



**THE DATASHEET OF
DSEP2X31-04A**



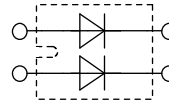
HiPerFRED

High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Parallel legs

$V_{RRM} = 400\text{ V}$
 $I_{FAV} = 2 \times 30\text{ A}$
 $t_{rr} = 30\text{ ns}$

Part number

DSEP2x31-04A



Backside: isolated

E72873

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package:

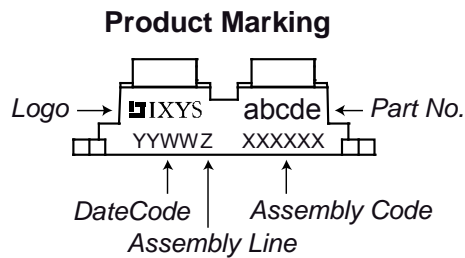
- Housing: SOT-227B (minibloc)
- Industry standard outline
- Cu base plate internal DCB isolated
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

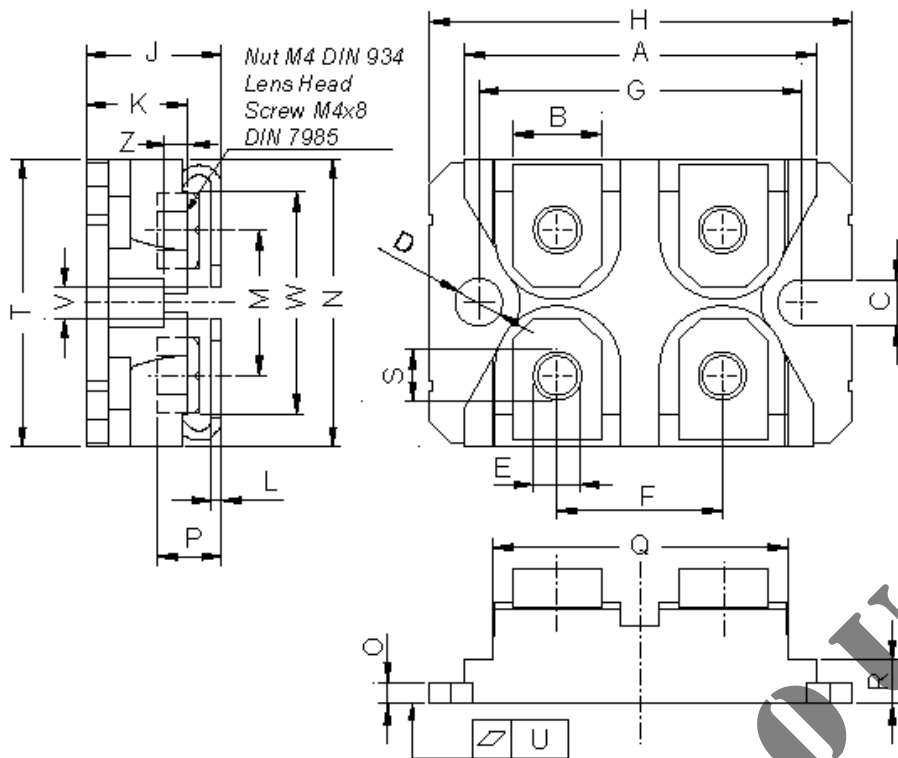
Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
V_{RRM}	max. repetitive reverse voltage				400	V
I_R	reverse current	$V_R = 400\text{ V}$			250	μA
		$V_R = 400\text{ V}$			1	mA
V_F	forward voltage	$I_F = 30\text{ A}$			1.47	V
		$I_F = 60\text{ A}$			1.67	V
		$I_F = 30\text{ A}$			1.07	V
		$I_F = 60\text{ A}$			1.28	V
I_{FAV}	average forward current	rectangular $d = 0.5$			30	A
V_{F0}	threshold voltage				0.88	V
r_F	slope resistance				6.5	m Ω
R_{thJC}	thermal resistance junction to case				1.15	K/W
T_{VJ}	virtual junction temperature		-40		150	$^{\circ}\text{C}$
P_{tot}	total power dissipation				100	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			280	A
I_{RM}	max. reverse recovery current				11	A
		$I_F = 30\text{ A}; V_R = 200\text{ V}$			18	A
t_{rr}	reverse recovery time	$-di_F/dt = 400\text{ A}/\mu\text{s}$			20	ns
					65	ns
C_J	junction capacitance	$V_R = 200\text{ V}; f = 1\text{ MHz}$			44	pF

**Recommended replacement:
 DPF60X400NA, DSEI2x31-04C**

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per terminal			100	A
R_{thCH}	thermal resistance case to heatsink			0.10		K/W
T_{stg}	storage temperature		-40		150	°C
Weight				30		g
M_D	mounting torque		1.1		1.5	Nm
M_T	terminal torque		1.1		1.5	Nm
V_{ISOL}	isolation voltage	t = 1 second	3000			V
		t = 1 minute	2500			V
$d_{Spp/App}$	creepage striking distance on surface through air	terminal to terminal	10.5	3.2		mm
$d_{Spb/Apb}$	creepage striking distance on surface through air	terminal to backside	8.6	6.8		mm



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DSEP2x31-04A	DSEP2x31-04A	Tube	10	479020

Outlines SOT-227B (minibloc)


Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

PHASE-OUT

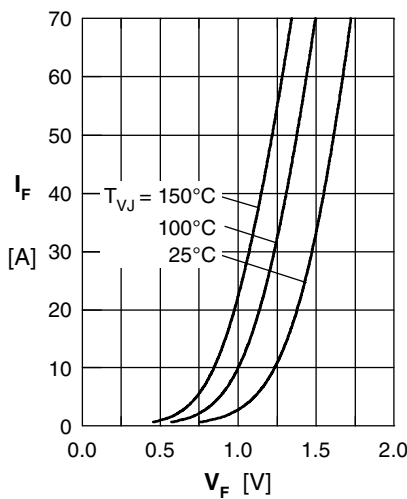


Fig. 1 Forward current I_F vs. V_F

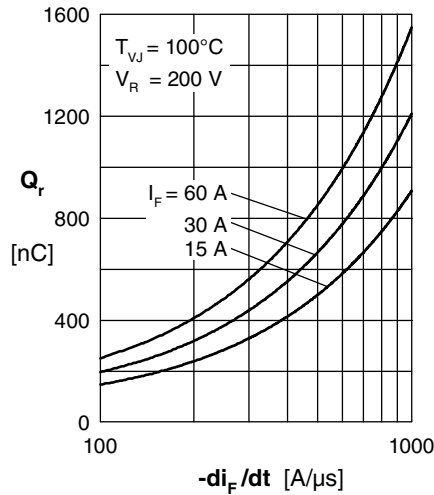


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

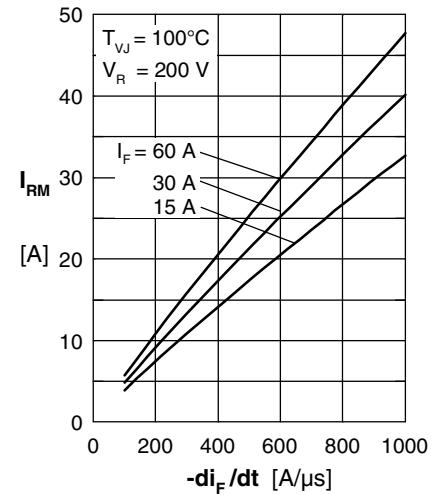


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

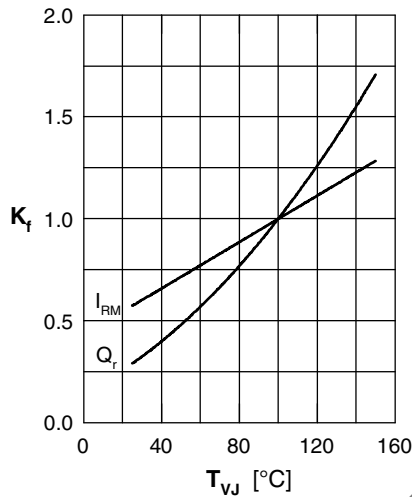


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

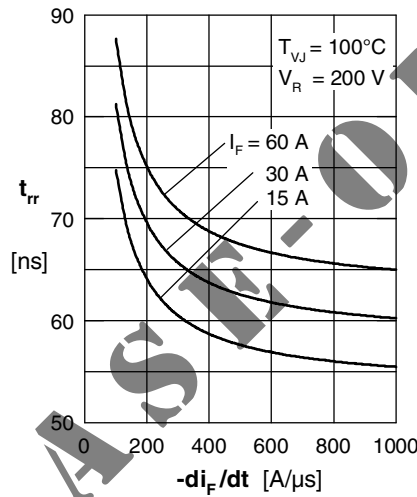


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

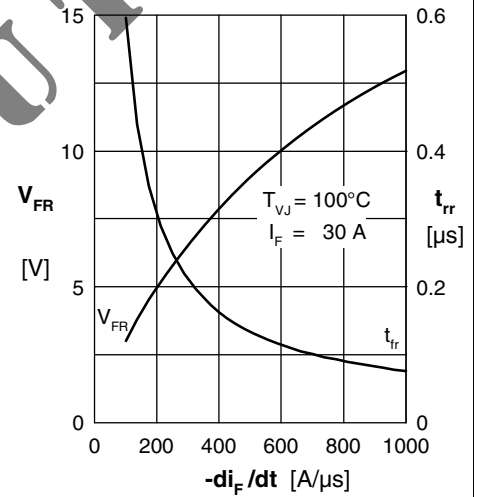


Fig. 6 Peak forward voltage V_{FR} and t_{rr} versus di_F/dt

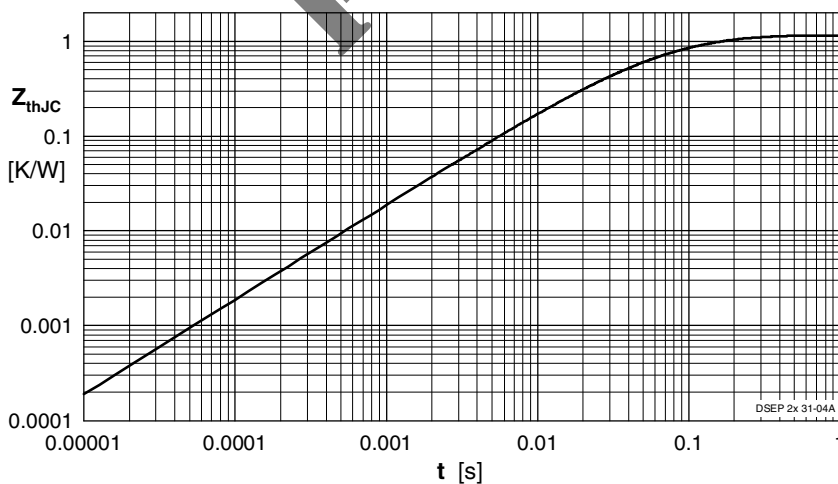




Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.436	0.0055
2	0.482	0.0092
3	0.117	0.0007
4	0.115	0.0418

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