

# EREC1002FPC

## Hyperfast rectifier data sheet



Photo is representative

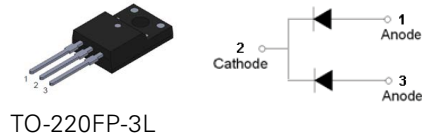
### Product features

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

### Mechanical data

- Case: TO-220FP molded plastic over passivated junction
- Terminals: Tin plated
- Weight: 2.07 gram 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	10	02	FPC
1	2	3	4	5	6	7

1	E=Eaton
2	R=Rectifier
3	E=Epitaxial process
4	C=Hyperfast
5	10= $I_{F(AV)}$ : 10 A
6	02= $V_{RRM}$ : 200 V
7	FPC=Package: TO-220FP Common cathode

### 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, $T_h \leq 92$ °C,	$I_{FAVI}$	10	A
Peak forward surge current: 10 ms single half sine wave superimposed on rated load per diode	$I_{FSM}$	50	A
Peak forward surge current: 8.3 ms single half sine wave superimposed on rated load per diode		55	
Operating junction and storage temperature range	$T_j, T_{stg}$	-55 to +150	°C

### Electrical characteristics

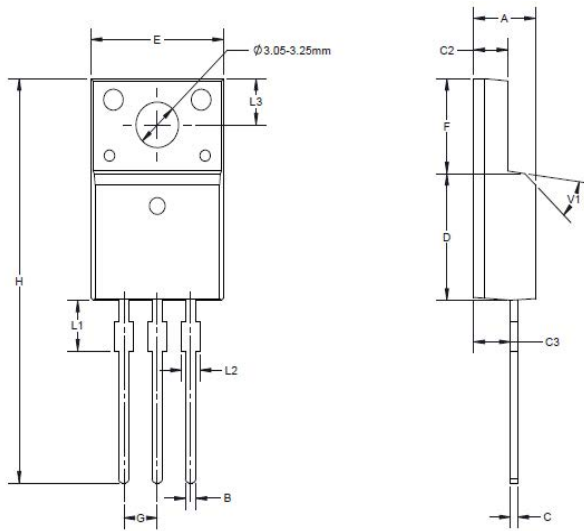
(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Test condition	Symbol	min	typ	max	Unit
Forward voltage @ $I_F=5A$	$T_j=25$ °C	$V_F$	-	0.95	1.1	V
Reverse current at rated DC blocking voltage	$T_j=25$ °C	$I_R$	-	-	5	μA
	$T_j=125$ °C		-	-	200	
Reverse recovery time	$I_F=1$ A, $V_R=30$ V, $di/dt=100$ A/μs, $T_j=25$ °C	$t_{rr}$	-	-	25	ns
RMS isolation voltage	50 Hz $f \leq 60$ Hz; RH $\leq 65\%$ ; from all pins to external heatsink; sinusoidal waveform; clean and dust free	$V_{isol}$ (RMS)	-	-	2500	V
Isolation capacitance	From cathode to external heatsink	$C_{isol}$	-	10	-	pF

### Thermal resistances

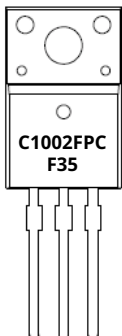
Symbol	Parameter	min	typ	max	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	55	-	°C/W
$R_{th(j-h)}$	Thermal resistance from junction to heatsink	-	-	5.7	°C/W

**Mechanical drawing - mm**



Dimension	min	typ	max
A	4.50	-	4.90
B	0.74	0.80	0.83
C	0.47	-	0.65
C2	2.45	-	2.75
C3	2.60	-	3.00
D	8.80	-	9.30
E	9.80	-	10.40
F	6.40	-	6.80
G	2.40	-	2.70
H	28.0	-	29.8
L1	-	3.36	-
L2	1.14	-	1.70
L3	-	3.30	-
V1	-	45°	-

**Marking**



**Product information**

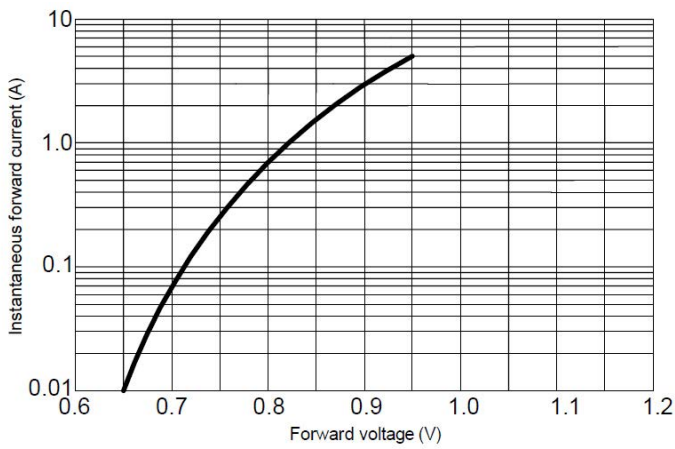
C	Hyperfast
10	$I_{F(AV)}$ : 10 A
02	$V_{RRM}$ : 200 V
FPC	Package: TO-220FP Common cathode
F35	Date code

**Packaging information**

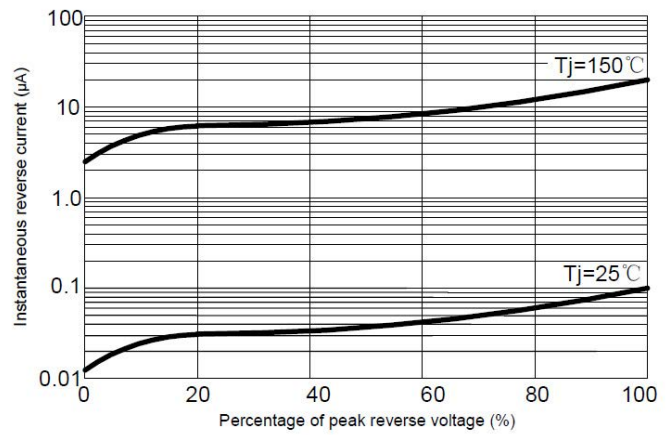
Outline	Unit weight (g/pcs) typ.	Tube(pcs)	Per carton (pcs)
TUBE	2.07	50	5,000

**Typical characteristics**

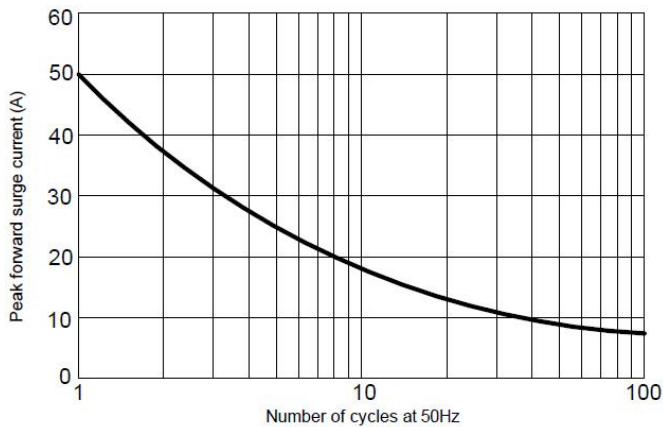
**Typical forward characteristics (+25 °C)**



**Typical reverse characteristics**



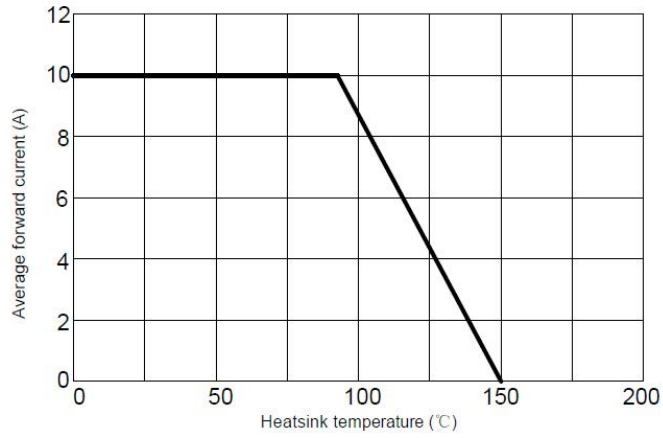
**Maximum non-repetitive peak forward surge current (10 ms single half sine-wave) (+25 °C)**



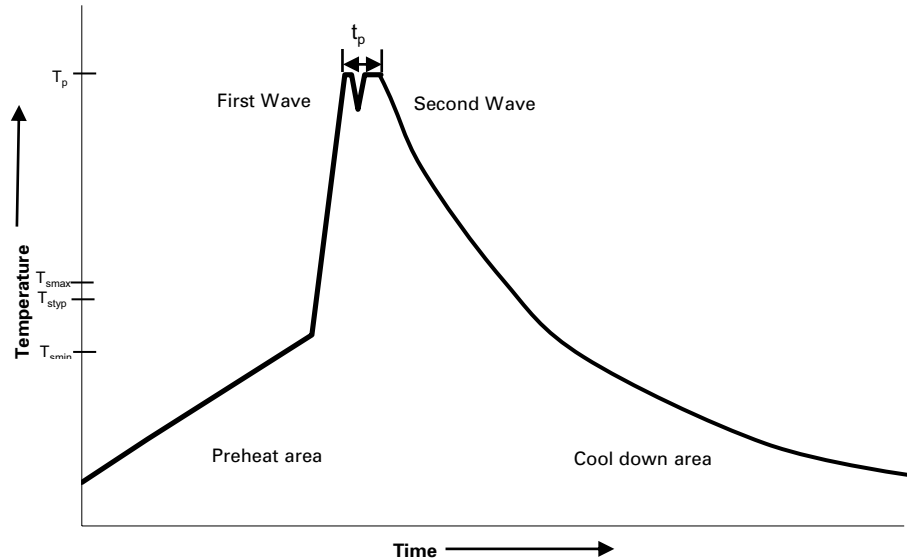
**Maximum non-repetitive peak forward surge current (8.3 ms single half sine-wave) (+25 °C)**



**Forward current derating curve**



## Wave solder profile



## Reference EN 61760-1:2006

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat		
• Temperature min. ( $T_{smin}$ )	100 °C	100 °C
• Temperature typ. ( $T_{styp}$ )	120 °C	120 °C
• Temperature max. ( $T_{smax}$ )	130 °C	130 °C
• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	70 seconds	70 seconds
$\Delta$ preheat to max Temperature	150 °C max.	150 °C max.
Peak temperature ( $T_p$ )*	235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature ( $t_p$ )	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

## Manual solder

Use a 20 watt soldering iron with tip diameter of 1.0 mm maximum. +350 °C, 4-5 seconds maximum, generally manual, hand soldering is not recommended

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