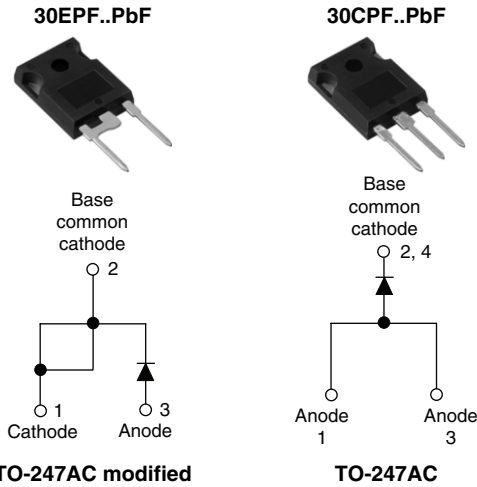




THE DATASHEET OF 30CPF10



Fast Soft Recovery Rectifier Diode, 30 A



FEATURES/DESCRIPTION

The 30EPF..PbF and 30CPF..PbF soft recovery rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.



RoHS*
COMPLIANT

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

30CPF series is a drop in replacement for 25CPF series (parallel connection only).

This product series has been designed and qualified for industrial level.

Compliant to RoHS directive 2002/95/EC.

APPLICATIONS

- Output rectification and freewheeling in inverters, choppers and converters
- Input rectifications where severe restrictions on conducted EMI should be met

PRODUCT SUMMARY	
V_F at 30 A	< 1.41 V
t_{rr}	95 ns
V_{RRM}	1000 V to 1200 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	30	A
V_{RRM}		1000 to 1200	V
I_{FSM}		350	A
V_F	30 A, $T_J = 25^\circ\text{C}$	1.41	V
t_{rr}	1 A, 100 A/ μs	95	ns
T_J		- 40 to 150	$^\circ\text{C}$

VOLTAGE RATINGS			
PART NUMBER	V_{RRM} , MAXIMUM PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} AT 150 $^\circ\text{C}$ mA
30EPF10PbF, 30CPF10PbF	1000	1100	6
30EPF12PbF, 30CPF12PbF	1200	1300	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 95^\circ\text{C}$, 180 $^\circ$ conduction half sine wave	30	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	300	
		10 ms sine pulse, no voltage reapplied	350	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	450	A^2s
		10 ms sine pulse, no voltage reapplied	636	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	6360	$\text{A}^2\sqrt{\text{s}}$

* Pb containing terminations are not RoHS compliant, exemptions may apply

30EPF..PbF, 30CPF..PbF Soft Recovery Series

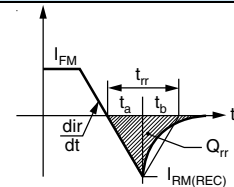


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Fast Soft Recovery
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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM}	30 A, $T_J = 25\text{ }^\circ\text{C}$		1.41	V
Forward slope resistance	r_t	$T_J = 150\text{ }^\circ\text{C}$		10.09	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.992	V
Maximum reverse leakage current	I_{RM}	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		6	

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	t_{rr}	I_F at 30 Apk 25 A/ μs 25 $^\circ\text{C}$	450	ns
Reverse recovery current	I_{rr}		6.1	A
Reverse recovery charge	Q_{rr}		2.16	μC
Snap factor	S	Typical	0.6	



THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.8	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}		40	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.2	
Approximate weight			6	g
			0.21	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-247AC modified (JEDEC)	30EPF10	
			30EPF12	
		Case style TO-247AC	30CPF10	
			30CPF12	



30EPF..PbF, 30CPF..PbF Soft Recovery Series

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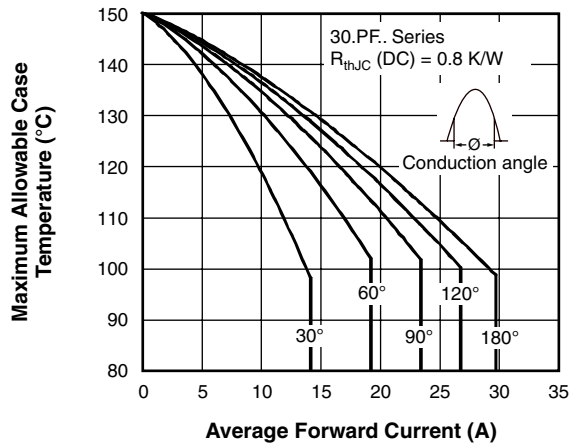


Fig. 1 - Current Rating Characteristics

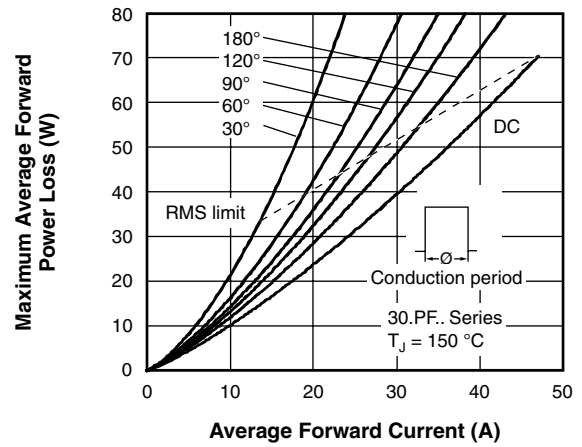


Fig. 4 - Forward Power Loss Characteristics

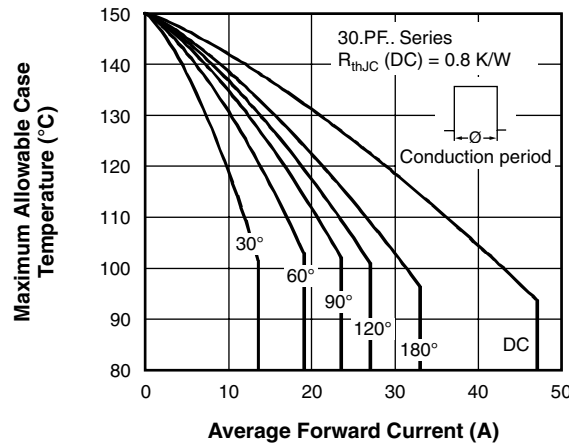


Fig. 2 - Current Rating Characteristics

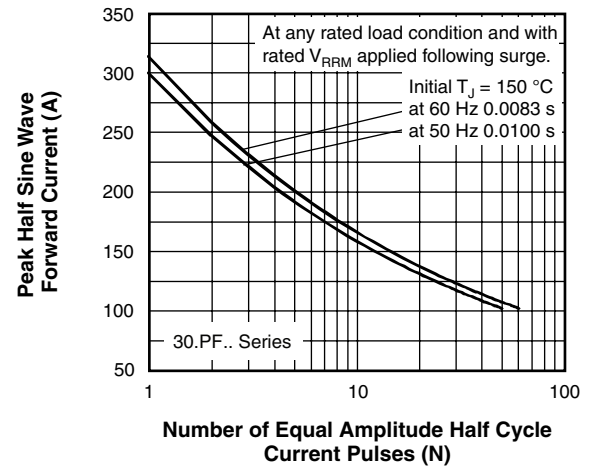


Fig. 5 - Maximum Non-Repetitive Surge Current

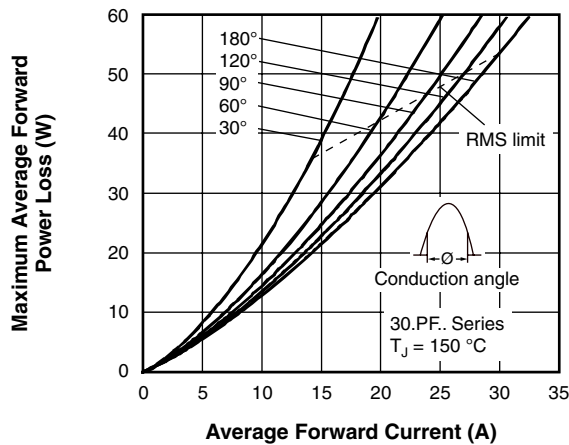


Fig. 3 - Forward Power Loss Characteristics

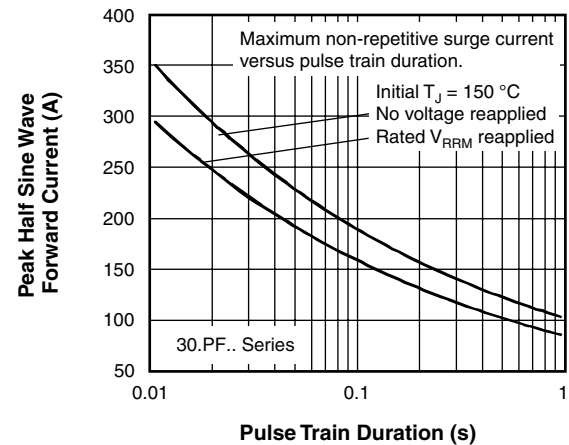


Fig. 6 - Maximum Non-Repetitive Surge Current

30EPF..PbF, 30CPF..PbF Soft Recovery Series



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Fast Soft Recovery Rectifier Diode, 30 A

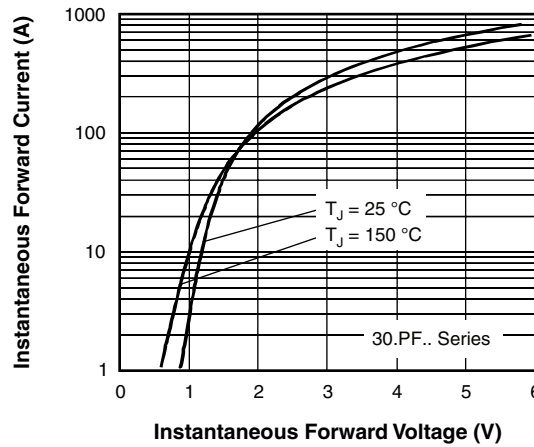


Fig. 7 - Forward Voltage Drop Characteristics

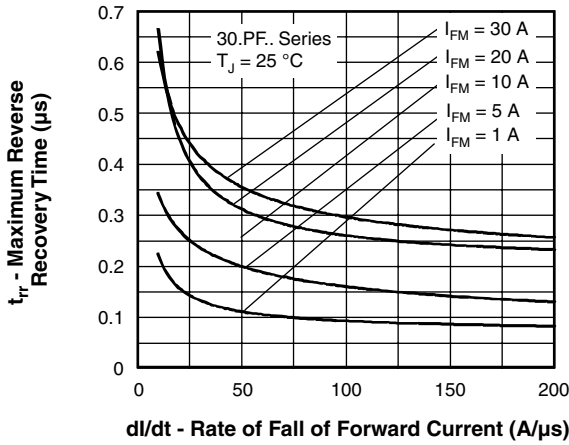


Fig. 8 - Recovery Time Characteristics, $T_J = 25\text{ }^\circ\text{C}$

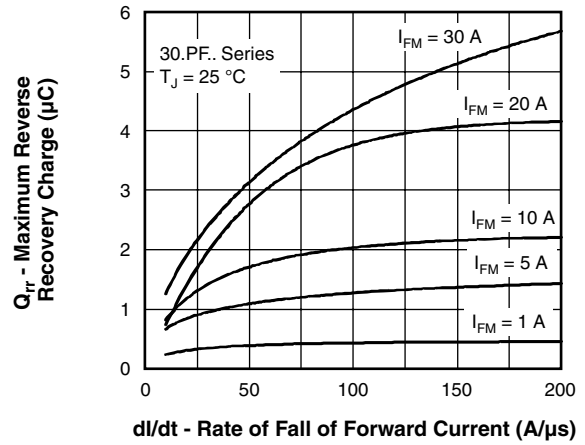


Fig. 10 - Recovery Charge Characteristics, $T_J = 25\text{ }^\circ\text{C}$

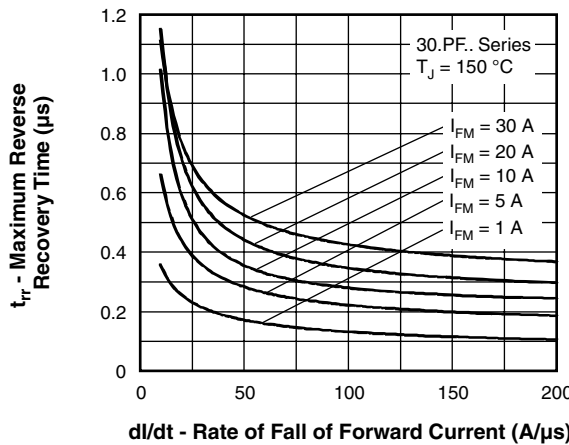


Fig. 9 - Recovery Time Characteristics, $T_J = 150\text{ }^\circ\text{C}$

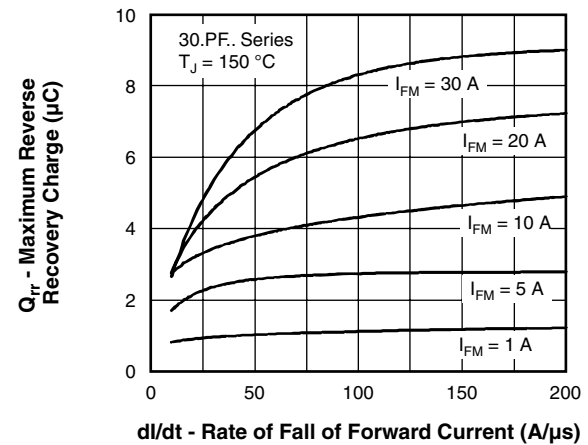


Fig. 11 - Recovery Charge Characteristics, $T_J = 150\text{ }^\circ\text{C}$



30EPF..PbF, 30CPF..PbF Soft Recovery Series

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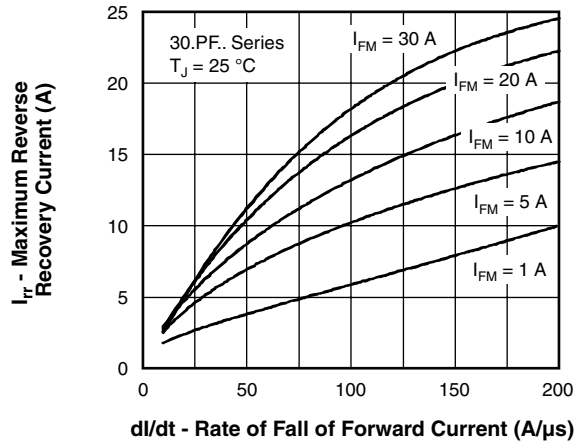


Fig. 12 - Recovery Current Characteristics, $T_J = 25\text{ }^\circ\text{C}$

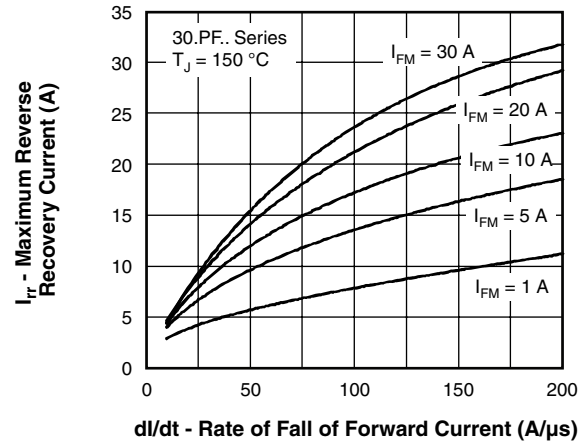


Fig. 13 - Recovery Current Characteristics, $T_J = 150\text{ }^\circ\text{C}$

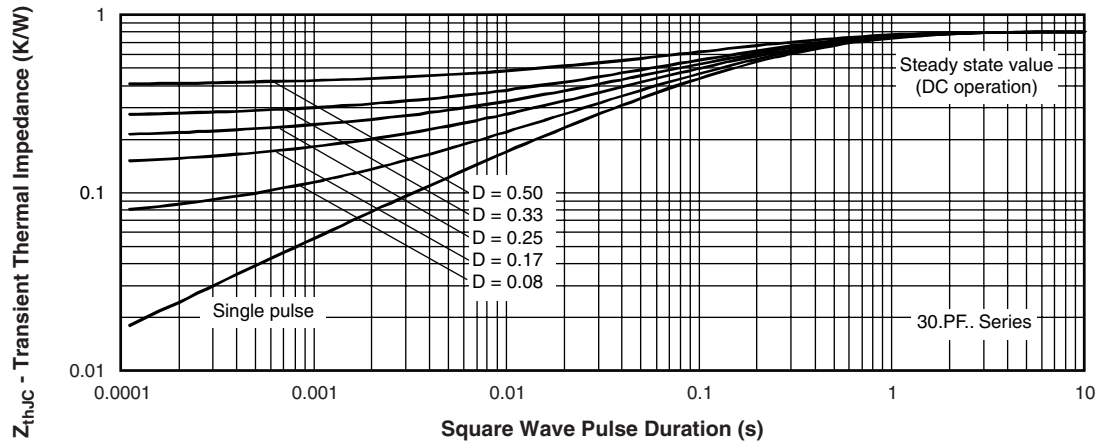


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

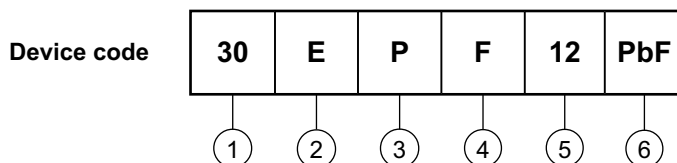
30EPF..PbF, 30CPF..PbF Soft Recovery Series



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Fast Soft Recovery
Rectifier Diode, 30 A

ORDERING INFORMATION TABLE



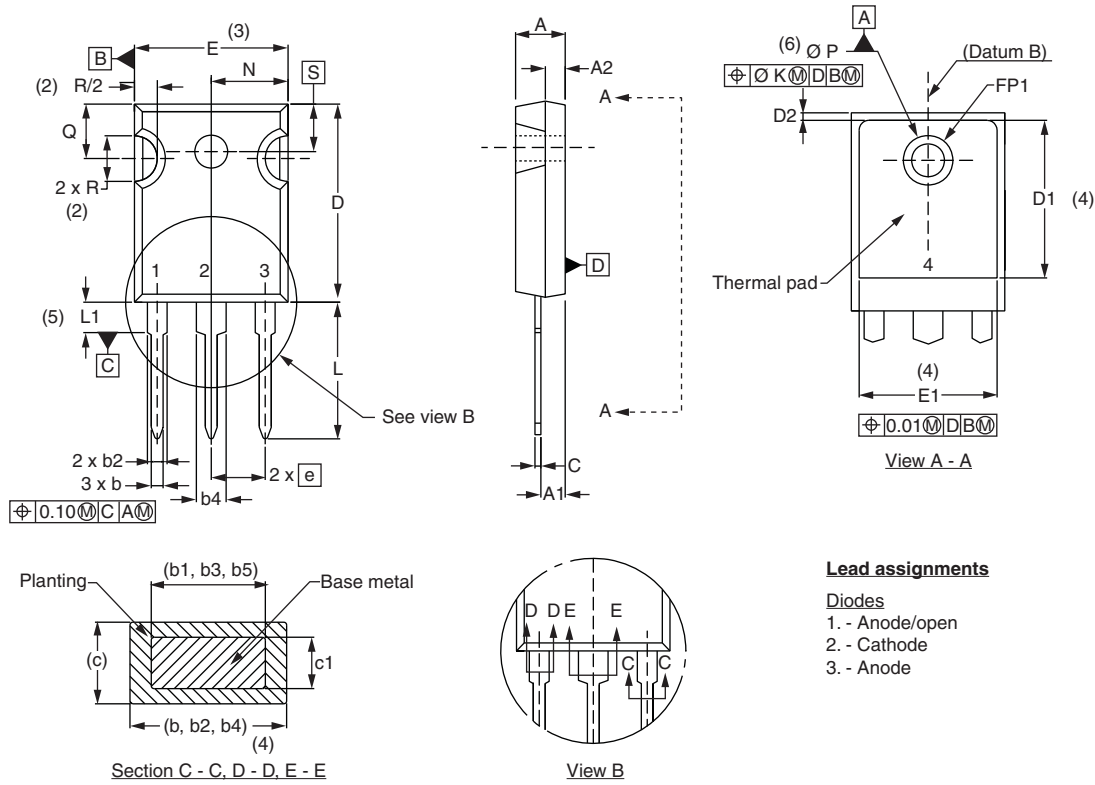
- 1** - Current rating (30 = 30 A)
- 2** - Circuit configuration:
E = Single diode
C = Single diode, 3 pins
- 3** - Package:
P = TO-247AC modified
- 4** - Type of silicon:
F = Fast recovery
- 5** - Voltage code x 100 = V_{RRM}
- 6** -
 - None = Standard production
 - PbF = Lead (Pb)-free

10 = 1000 V
12 = 1200 V

LINKS TO RELATED DOCUMENTS		
Dimensions	TO-247AC modified	www.vishay.com/doc?95253
	TO-247AC	www.vishay.com/doc?95223
Part marking information	TO-247AC modified	www.vishay.com/doc?95255
	TO-247AC	www.vishay.com/doc?95226
SPICE model		www.vishay.com/doc?95184



DIMENSIONS in millimeters and inches



Lead assignments

- Diodes
 1. - Anode/open
 2. - Cathode
 3. - Anode

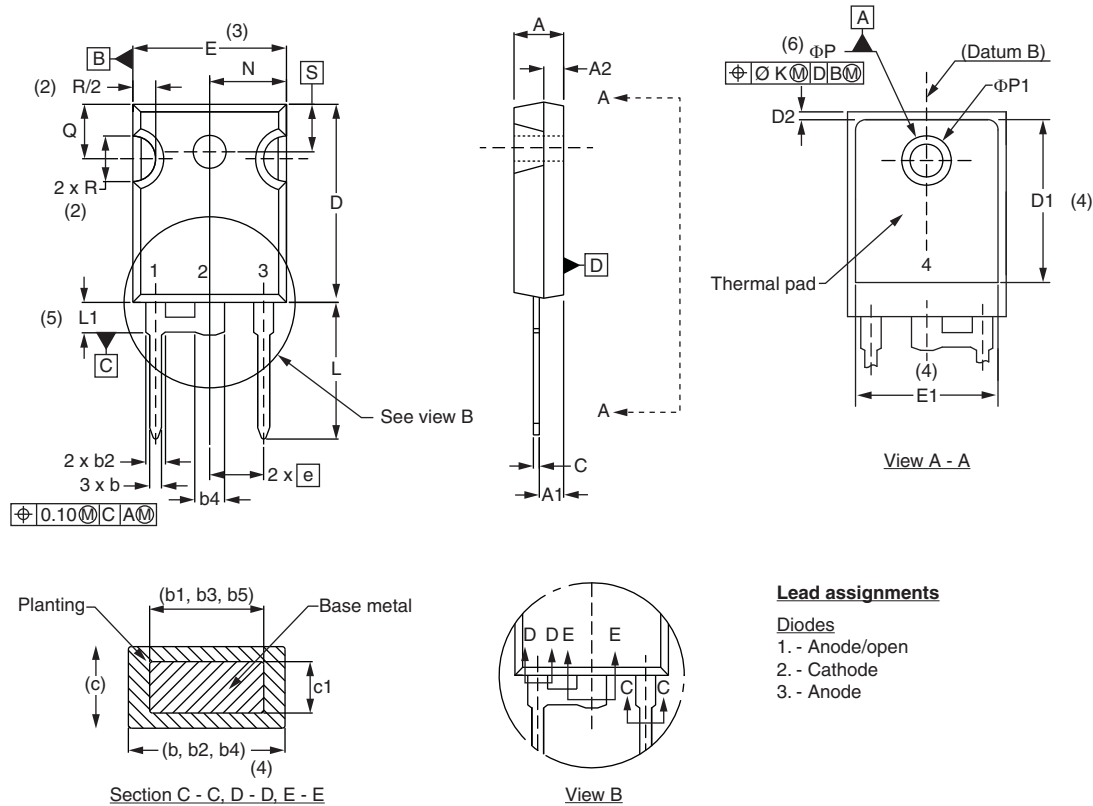
SYMBOL	MILLIMETERS		INCHES		NOTES	SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.			MIN.	MAX.	MIN.	MAX.	
A	4.65	5.31	0.183	0.209		D2	0.51	1.30	0.020	0.051	
A1	2.21	2.59	0.087	0.102		E	15.29	15.87	0.602	0.625	3
A2	1.50	2.49	0.059	0.098		E1	13.72	-	0.540	-	
b	0.99	1.40	0.039	0.055		e	5.46 BSC		0.215 BSC		
b1	0.99	1.35	0.039	0.053		FK	2.54		0.010		
b2	1.65	2.39	0.065	0.094		L	14.20	16.10	0.559	0.634	
b3	1.65	2.37	0.065	0.094		L1	3.71	4.29	0.146	0.169	
b4	2.59	3.43	0.102	0.135		N	7.62 BSC		0.3		
b5	2.59	3.38	0.102	0.133		ΦP	3.56	3.66	0.14	0.144	
c	0.38	0.86	0.015	0.034		ΦP1	-	6.98	-	0.275	
c1	0.38	0.76	0.015	0.030		Q	5.31	5.69	0.209	0.224	
D	19.71	20.70	0.776	0.815	3	R	4.52	5.49	1.78	0.216	
D1	13.08	-	0.515	-	4	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) Ø 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



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	
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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		
ΦK	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		0.3		
ΦP	3.56	3.66	0.14	0.144	
ΦP1	-	6.98	-	0.275	
Q	5.31	5.69	0.209	0.224	
R	4.52	5.49	1.78	0.216	
S	5.51 BSC		0.217 BSC		

Notes

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