EREC0506CL

Hyperfast soft recovery rectifier

Applications

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

Product features

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

Environmental data

HALOGEN HF FREE

RoHS

Mechanical data

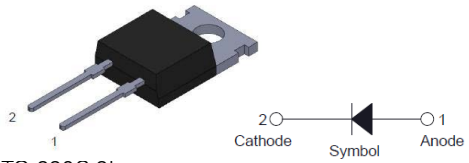
- Case: TO-220C-2L molded plastic over passivated junction
- Terminals: Tin plated
- Weight: 2.0 grams typical

Part numbering system

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

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

Package diagram/size and schematic



TO-220C-2L

Powering Business Worldwide

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_{mb}≤133 °C square-wave pulse	$I_{F(AV)}$	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,T_{stg}	-55 to +150	°C

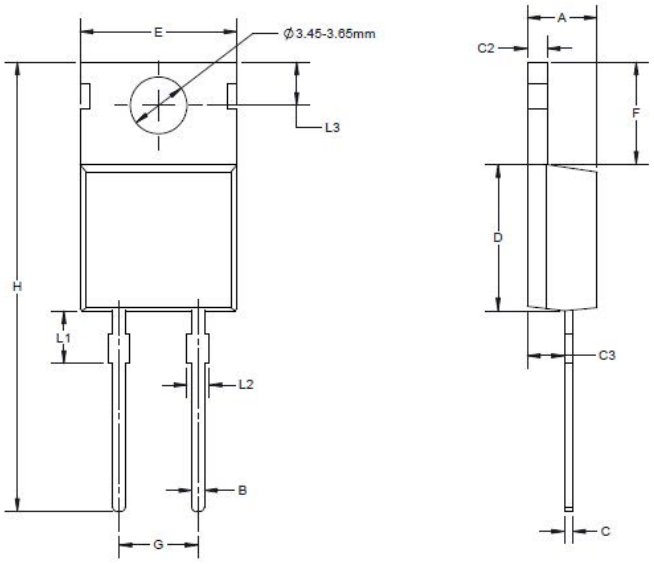
Electrical characteristics
(Rating at +25 °C ambient temperature unless otherwise specified)

Parameter	Test condition	Symbol	min	typ	max	Unit
Forward voltage @IF=5A	Tj=25 °C	V_F	-	2.5	3.3	V
Reverse current at rated DC blocking voltage	Tj=25 °C	I_R	-	-	5	µA
	Tj=150 °C	I_R	-	-	200	µA
Reverse recovery time	IIF=1 A, VR=30 V, di/dt=200 A/µs, Tj=25 °C	t_{rr}	-	11	-	ns
	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=25 °C	t_{rr}	-	23	-	ns
	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=125 °C	t_{rr}	-	28	-	ns
Peak reverse recovery current	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=25 °C	I_{RM}	-	1.7	-	A
	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=125 °C	I_{RM}	-	3.2	-	A
Reverse Recovered charge	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=25 °C	Q_{rr}	-	19	-	nC
	IF=5 A, VR=200 V, di/dt=200 A/µs, Tj=125 °C	Q_{rr}	-	45	-	nC

Thermal resistances

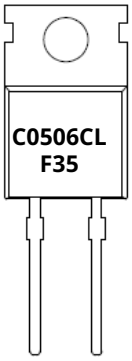
Symbol	Parameter	min	typ	max	Unit
$R_{th(j-a)}$	Thermal resistance from junction to ambient	-	60	-	°C /W
$R_{th(j-mb)}$	Thermal resistance from junction to mounting base	-	-	3.5	°C /W

Mechanical drawing, pad layout, marking-mm



Dimension	min	typ	max
A	4.40	-	4.60
B	0.70	-	0.90
C	0.45	-	0.60
C2	1.23	-	1.32
C3	2.20	-	2.60
D	8.90	-	9.90
E	9.90	-	10.30
F	6.30	-	6.90
G	-	5.08	-
H	28.00	-	29.80
L1	-	3.39	-
L2	1.14	-	1.70
L3	2.65	-	2.95

Marking



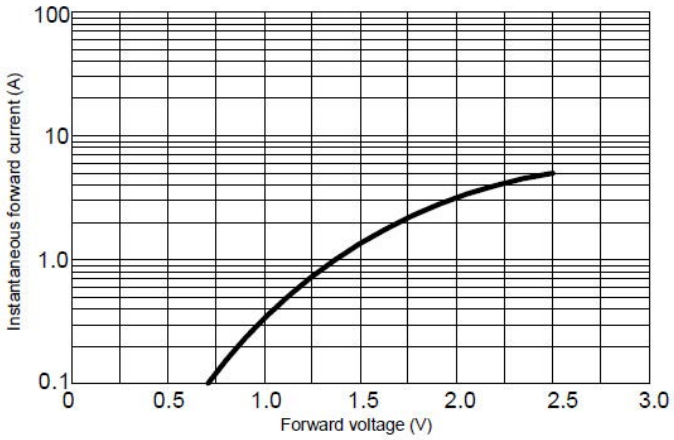
Product information	
C	Hyperfast
05	$I_{F(AV)}$: 5 A
06	V_{RRM}: 600 V
CL	Package: TO-220C-2L
F35	Date code

Packaging information

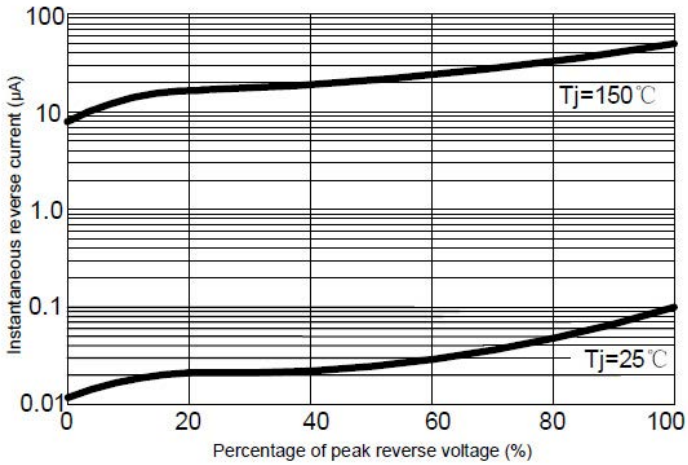
Type	Unit weight (g/pcs) typ.	TUBE (pcs)	Per carton (pcs)
TUBE	2.0	50	5,000

Typical characteristics

Typical forward characteristics (+25 °C)



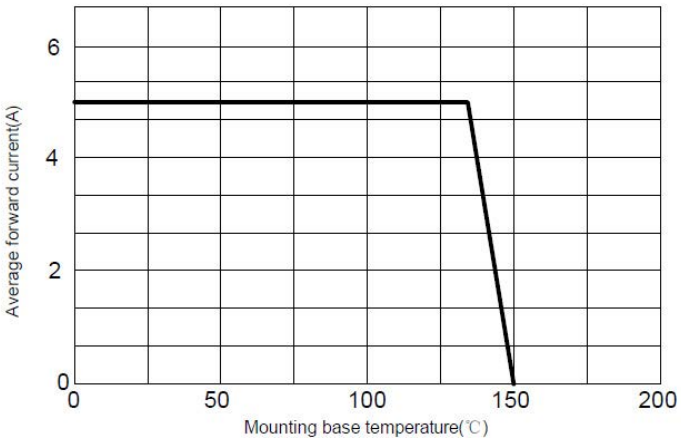
Typical reverse characteristics



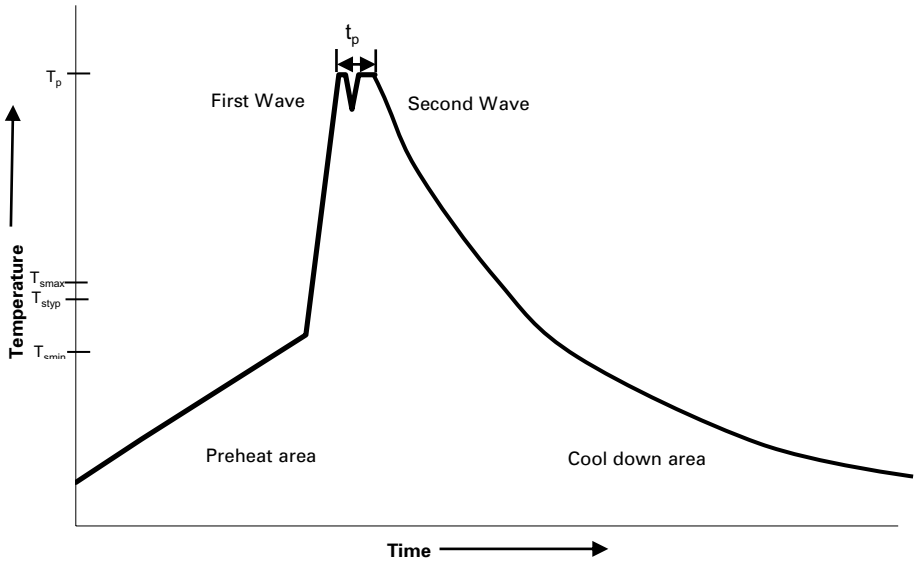
Maximum non-repetitive peak forward surge current (10ms single half sine-wave) (+25 °C)

Maximum non-repetitive peak forward surge current (8.3ms 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

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

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