Solid State Devices, Inc.
14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

SHF2340 thru SHF2360

Designer's Data Sheet

Part Number/Ordering Information[1/]

SHF23 __ __ __

- **Screening**[2/]
  - __ = Not Screened
  - TX = TX Level
  - TXV = TXV Level
  - S = S Level
- **Package Type**
  - __ = Axial Leaded
  - SMS = Surface Mount Square Tab
  - GW = Gullwing
- **Voltage/Family**
  - 40 = 400V
  - 50 = 500V
  - 60 = 600V

3 AMP HYPERFAST RECOVERY RECTIFIER

400 – 600 VOLTS, 18 ns

FEATURES:

- Hyper fast reverse recovery: 18 ns maximum[4/]
- Low switching losses
- Hermetically sealed
- Void free ceramic frit glass construction
- High temperature category I eutectic metallurgical bond
- Solid silver leads
- Available in axial leaded, surface mount square tab, and gullwing versions
- TX, TXV, and S-level screening available[2/]

TYPICAL APPLICATIONS:

- Power Factor Correction
- High Frequency Rectification

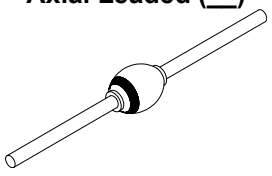
MAXIMUM RATINGS[3/]

RATING	SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage and DC Blocking Voltage	V_{RRM} V_{RWM} V_R	400 500 600	Volts
Average Rectified Forward Current (Axial $T_L \le 50°C$; SMS $T_{EC} \le 120°C$; GW $T_{EGW} \le 100°C$)[5/]	I_O	3	Amps
Peak Surge Current (8.3 ms pulse, half sine wave, superimposed on Io, V_{RWM} = rated, allow junction to reach equilibrium between pulses, T_A= 25°C)	I_{FSM}	35	Amps
Operating & Storage Temperature	T_J and T_{STG}	-65 to +175	°C
Thermal Resistance — Axial Leaded, L = .375" Surface Mount Square Tab (SMS) Gullwing (GW)	$R_{\theta JL}$ $R_{\theta JE}$ $R_{\theta JGW}$	32 8.5 17	°C/W

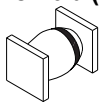
NOTES:

1/ For ordering information, price, operating curves, and availability- contact factory.
2/ Screening based on MIL-PRF-19500. Screening flows available on request.
3/ Unless otherwise specified, all electrical characteristics @ 25°C.
4/ I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A, T_A = 25°C
5/ Operating at higher I_O currents may be achieved based on specific application and device mounting if T_J is maintained below 175°C.

Axial Leaded (__)



Surface Mount Square Tab (SMS)



Gullwing (GW)



NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.	DATA SHEET #: RC0190A	DOC

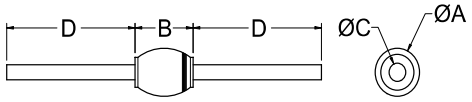
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ELECTRICAL CHARACTERISTICS[3/]		SYMBOL	TYP	MAX	UNIT
Instantaneous Forward Voltage Drop 300 µs pulse	I_F = 1 Adc	V_{F1}	2.4	3.0	Vdc
	I_F = 3 Adc	V_{F2}	2.6	3.2	
	I_F = 1 Adc, T_A= +125°C	V_{F3}	1.3	2.0	
	I_F = 3 Adc, T_A= +125°C	V_{F4}	1.7	2.3	
Reverse Leakage Current At rated V_R, 300 µs pulse	T_A= +25°C	I_{R1}	35	200	µA
	T_A= +125°C	I_{R2}	17	70	mA
Breakdown Voltage I_R= 100 µA	SHF2340	BV_R	--	410	V
	SHF2350		--	510	
	SHF2360		--	610	
Junction Capacitance V_R= 10 Vdc, f= 1 MHz		C_J	20	50	pF
Reverse Recovery Time I_F= 0.5 A, I_R= 1 A, I_{RR}= 0.25 A	T_A= +25°C	t_{rr}	11	18	ns
	T_A= +100°C		20	--	

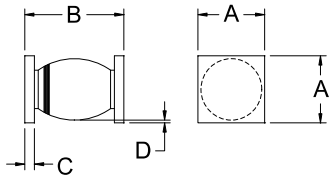
Axial Leaded (__) Dimensions (in.)

DIM	MIN	MAX
A	--	.130
B	.130	.180
C	.027	.031
D	1.00	--



Surface Mount Square Tab (SMS) Dimensions (in.)

DIM	MIN	MAX
A	.127	.140
B	.180	.230
C	.020	.030
D	.003	--



Gullwing (GW) Dimensions (in.)

DIM	MIN	MAX
A	--	.140
B	.130	.180
C	.040	.080
D	.100	--
E	.002	--
F	.008	.016

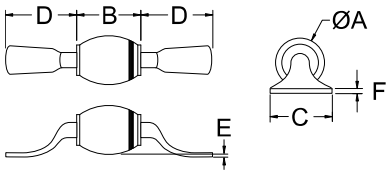


Fig. 1 Typical Forward Voltage
I_F vs V_F vs T_C

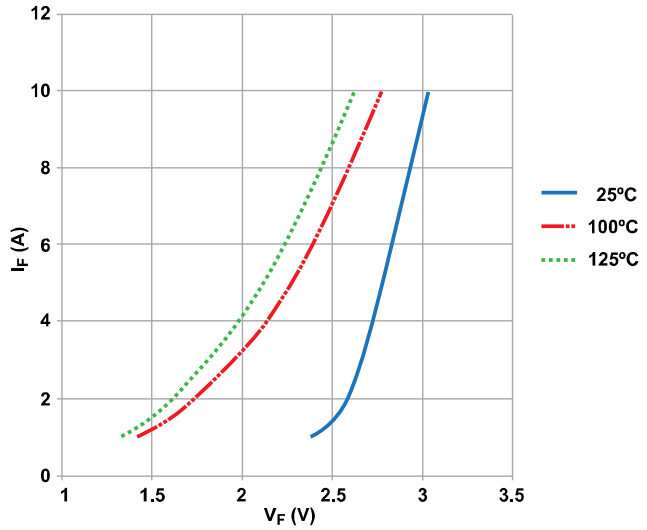
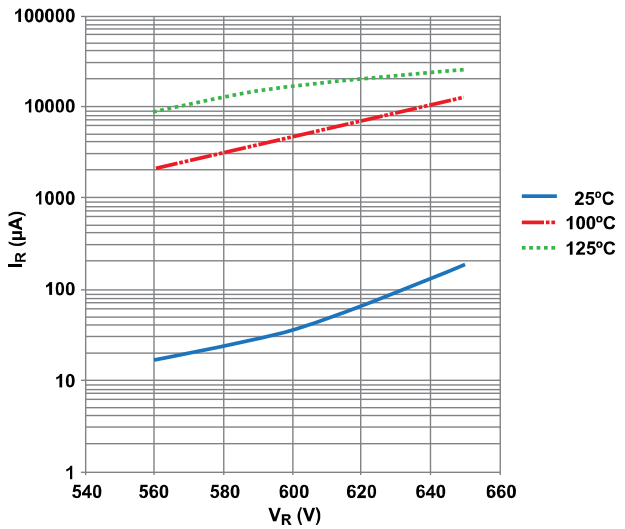


Fig. 2 Typical Leakage Current
I_R vs V_R vs T_C



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Fig. 3 Typical t_{RR} response at 25°C (0.5A/1A/0.25A)

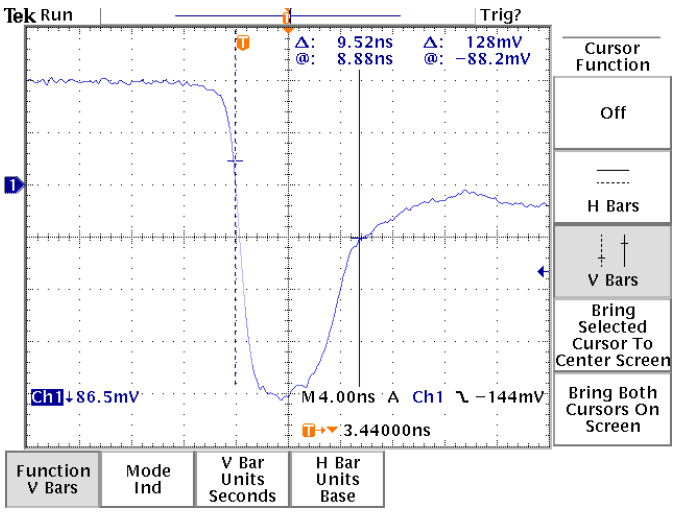


Fig. 4 Typical t_{RR} response at 95°C (0.5A/1A/0.25A)

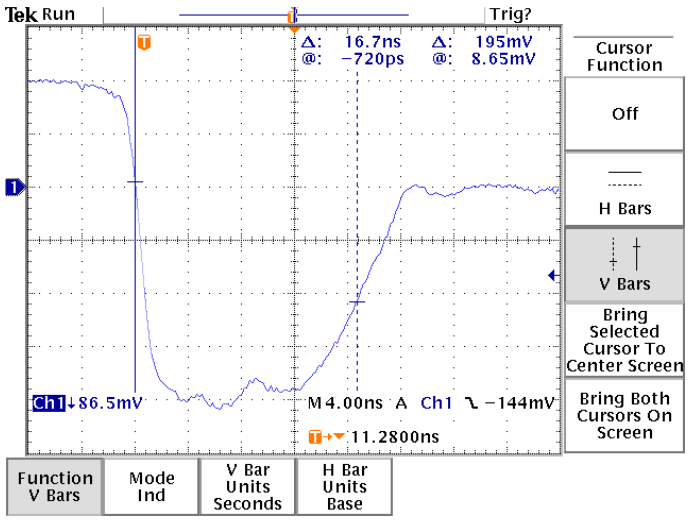


Fig. 5 Actual In-circuit Performance in a 48V/7.5A Switch-Mode Power Supply (I_{LOAD}=1A). SHF2360 is utilized in the active PFC input stage. Wave forms represent the diode current.

