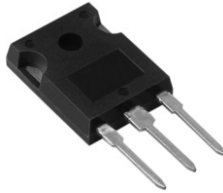
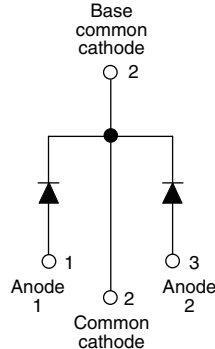


Ultrafast Rectifier, 2 x 15 A FRED Pt™


TO-247AC


FEATURES

- Ultrafast recovery time
- Low forward voltage drop
- Low leakage current
- 175 °C operating junction temperature
- Designed and qualified for industrial level

DESCRIPTION/APPLICATIONS

FRED Pt™ series are the state of the art ultrafast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultrafast recovery time.

The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics.

These devices are intended for use in the output rectification stage of SMPS, UPS, dc-to-dc converters as well as freewheeling diodes in low voltage inverters and chopper motor drives.

Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

PRODUCT SUMMARY

t_{rr}	60 ns
$I_{F(AV)}$	2 x 15 A
V_R	400 V

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Peak repetitive reverse voltage	V_{RRM}		400	V
Average rectified forward current	$I_{F(AV)}$	per leg	15	A
total device		Rated V_R , $T_C = 149\text{ °C}$	30	
Non-repetitive peak surge current per leg	I_{FSM}	$T_C = 25\text{ °C}$	200	
Peak repetitive forward current per leg	I_{FRM}	Rated V_R , $T_C = 149\text{ °C}$, square wave, 20 kHz	30	
Operating junction and storage temperatures	T_J, T_{Stg}		- 65 to 175	°C

ELECTRICAL SPECIFICATIONS ($T_J = 25\text{ °C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Breakdown voltage, blocking voltage	V_{BR}, V_R	$I_R = 100\text{ }\mu\text{A}$	400	-	-	V
Forward voltage	V_F	$I_F = 15\text{ A}$	-	1.17	1.25	
		$I_F = 15\text{ A}, T_J = 150\text{ °C}$	-	0.93	1.12	
Reverse leakage current	I_R	$V_R = V_R$ rated	-	0.3	10	μA
		$T_J = 150\text{ °C}, V_R = V_R$ rated	-	30	500	
Junction capacitance	C_T	$V_R = 400\text{ V}$	-	28	-	pF
Series inductance	L_S	Measured lead to lead 5 mm from package body	-	12	-	nH

DYNAMIC RECOVERY CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	$I_F = 1\text{ A}$, $di_F/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$		-	36	60	ns
		$T_J = 25\text{ }^\circ\text{C}$	$I_F = 15\text{ A}$ $di_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 200\text{ V}$	-	46	-	
		$T_J = 125\text{ }^\circ\text{C}$		-	80	-	
Peak recovery current	I_{RRM}	$T_J = 25\text{ }^\circ\text{C}$	$I_F = 15\text{ A}$ $di_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 200\text{ V}$	-	3.6	-	A
		$T_J = 125\text{ }^\circ\text{C}$		-	8.7	-	
Reverse recovery charge	Q_{rr}	$T_J = 25\text{ }^\circ\text{C}$	$I_F = 15\text{ A}$ $di_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 200\text{ V}$	-	84	-	nC
		$T_J = 125\text{ }^\circ\text{C}$		-	345	-	

THERMAL - MECHANICAL SPECIFICATIONS							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}			- 65	-	175	$^\circ\text{C}$
Thermal resistance, junction to case per leg	R_{thJC}			-	0.8	1.5	$^\circ\text{C}/\text{W}$
Thermal resistance, junction to ambient per leg	R_{thJA}	Typical socket mount		-	-	40	
Thermal resistance, case to heatsink	R_{thCS}	Mounting surface, flat, smooth and greased		-	0.4	-	
Weight				-	6.0	-	g
				-	0.21	-	oz.
Mounting torque				6.0 (5.0)	-	12 (10)	kgf · cm (lbf · in)
Marking device		Case style TO-247AC		30CPU04			



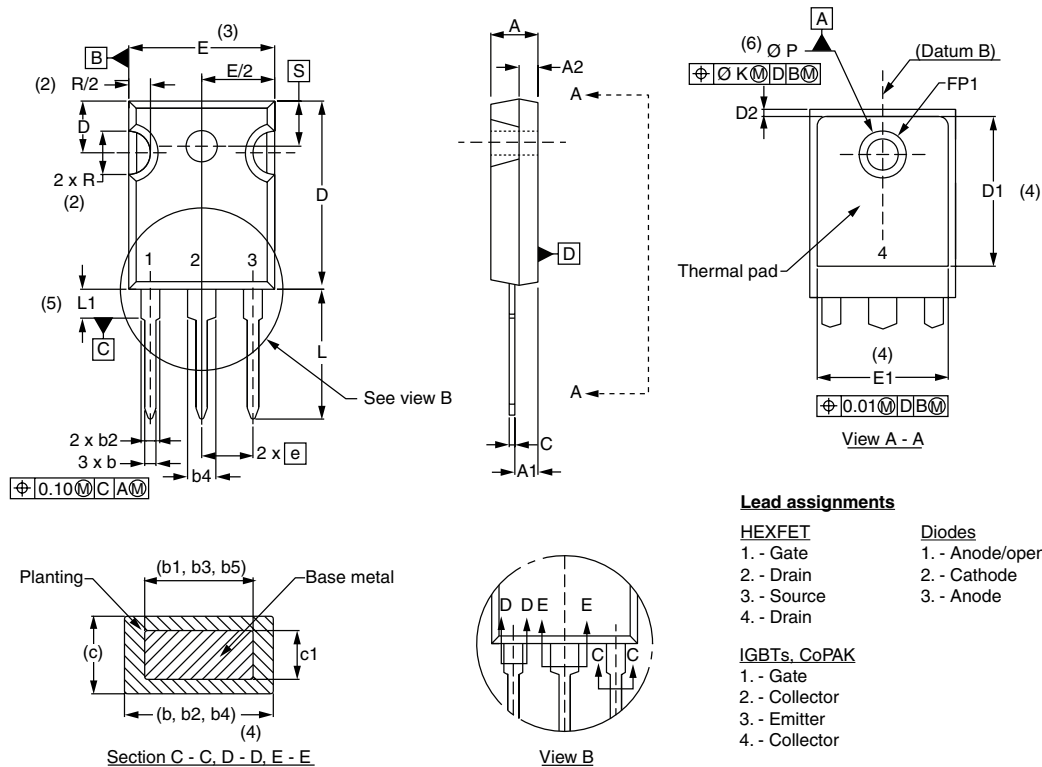
ORDERING INFORMATION TABLE

Device code	30	C	P	U	04	-
	①	②	③	④	⑤	⑥

- 1** - Current rating (30 = 30 A)
- 2** - Common cathode
- 3** - TO-247AC
- 4** - Ultrafast recovery
- 5** - Voltage rating (04 = 400 V)
- 6** -
 - None = Standard production
 - PbF = Lead (Pb)-free

TO-247

DIMENSIONS in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.65	5.31	0.183	0.209	
A1	2.21	2.59	0.087	0.102	
A2	1.50	2.49	0.059	0.098	
b	0.99	1.40	0.039	0.055	
b1	0.99	1.35	0.039	0.053	
b2	1.65	2.39	0.065	0.094	
b3	1.65	2.37	0.065	0.094	
b4	2.59	3.43	0.102	0.135	
b5	2.59	3.38	0.102	0.133	
c	0.38	0.86	0.015	0.034	
c1	0.38	0.76	0.015	0.030	
D	19.71	20.70	0.776	0.815	3
D1	13.08	-	0.515	-	4

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
D2	0.51	1.30	0.020	0.051	
E	15.29	15.87	0.602	0.625	3
E1	13.72	-	0.540	-	
e	5.46 BSC		0.215 BSC		
FK	2.54		0.010		
L	14.20	16.10	0.559	0.634	
L1	3.71	4.29	0.146	0.169	
N	7.62 BSC		3		
FP	3.56	3.66	0.14	0.144	
FP1	-	6.98	-	0.275	
Q	5.31	5.69	0.209	0.224	
R	0.452	5.49	0.178	0.216	
S	5.51 BSC		0.217 BSC		

Notes

- (1) Dimensioning and tolerancing per ASME Y14.5M-1994
- (2) Contour of slot optional
- (3) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (4) Thermal pad contour optional with dimensions D1 and E1
- (5) Lead finish uncontrolled in L1
- (6) $\emptyset P$ to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- (7) Outline conforms to JEDEC outline TO-247 with exception of dimension c