EREC2006AL

Hyperfast soft recovery rectifier

Applications

- Discontinuous current mode (DCM) power factor correction (PFC)
- Active PFC in air conditioners
- Switched-mode power supplies
- DC/DC converters

Product features

- Plastic package UL 94V-0
- Low reverse leakage current
- Hyperfast recovery time and soft recovery characteristics
- Low recovery loss
- Insulation (2500 Vrms) allows placement on same heatsink as mosfet and flexible heatsinking on common or separate heatsink

Environmental compliance and general specifications

HALOGEN HF FREE

RoHS

Mechanical data

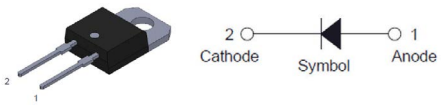
- Case: TO-220A-2L molded plastic over passivated junction
- Terminals: Tin plated
- Weight: 2.1 gram typical

Ordering part number

E	R	E	C	20	06	AL
1	2	3	4	5	6	7

1	E=Eaton
2	R=Rectifier
3	E=Epitaxial process
4	C=Hyperfast
5	20=I_F(AV): 20 A
6	06=V_{RRM}: 600 V
7	AL=Package: TO-220A-2L

Package diagram/size and schematic



TO-220A-2L

Powering Business Worldwide

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 Tmb =120 °C	$I_{F(AV)}$	20	A
Peak forward surge current: 10 ms single half sinewave superimposed on rated load	I_{FSM}	200	A
Peak forward surge current: 8.3 ms single half sinewave superimposed on rated load		220	
Operating junction and storage temperature range	T_j, T_{stg}	-55 to +150	°C

Electrical characteristics

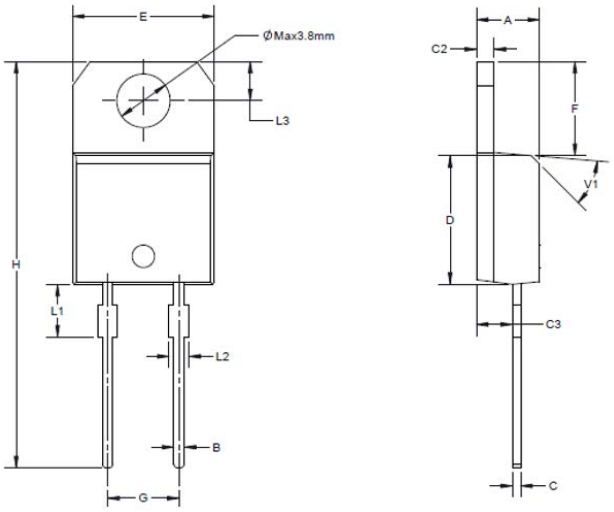
(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Test condition	Symbol	Minimum	Typical	Maximum	Unit
Forward voltage @IF=20 A	Tj=25 °C	V_F	-	2	2.9	V
	Tj=150 °C		-	1.2	1.97	
Reverse current at rated DC blocking voltage	Tj=25 °C	I_R	-	-	5	µA
	Tj=150 °C		-	-	300	
Reverse recovery time	IF=1 A, VR=30 V, dIF/dt=200 A/µs, Tj=25 °C	t_{rr}	-	16	20	ns
	IF=20 A, VR=400 V, dIF/dt=500 A/µs, Tj=125 °C		-	26	-	
	IF=20 A, VR=200 V, dIF/dt=200 A/µs, Tj=25 °C		-	33	-	
	IF=20 A, VR=200 V, dIF/dt=200 A/µs, Tj=125 °C		-	51	-	
Peak reverse recovery current	IF=20 A, VR=200 V, dIF/dt=200 A/µs, Tj=25 °C	I_{RM}	-	2.8	-	A
	IF=20 A, VR=200 V, dIF/dt=200 A/µs,Tj=125 °C		-	7.6	-	
Reverse recovery charge	IF=20 A, VR=200 V, dIF/dt=200 A/µs, Tj=25 °C	Q_{rr}	-	47	-	nC
	IF=20 A, VR=200 V, dIF/dt=200 A/µs, Tj=125 °C		-	193	-	
RMS isolation voltage	50 Hz≤f≤60 Hz;RH≤65%; from all pins to external heat-sink; sinusoidal waveform; clean and dust free	V_{isol}(RMS)	-	-	2500	V
Isolation capacitance	from cathode to external heatsink	C_{isol}	-	10	-	pF

Thermal resistances

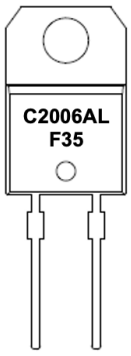
Symbol	Parameter	Minimum	Typical	Maximum	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	60	-	°C /W
$R_{th(j-mb)}$	Thermal resistance from junction to mounting base	-	-	2.1	°C /W

Mechanical drawing- mm



Dimension	Minimum	Typical	Maximum
A	4.40	-	4.60
B	0.61	-	0.88
C	0.46	-	0.70
C2	1.21	-	1.32
C3	2.40	-	2.72
D	8.60	-	9.70
E	9.80	-	10.40
F	6.55	-	6.95
G	-	5.08	-
H	28	-	29.80
L1	-	3.75	-
L2	1.14	-	1.70
L3	2.65	-	2.95
V1	-	45°	-

Marking



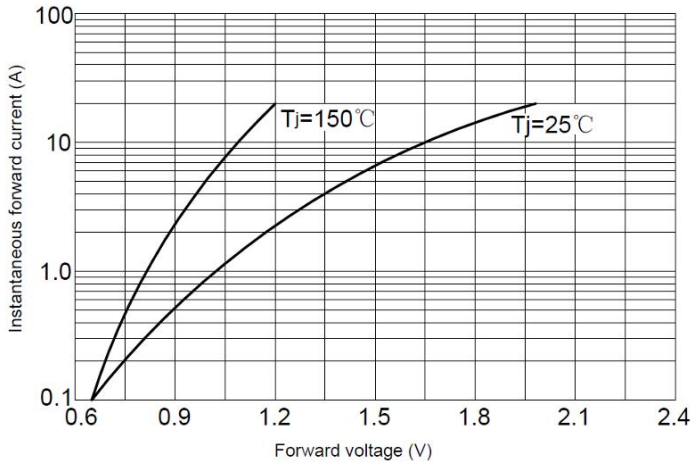
Product information	
C	Hyperfast
20	$I_{F(AV)}$: 20 A
06	V_{RRM}: 600 V
AL	Package: TO-220A-2L
F35	Date code

Packaging information

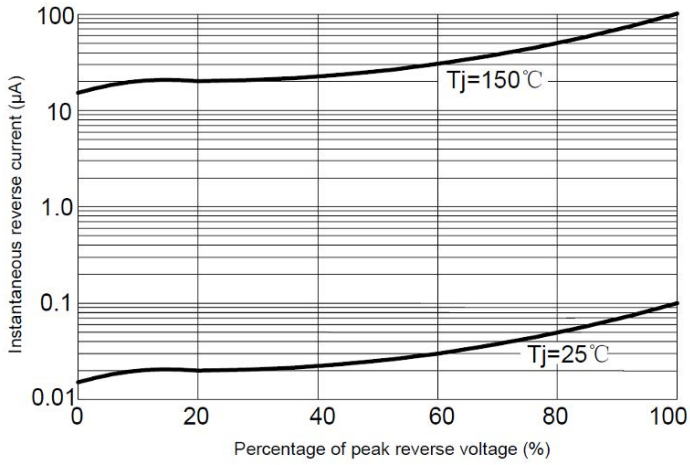
Outline	Unit weight (g/pcs) typical	Tube (pcs)	Per carton (pcs)
TUBE	2.1	50	5,000

Typical characteristics

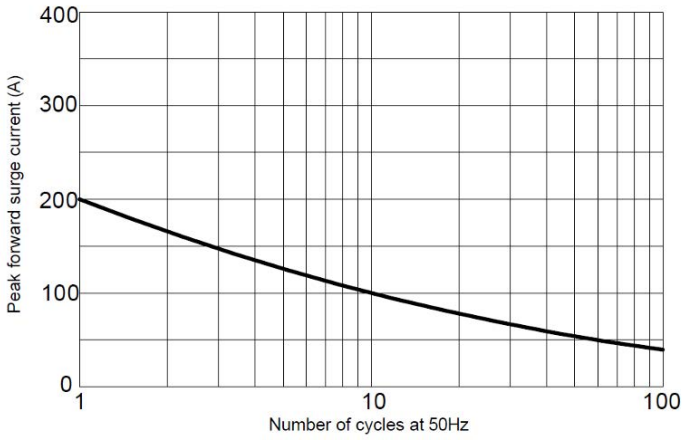
Typical forward characteristics



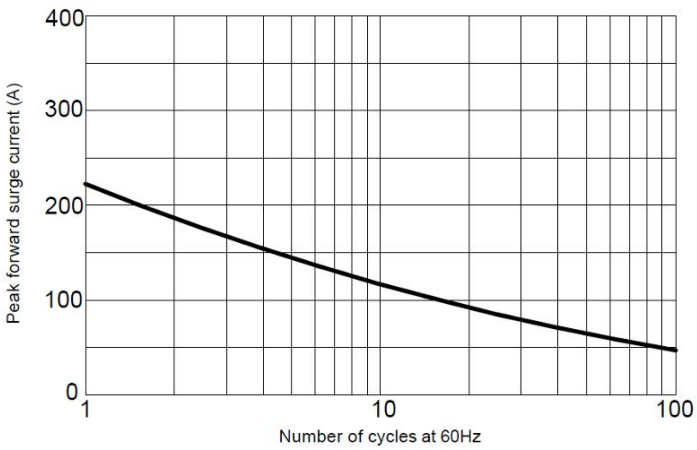
Typical reverse characteristics



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

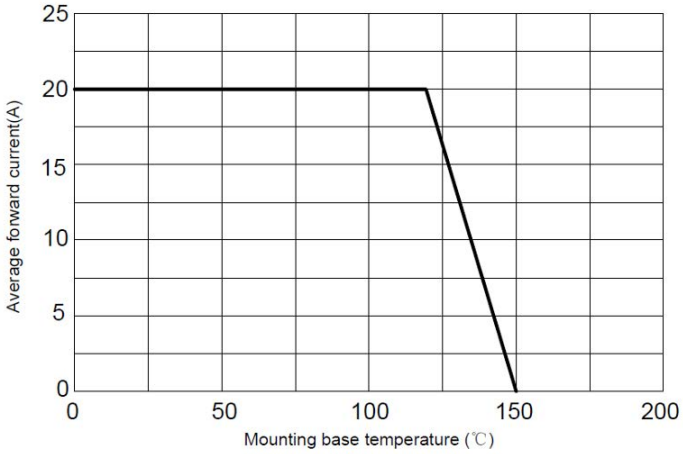


Maximum non-repetitive peak forward surge current (8.3 ms single half sine-wave) (+25 °C)

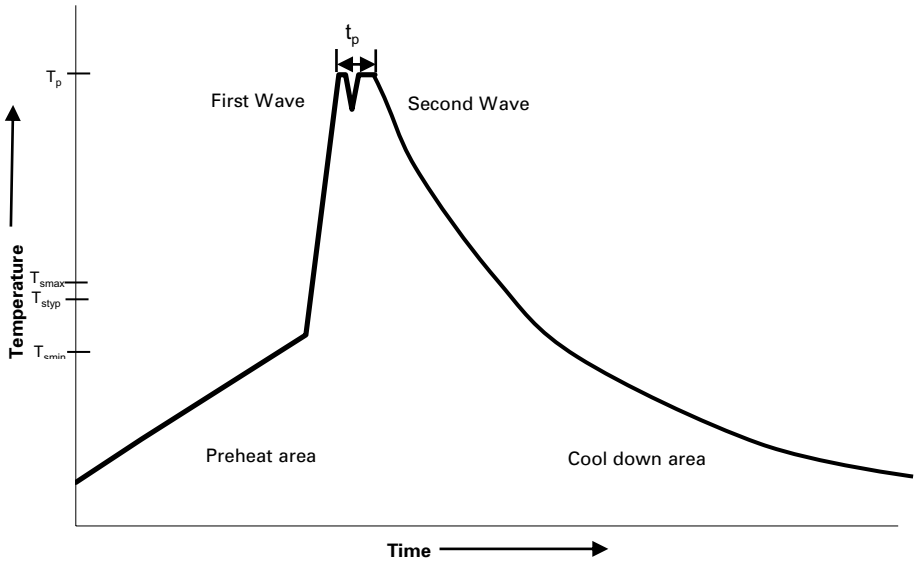


Typical characteristics

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

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

Printed in USA
Publication No. ELX1345 BU-ELX22211
July 2023

Powering Business Worldwide

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