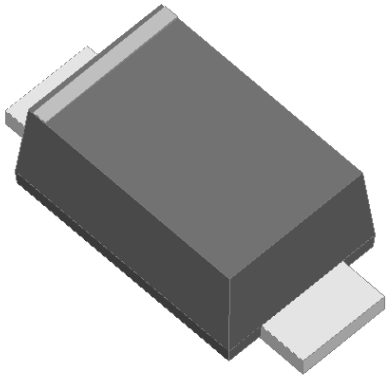
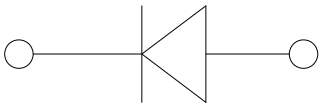
Surface Mount Ultra Fast Recovery Rectifier





Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer and telecommunication.

Mechanical Data

- **Package**: SOD-123FL
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	U1A	U1B	U1C	U1D	U1F	U1G	U1H	U1J
Device marking code			U1A	U1B	U1C	U1D	U1F	U1G	U1H	U1J
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	V	50	100	150	200	300	400	500	600
Maximum RMS Voltage	V_{RMS}	V	35	70	105	140	210	280	350	420
Maximum DC blocking Voltage	V_{DC}	V	50	100	150	200	300	400	500	600
Average rectified output current @60Hz sine wave, Resistance load, TL (FIG.1)	IO	A	1.0							
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave,1 cycle, Tj=25℃	I_{FSM}	A	30							
Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25℃			60							
Current squared time @1ms≤t≤8.3ms Tj=25℃	I^2t	A^2s	3.735							
Storage temperature	T_{stg}	℃	-55 ~ +150							
Junction temperature	T_j	℃	-55 ~ +150							

■Electrical Characteristics（Ta=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	U1A	U1B	U1C	U1D	U1F	U1G	U1H	U1J
Maximum instantaneous forward voltage	VF	V	IFM=1.0A	0.92				1.25		1.7	
Maximum reverse recovery time	t_{rr}	ns	I_F=0.5A,I_R=1.0A, I_{rr}=0.25A	25						35	
Maximum DC reverse current at rated DC blocking voltage	IR	μA	Tj =25℃	5							
			Tj =125℃	50							
Typical junction capacitance	Cj	pF	Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C	17				15		16	

■Dynamic Characteristics

◆ U1A THRU U1D

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25℃	I_F=1A，di/dt=-50A/us V_{RM}=30V	-	27	-
			Tj=25℃	I_F=1A di/dt=-200A/us V_{RM}=100V	-	18	-
			Tj=125℃		-	24	-
Peak recovery current	I_{RRM}	A	Tj=25℃		-	2.4	-
			Tj=125℃		-	3.9	-
Reverse recovery charge	Qrr	nC	Tj=25℃		-	21.6	-
			Tj=125℃		-	46.6	-
Non-repetitive avalanche energy	EAS	mJ	Tj=25℃	I_R=1.5 A，L=15 mH	16.9	-	-

◆ U1F THRU U1G

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25℃	I_F=1A，di/dt=-50A/us V_{RM}=30V	-	26	-
			Tj=25℃	I_F=1A di/dt=-200A/us V_{RM}=200V	-	22	-
			Tj=125℃		-	31	-
Peak recovery current	I_{RRM}	A	Tj=25℃		-	1.9	-
			Tj=125℃		-	3.5	-
Reverse recovery charge	Qrr	nC	Tj=25℃		-	21.1	-
			Tj=125℃		-	54.9	-
Non-repetitive avalanche energy	EAS	mJ	Tj=25℃	I_R=0.4A，L=15 mH	1.2	-	-

◆ U1H THRU U1J

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T_{RR}	ns	Tj=25℃	I_F=1A，di/dt=-50A/us V_{RM}=30V	-	38	-
			Tj=25℃	I_F=1A di/dt=-200A/us V_{RM}=400V	-	32	-
			Tj=125℃		-	52	-
Peak recovery current	I_{RRM}	A	Tj=25℃		-	2.9	-
			Tj=125℃		-	4.7	-
Reverse recovery charge	Qrr	nC	Tj=25℃		-	45.8	-
			Tj=125℃		-	121.9	-
Non-repetitive avalanche energy	EAS	mJ	Tj=25℃	I_R=0.3A，L=15 mH	0.7	-	-

■Thermal Characteristics （Ta=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	U1A	U1B	U1C	U1D	U1F	U1G	U1H	U1J
Typical Thermal resistance	RθJ-A(1)	℃/W	65							
	RθJ-L(1)		25							
	RθJ-C(1)		20							

Note：

(1) Thermal resistance between junction and ambient and between junction and lead mounted on P.C.B with 3mm*3mm copper pad areas.

■ Characteristics (Typical)

FIG.1: Io-TL Cure

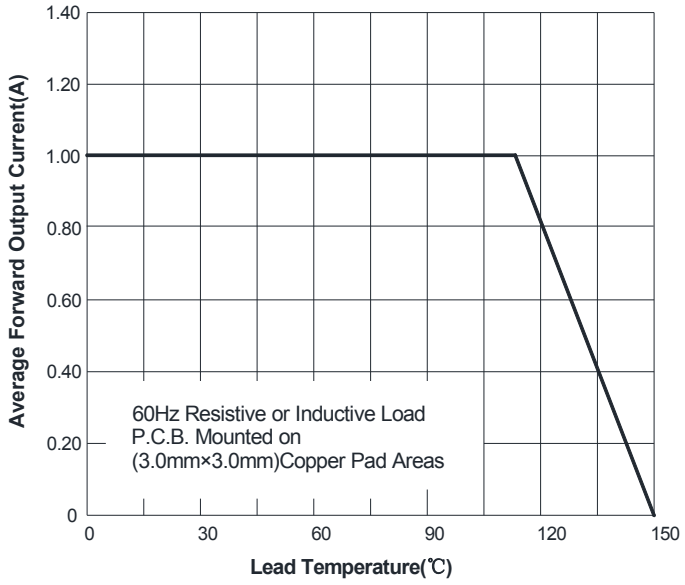


FIG.2: Forward Surge Current Capability

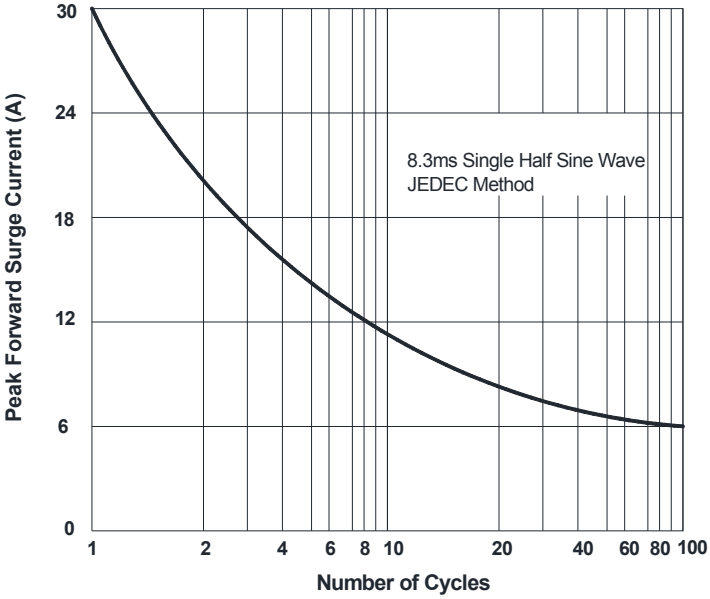


FIG.3: Typical Forward Characteristics

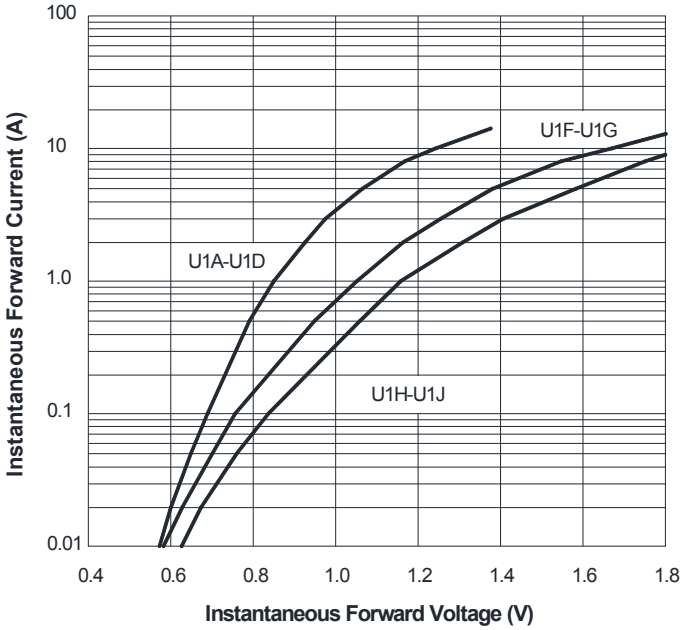


FIG.4: Typical Reverse Characteristics

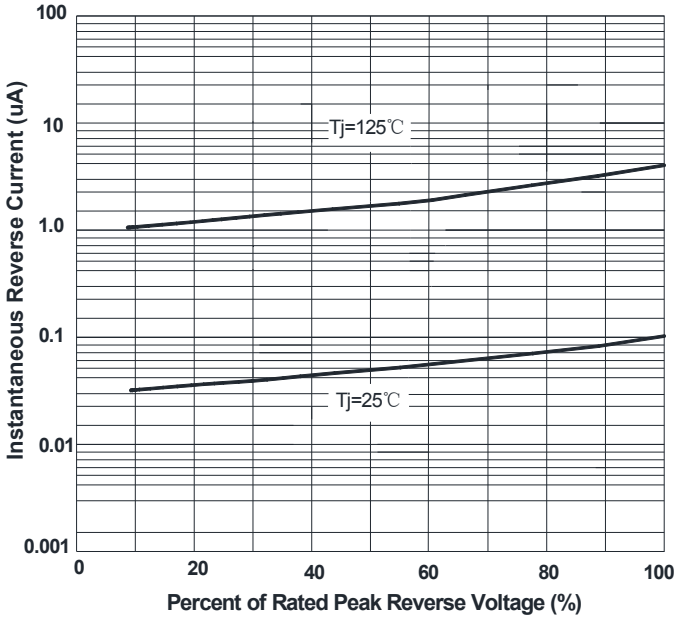
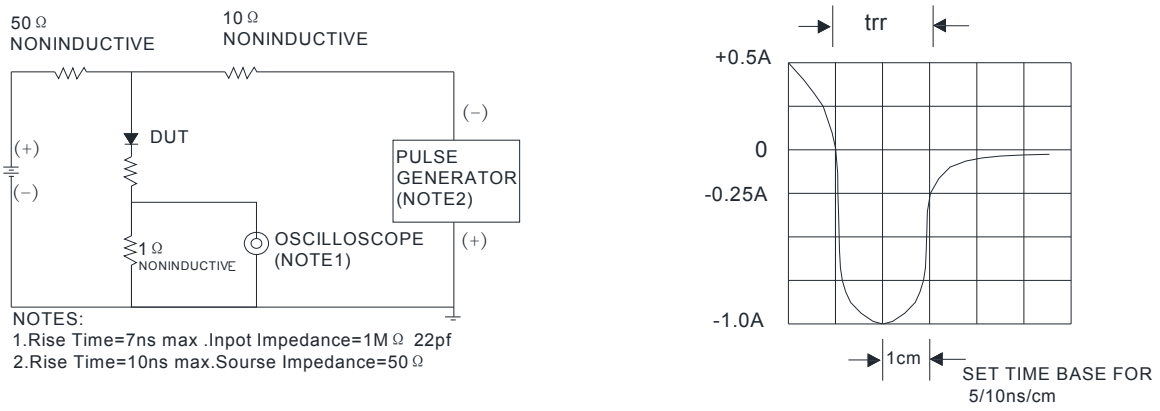


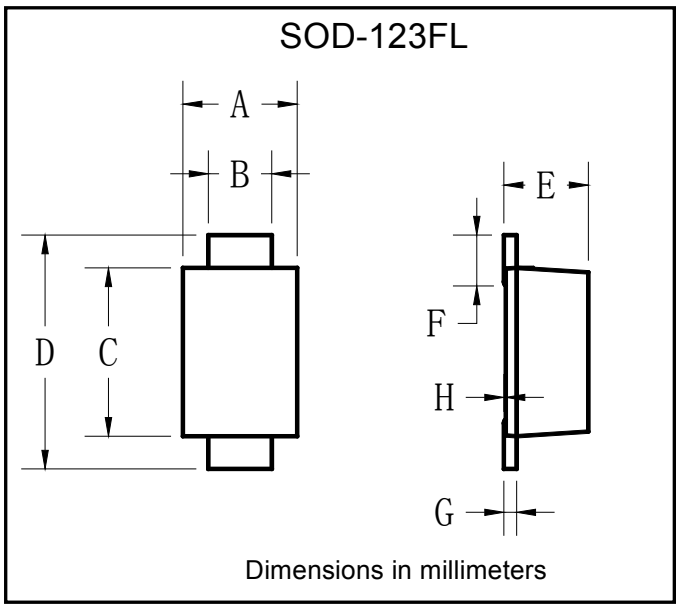
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



■Ordering Information (Example)

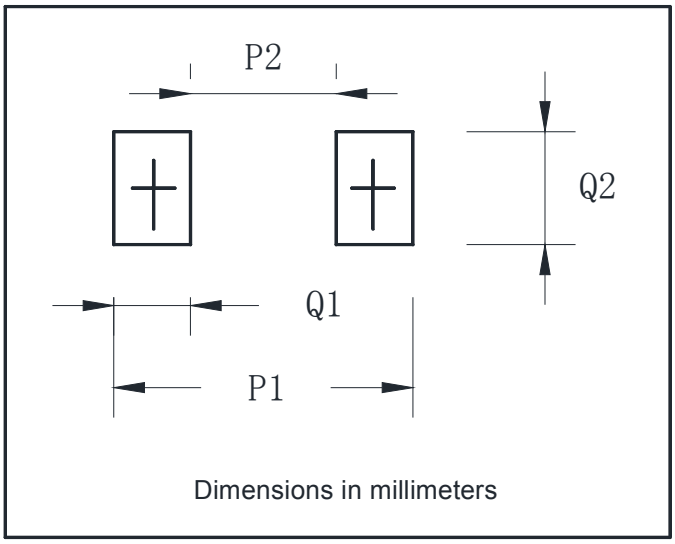
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
U1A THRU U1J	F1	Approximate 0.0169	3000	30000	120000	7” reel
U1A THRU U1J	F2	Approximate 0.0169	2500	25000	100000	7” reel
U1A THRU U1J	F3	Approximate 0.0169	10000	/	210000	13” reel
U1A THRU U1J	F4	Approximate 0.0169	3000	54000	108000	7” reel
U1A THRU U1J	F5	Approximate 0.0169	10000	/	160000	13” reel
U1A THRU U1J	F6	Approximate 0.0169	3000	12000	60000	7” reel

■ Outline Dimensions



SOD-123FL		
Dim	Min	Max
A	1.60	1.90
B	0.90	1.10
C	2.55	2.85
D	3.60	3.90
E	1.00	1.20
F	0.40	0.90
G	0.10	0.25
H	0.02	0.05

■ Suggested pad layout



SOD-123FL	
Dim	Millimeters
P1	3.90
P2	1.90
Q1	1.00
Q2	1.50

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