	UNIT
V_{BR} Peak reverse voltage Temp. range from -65°C to +150°C	60	120	240	360	480	V
V_R Rated Peak Reverse Voltage Temp. range from -65°C to +150°C	50	100	200	300	400	V
V_{RMS} Sinusoidal rated voltage Temp. range from -65°C to +150°C	35	70	140	210	280	V
I_o Peak rectified forward current Temp. range from -65°C to +100°C	20					A
t_{rr} Reverse recovery time	200					ns
T_{STG} Storage temperature Non-Operating	-65 to +200					°C
T_{OP} Operating temperature	-65 to +200					°C
θ_{JC} Thermal Resistance (Junction to Case)	1°C/Watt (DO-5) 1.2°C/Watt (TO-3)					°C

*NOTE: For TO-3 package designate using 'T' suffix as SPD 2005T

6-74-ZE

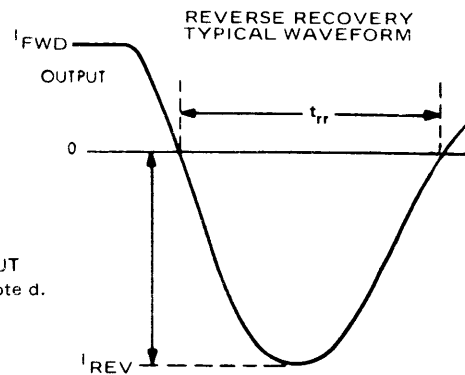
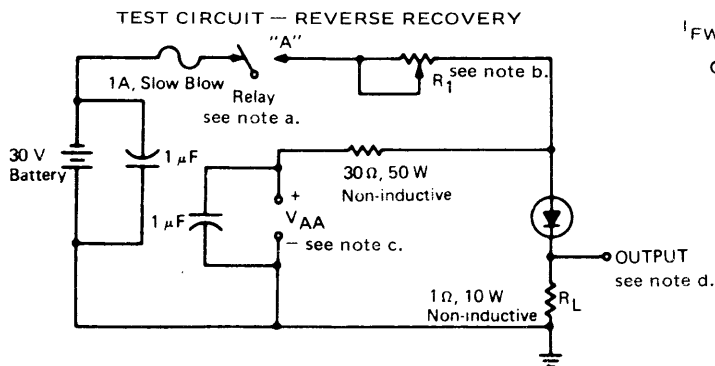


1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

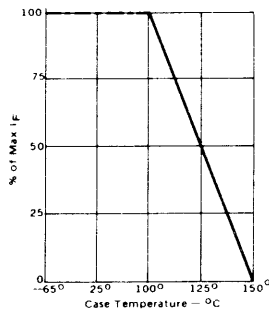
ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR}		5	μA
	At Rated V_R	.5	1	μA
I_R Reverse Current	At 80% V_R	.250	.750	μA
	At 80% $V_R - 100^\circ C$	10	20	
	At 80% $V_R - 150^\circ C$	25	50	
V_F Forward Voltage	At I_F (Max. 20 Amp)	1.2	1.4	V
V_F Peak Forward Voltage	At I_F (Max. 20 Amp) Pulse Tested	1.4	1.6	V
I_S Max. Surge Capability	Operating at $I_{RMS} = 14A$, $V_{RMS} =$ Rated Pulsed with 60 CPS half-sine wave. Repeated after return to thermal equilibrium		250 (Min.)	A
I_{rr} Reverse Recovery	At $I_R = I_F = 3$ AMP	1.5	2.0	A
		t_{rr}	150	200
C_T Capacitance	At $V_R = 1$ V, $f = 1$ MHz	250	400	pF

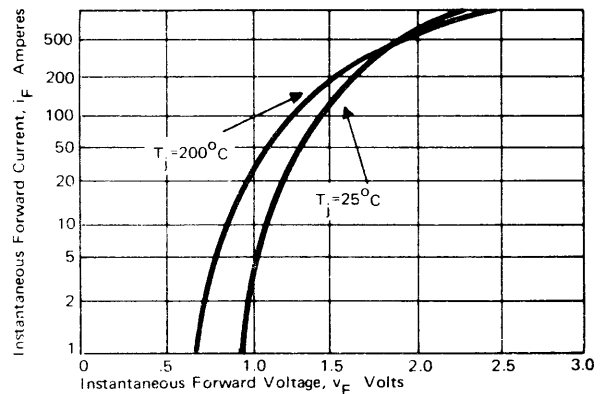
PARAMETER MEASUREMENT INFORMATION



**FORWARD CURRENT DERATING
vs CASE TEMPERATURE**



MAXIMUM FORWARD CHARACTERISTICS



NOTES:

- Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60-cps sine wave. The relay conducts for approximately 640 μ sec and is open for approximately 7.7 msec.
- Resistor R_1 is a 3 Ω , 25 W rheostat adjusted for a total resistance value of 1.4 Ω from anode to relay contact A. Measured inductance between these points is $\approx 0.9 \mu$ h.
- V_{AA} supply has an output impedance $Z_0 \leq 0.5 \Omega$ from 0 to 2 kc, and is adjusted for $I_F = 1$ A.
- Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 14$ nsec, $R_{in} = 9$ M Ω , $C_{in} \leq 12$ pf, $L_{in(serie)} \leq 0.5 \mu$ h.