

# EREC0102FL

## Hyperfast soft recovery rectifier



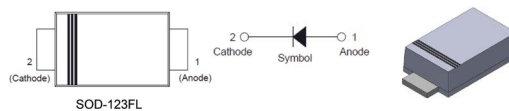
### Product features

- Plastic package UL 94V-0
- Low reverse leakage current
- Hyperfast recovery time and soft recovery characteristics
- Low recovery loss

### Mechanical data

- Case: SOD-123FL molded plastic
- Terminals: Tin plated
- Weight: 0.0144 grams typical

### Package diagram/size and schematic



### Applications

- Switching mode power supplies (SMPS)
- Inverters
- Freewheeling diodes
- DC/DC converters
- Other power switching application.

### Environmental data



### Part numbering system

E	R	E	C	01	02	FL
1	2	3	4	5	6	7

1	E=Eaton
2	R=Rectifier
3	E=Epitaxial process
4	C= Hyperfast
5	01= $I_{F(AV)}$ : 1 A
6	02= $V_{RRM}$ : 200 V
7	FL=Package: SOD-123FL

### Absolute maximum rating

(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	V
Maximum RMS voltage	$V_{RMS}$	140	V
Maximum DC blocking voltage	$V_{DC}$	200	V
Average forward current at $T_A = +85\text{ °C}$	$I_{F(AV)}$	1	A
Peak forward surge current: 8.3ms single half sinewave superimposed on rated load	$I_{FSM}$	35	A
Operating junction and storage temperature range	$T_j, T_{stg}$	-55 to +150	°C

### Electrical characteristics

(Rating at +25 °C ambient temperature unless otherwise specified)

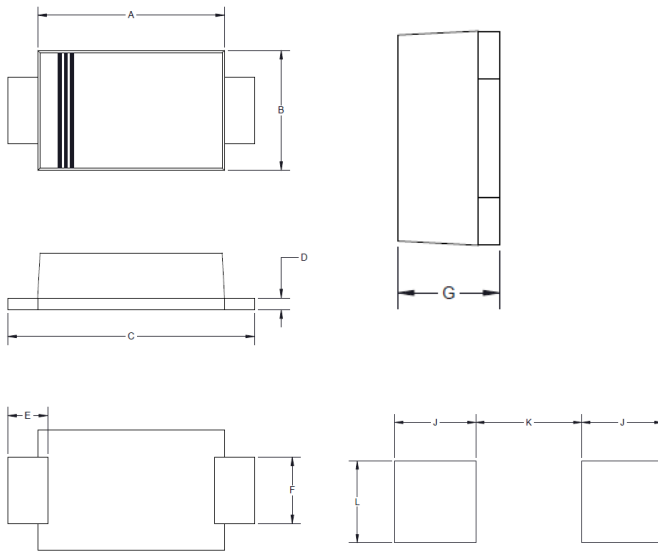
Parameter	Test condition	Symbol	min	typ	max	Unit
Forward voltage @ $I_F = 1\text{ A}$	$T_j = 25\text{ °C}$	$V_F$	-	-	0.95	V
	$T_j = 125\text{ °C}$	$V_F$	-	-	0.8	V
Reverse current at rated DC blocking voltage	$T_j = 25\text{ °C}$	$I_R$	-	0.02	1	μA
	$T_j = 125\text{ °C}$	$I_R$	-	1.5	20	μA
Reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$	$t_{rr}$	-	-	25	ns
	$I_F = 1\text{ A}, dI_F/dt = 50\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_j = 25\text{ °C}$	$t_{rr}$	-	23	-	ns
	$I_F = 1\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_j = 25\text{ °C}$	$t_{rr}$	-	20	-	ns
Peak reverse recovery current	$I_F = 1\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_j = 25\text{ °C}$	$I_{RM}$	-	1.7	-	A
Reverse recovery charge	$I_F = 1\text{ A}, dI_F/dt = 100\text{ A}/\mu\text{s}, V_R = 30\text{ V}, T_j = 25\text{ °C}$	$Q_{rr}$	-	17	-	nC

### Thermal resistances

Symbol	Parameter	min	typ	max	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	-	170	°C/W

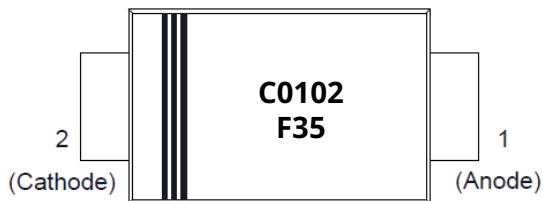
**Note:** Mounted on P.C.B. with 8.0 mm x 8.0 mm copper pad areas.

**Mechanical drawing, pad layout marking- mm**



Dimension	min	max
A	2.60	3.00
B	1.60	2.00
C	3.45	3.95
D	0.10	0.25
E	0.30	0.90
F	0.80	1.20
G	0.70	1.00
J	1.30	-
K	-	1.70
L	1.30	-

**Marking**

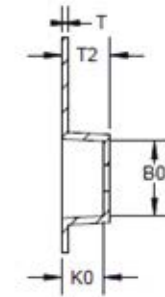
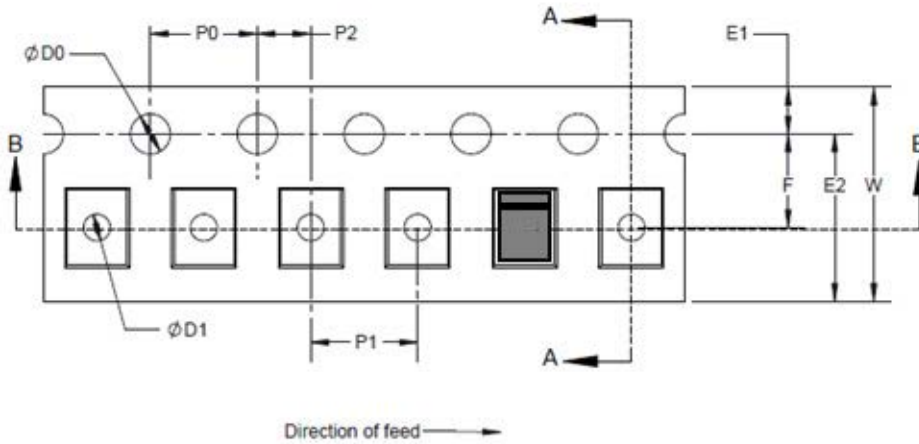


**Product information**

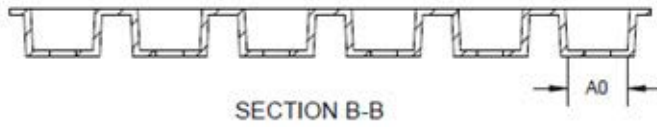
C	Hyperfast
01	$I_{F(AV)}$ : 1 A
02	$V_{RRM}$ : 200 V
F35	Date code

**Packaging information-mm**

Unit weight (g/pcs) typ.	Reel (pcs)	Per carton (pcs)	Reel diameters (mm)
0.0144	3,000	150,000	178



SECTION A-A

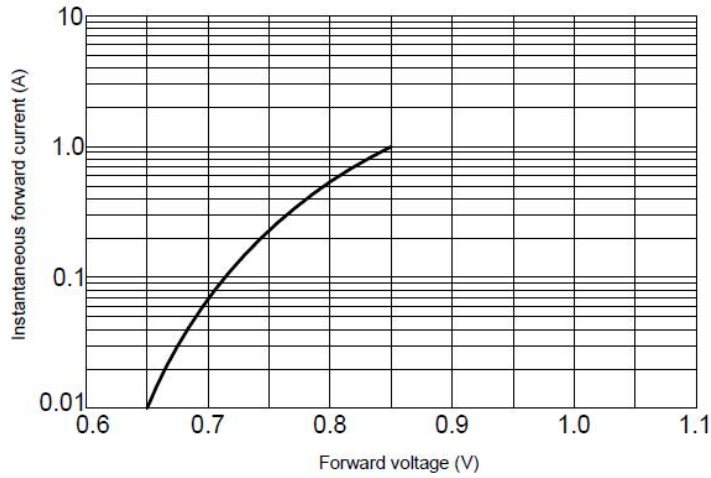


SECTION B-B

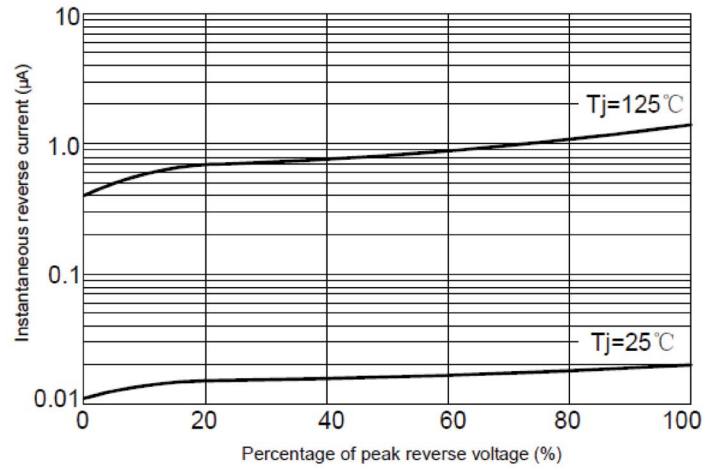
Dimension	Tolerance	Value
W	±0.20	8
F	±0.20	3.5
E1	±0.20	1.75
P0	±0.20	4
P1	±0.20	4
P2	±0.20	2
D0	±0.10	1.55
D1	±0.20	1.05
A0	±0.30	1.95
B0	±0.30	3.95
K0	±0.20	1.35
T	±0.10	0.2
T2	±0.30	1.55

### Typical characteristics

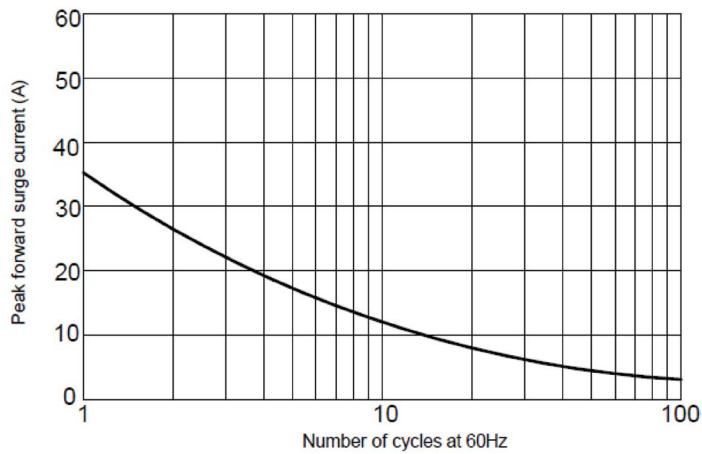
Typical forward characteristics (+25 °C)



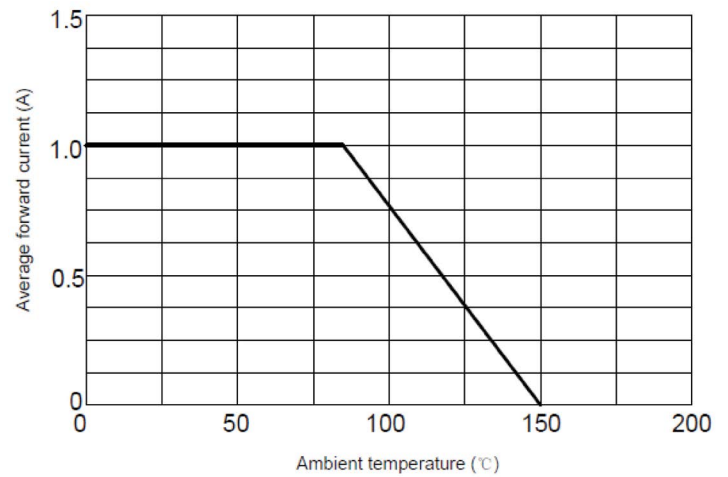
Typical reverse characteristics



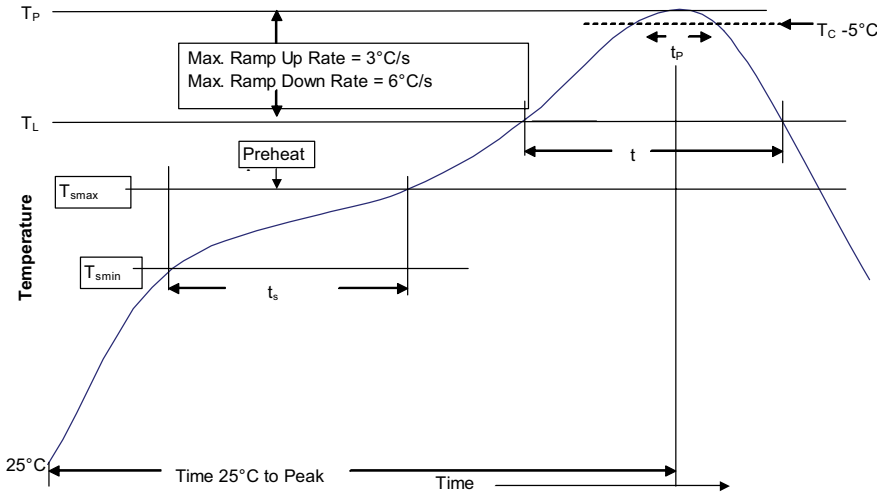
Maximum non-repetitive peak forward surge current (8.3 ms single half sine-wave) (+25 °C)



Forward current derating curve



### Solder reflow profile



**Table 1 - Standard SnPb solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

**Table 2 - Lead (Pb) free solder ( $T_C$ )**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

### Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	<ul style="list-style-type: none"> <li>100 °C</li> <li>150 °C</li> <li>60-120 seconds</li> </ul>
Ramp up rate $T_L$ to $T_p$	3 °C/ second max.	3 °C/ second max.
Liquidous temperature ( $T_L$ ) Time ( $t_L$ ) maintained above $T_L$	<ul style="list-style-type: none"> <li>183 °C</li> <li>60-150 seconds</li> </ul>	<ul style="list-style-type: none"> <li>217 °C</li> <li>60-150 seconds</li> </ul>
Peak package body temperature ( $T_p$ )*	Table 1	Table 2
Time ( $t_p$ )* within 5 °C of the specified classification temperature ( $T_C$ )	20 seconds*	30 seconds*
Ramp-down rate ( $T_p$ to $T_L$ )	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

\* Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

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