

EREC1006FPL

Hyperfast rectifier data sheet



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 gram typical

Package diagram/size and schematic



TO-220FP-2L



Applications

- Switched-mode power supplies (SMPS)
- Inverters
- Freewheeling diodes
- DC/DC converters

Environmental data



Part numbering system

E	R	E	C	10	06	FPL
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	06= V_{RRM} : 600 V
7	FPL=Package: TO-220FP-2L

Absolute maximum rating

(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 $T_h \leq 61$ °C	$I_{F(AV)}$	10	A
Peak forward surge current: 10ms single half sinewave superimposed on rated load	I_{FSM}	120	A
Peak forward surge current: 8.3ms single half sinewave superimposed on rated load		132	
Operating junction and storage temperature range	$T_{j, T_{stg}}$	-55 to +150	°C

Electrical characteristics

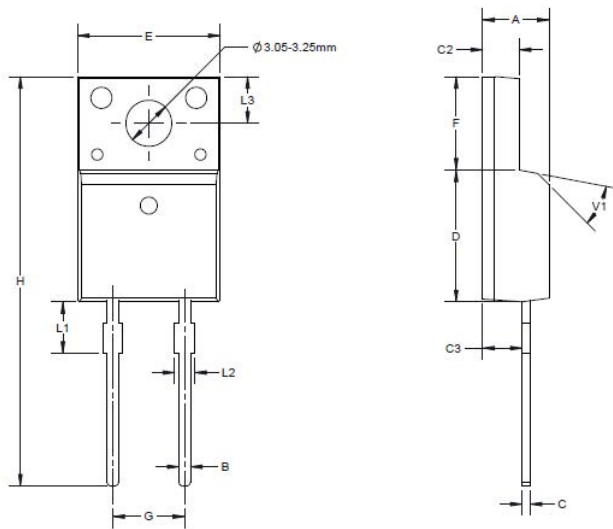
(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Test condition	Symbol	min	typ	max	Unit
Forward voltage @ $I_F=10$ A	$T_j=25$ °C	V_F	-	2.5	3.2	V
Reverse current at rated DC blocking voltage	$T_j=25$ °C	I_R	-	-	5	μA
	$T_j=125$ °C		-	-	300	
Reverse recovery time	$I_F=1$ A, $V_R=30$ V, $di/dt=200$ A/μs, $T_j=25$ °C	t_{rr}	-	12	18	ns
	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=25$ °C		-	26	-	
	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=125$ °C		-	34	-	
Peak reverse recovery current	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=25$ °C	I_{RM}	-	2	-	A
	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=125$ °C		-	4.8	-	
Reverse recovery charge	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=25$ °C	Q_{rr}	-	26	-	nC
	$I_F=10$ A, $V_R=200$ V, $di/dt=200$ A/μs, $T_j=125$ °C		-	83	-	
RMS isolation voltage	50 Hz $\leq f \leq 60$ Hz; RH ≤ 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

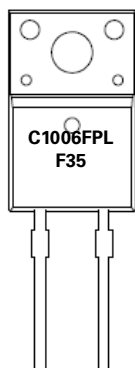
Symbol	Parameter	min	typ	max	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	55	-	°C /W
$R_{th(j-h)}$	Thermal resistance from junction to heatsink	-	-	4.8	°C /W

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	-	5.08	-
H	28.0	-	29.8
L1	-	3.36	-
L2	1.14	-	1.70
L3	-	3.30	-
V1	-	45°	-

Marking



Product information

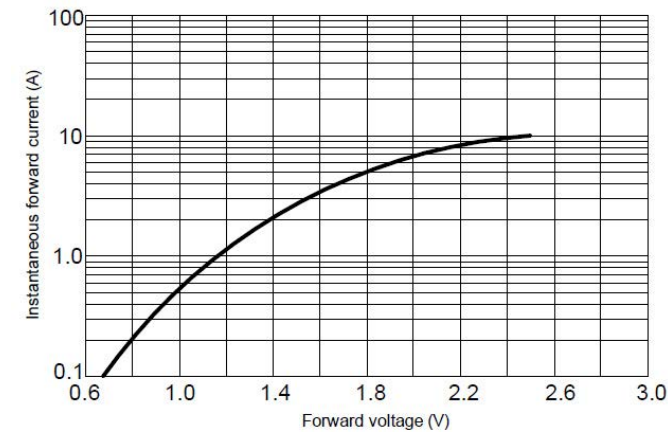
C	Hyperfast
10	$I_{F(AV)}$: 10 A
06	V_{RRM} : 600 V
FPL	Package: TO-220FP-2L
F35	Date code

Packaging information

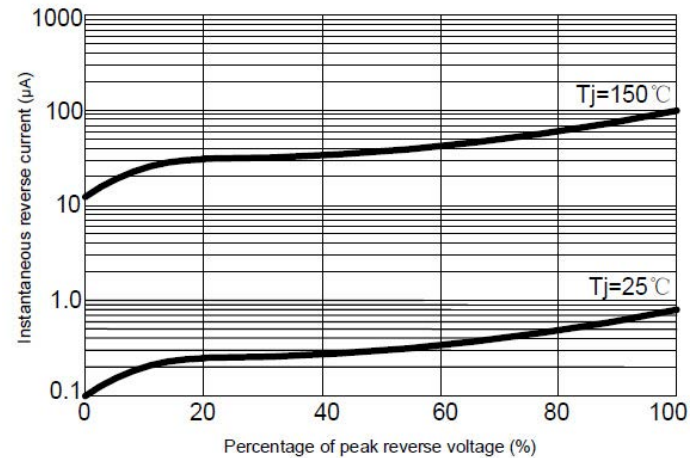
Outline	Unit weight (g/pcs) typ.	Tube(pcs)	Per carton (pcs)
TUBE	2.0	50	5,000

Typical characteristics

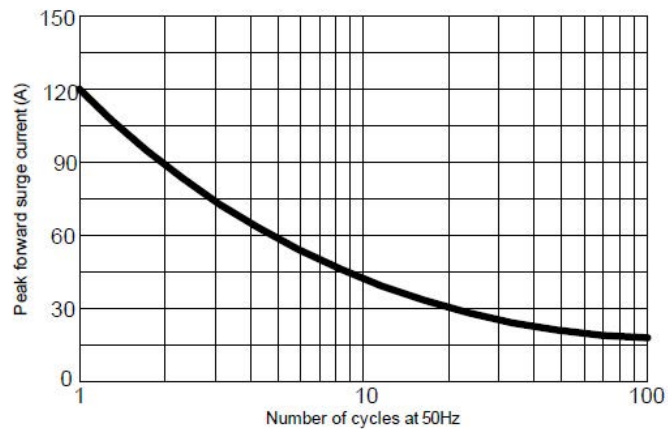
Typical forward characteristics (+25 °C)



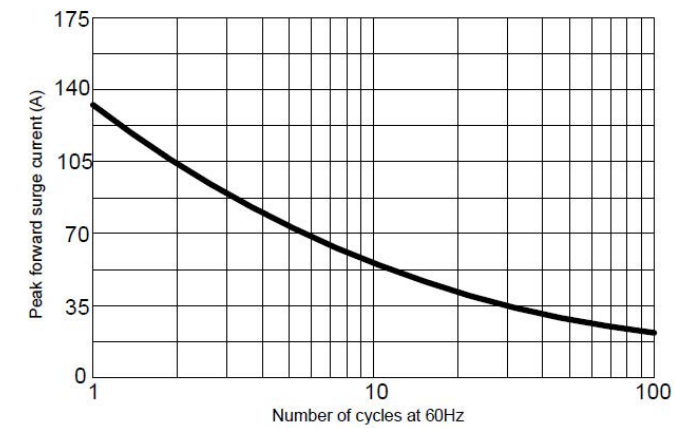
Typical reverse characteristics



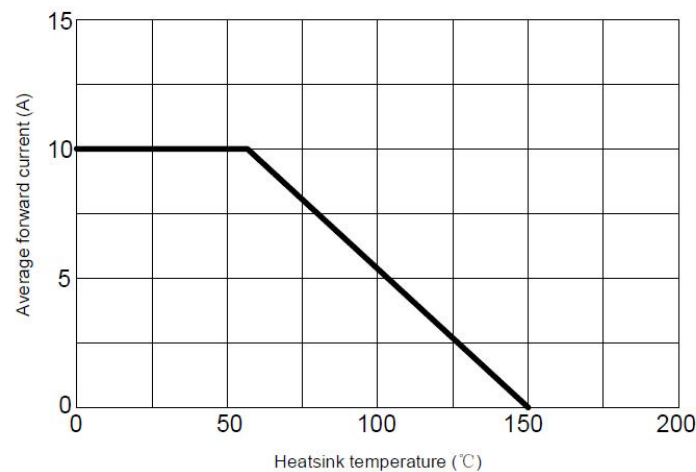
Maximum non-repetitive peak forward surge current (10 ms single half sine-wave) (+25 °C)



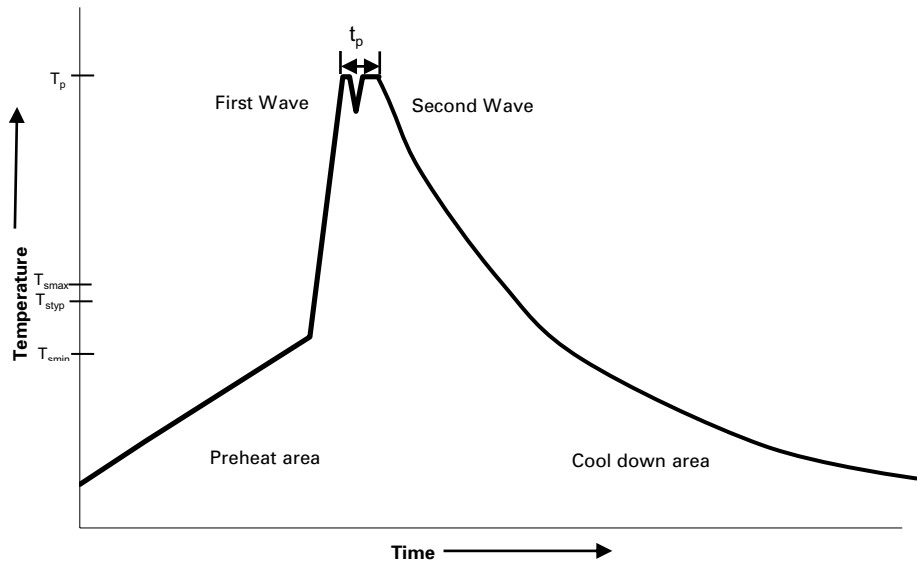
Maximum non-repetitive peak forward surge current (8 ms single half sine-wave) (+25 °C)



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
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

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