

EREC0506FPL

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: TO-220FP-2L molded plastic over passivated junction
- Terminals: Tin plated
- Weight: 2.0 grams typical

Package diagram/size and schematic



TO-220FP-2L

Applications

- Switching mode power supplies
- Inverters
- Freewheeling diodes
- DC/DC converters
- Other power switching applications

Environmental compliance and general specifications



Ordering part number

E	R	E	C	05	06	FPL
1	2	3	4	5	6	7

1	E=Eaton
2	R=Rectifier
3	E=Epitaxial process
4	C=Hyperfast
5	05= $I_T(AV)$: 5 A
6	06= V_{RRM} : 600 V
7	FPL=Package: TO-220FP-2L

Absolute maximum ratings

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	600	V
Maximum RMS voltage	V_{RMS}	420	V
Maximum DC blocking voltage	V_{DC}	600	V
Average forward current at $T_h \leq 97\text{ °C}$	$I_{F(AV)}$	5	A
Peak forward surge current: 10 ms single half sinewave superimposed on rated load	I_{FSM}	60	A
Peak forward surge current: 8.3 ms single half sinewave superimposed on rated load	I_{FSM}	65	A
Operating junction and storage temperature range	$T_{j,Tstg}$	-55 to +150	°C

Electrical characteristics

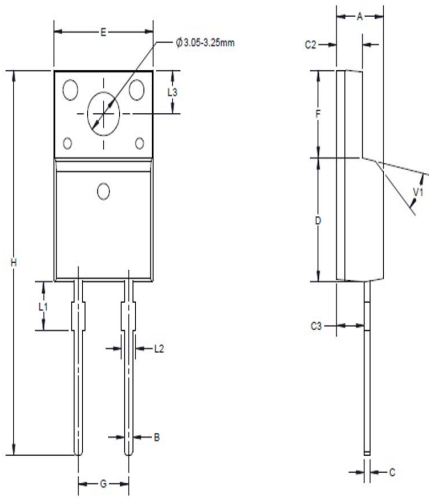
(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Test condition	Symbol	Minimum	Typical	Maximum	Unit
Forward voltage @ $I_F=5\text{ A}$	$T_j=25\text{ °C}$	V_F	-	2.5	3.3	V
Reverse current at rated DC blocking voltage	$T_j=25\text{ °C}$	I_R	-	-	5	μA
	$T_j=125\text{ °C}$		-	-	200	
Reverse recovery time	$I_F=1\text{ A}, V_R=30\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=25\text{ °C}$	t_{rr}	-	11	-	ns
	$I_F=5\text{ A}, V_R=200\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=25\text{ °C}$		-	23	-	
	$I_F=5\text{ A}, V_R=200\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=125\text{ °C}$		-	28	-	
Peak reverse recovery current	$I_F=5\text{ A}, V_R=200\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=25\text{ °C}$	I_{RM}	-	1.7	-	A
	$I_F=5\text{ A}, V_R=200\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=125\text{ °C}$		-	3.2	-	
Reverse recovery charge	$I_F=5\text{ A}, V_R=200\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=25\text{ °C}$	Q_{rr}	-	19	-	nC
	$I_F=5\text{ A}, V_R=100\text{ V}, di/dt=200\text{ A}/\mu\text{s}, T_j=125\text{ °C}$		-	45	-	
RMS isolation voltage	50 Hz $\leq f \leq$ 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	Minimum	Typical	Maximum	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	55	-	°C/W
$R_{th(j-h)}$	Thermal resistance from junction to heatsink	-	-	6.5	°C/W

Mechanical drawing-mm



Dimension	Minimum	Typical	Maximum
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
D	8.80	-	9.30
E	9.80	-	10.4
F	6.40	-	6.80
G	-	5.08	-
H	28	-	29.8
L1	-	3.36	-
L2	1.14	-	1.70
L3	-	3.30	-
V1	-	45°	-

Marking



Product information

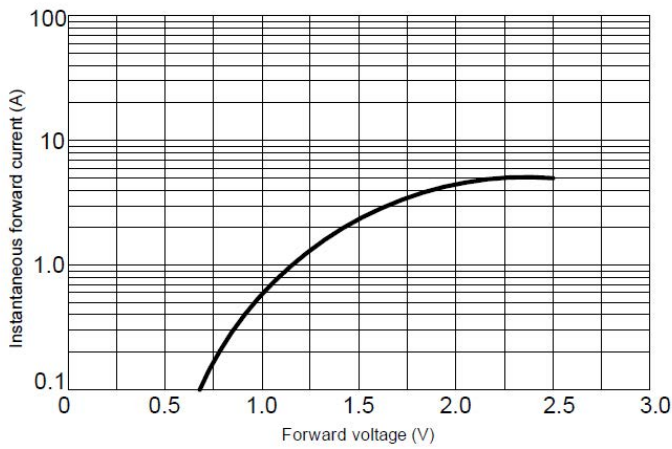
C	Hyperfast
05	$I_{F(AV)}$: 5 A
06	V_{RRM} : 600 V
FPL	Package: TO-220FP-2L
F35	Date code

Packaging information

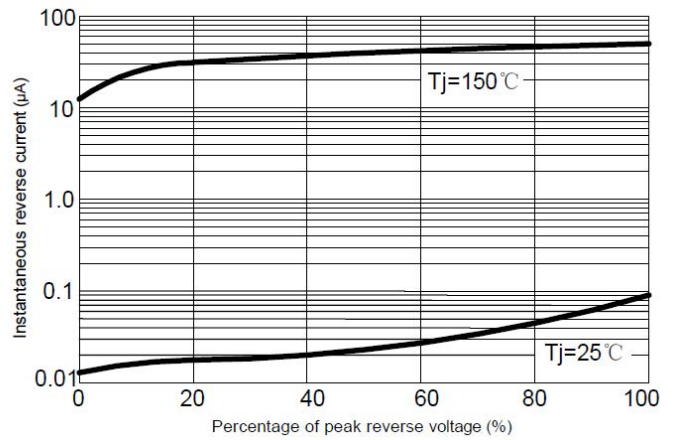
Type	Unit weight (g/pcs) typ.	Tube (pcs)	Per carton (pcs)
TUBE	2.0	50	5,000

Typical characteristics

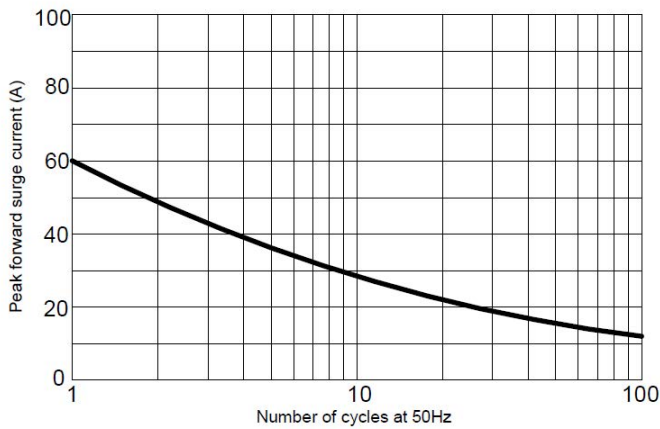
Typical forward characteristics (+25 °C)



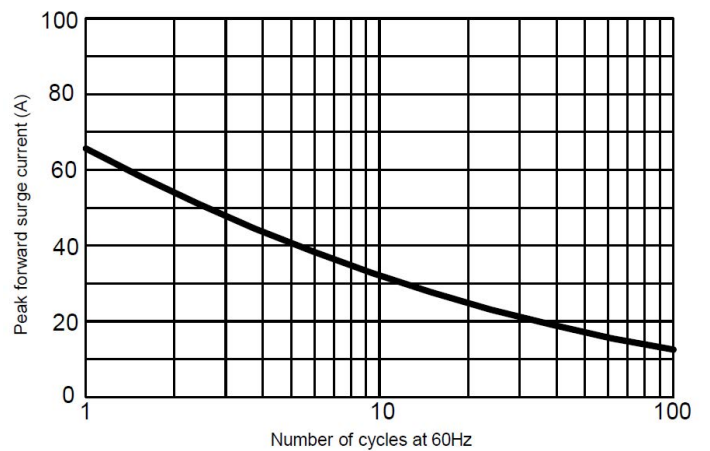
Typical reverse characteristics



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

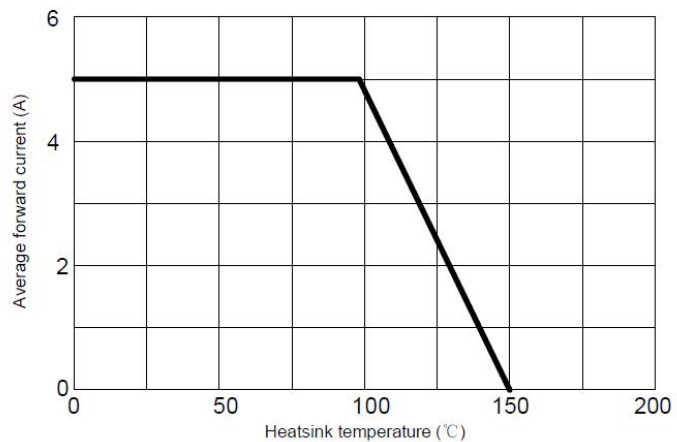


Maximum non-repetitive peak forward surge current (8.3 ms single half sine-wave) (+25 °C)

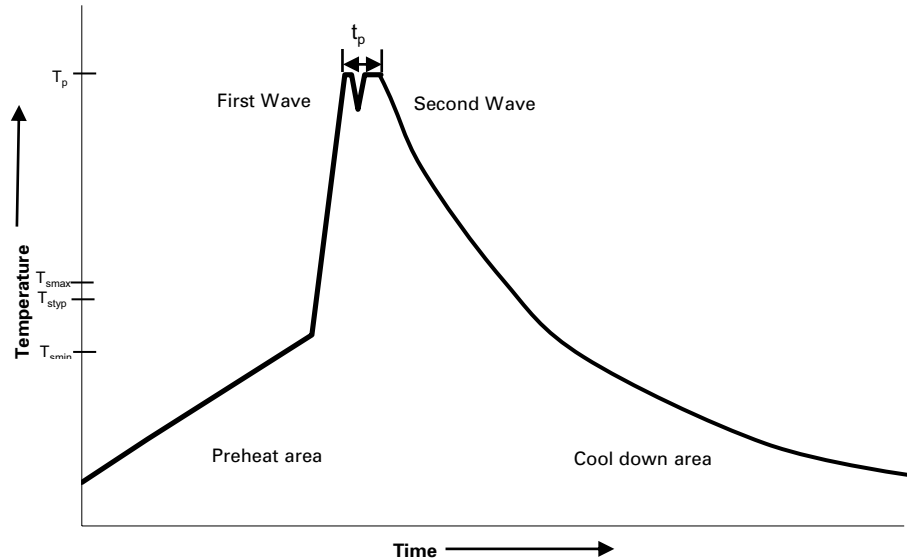


Typical characteristics

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
Δ 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

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics

© 2023 Eaton
All Rights Reserved
Printed in USA
Publication No. ELX1294 BU-ELX22157
June 2023

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

Follow us on social media to get the latest product and support information.

