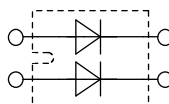


HiPerFRED

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

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:

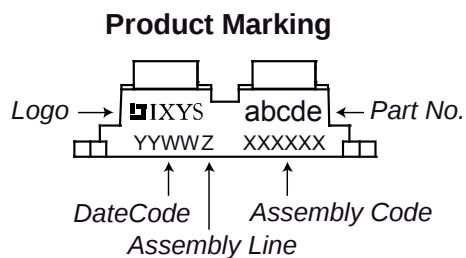
- Housing: SOT-227B (minibloc)
- Industry standard outline
- Cu base plate internal DCB isolated
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage		$T_{VJ} = 25^{\circ}\text{C}$			400	V
I_R	reverse current	$V_R = 400\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			250	μA
		$V_R = 400\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			1	mA
V_F	forward voltage	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.47	V
		$I_F = 60\text{ A}$				1.67	V
		$I_F = 30\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			1.07	V
		$I_F = 60\text{ A}$				1.28	V
I_{FAV}	average forward current	rectangular $d = 0.5$	$T_C = 105^{\circ}\text{C}$			30	A
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}\text{C}$			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		$T_C = 25^{\circ}\text{C}$			100	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			280	A
I_{RM}	max. reverse recovery current		$T_{VJ} = 25^{\circ}\text{C}$		11		A
		$I_F = 30\text{ A}; V_R = 200\text{ V}$	$T_{VJ} = 100^{\circ}\text{C}$		18		A
t_{rr}	reverse recovery time	$-di_F/dt = 400\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}\text{C}$		20		ns
			$T_{VJ} = 100^{\circ}\text{C}$		65		ns
C_J	junction capacitance	$V_R = 200\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		44		pF

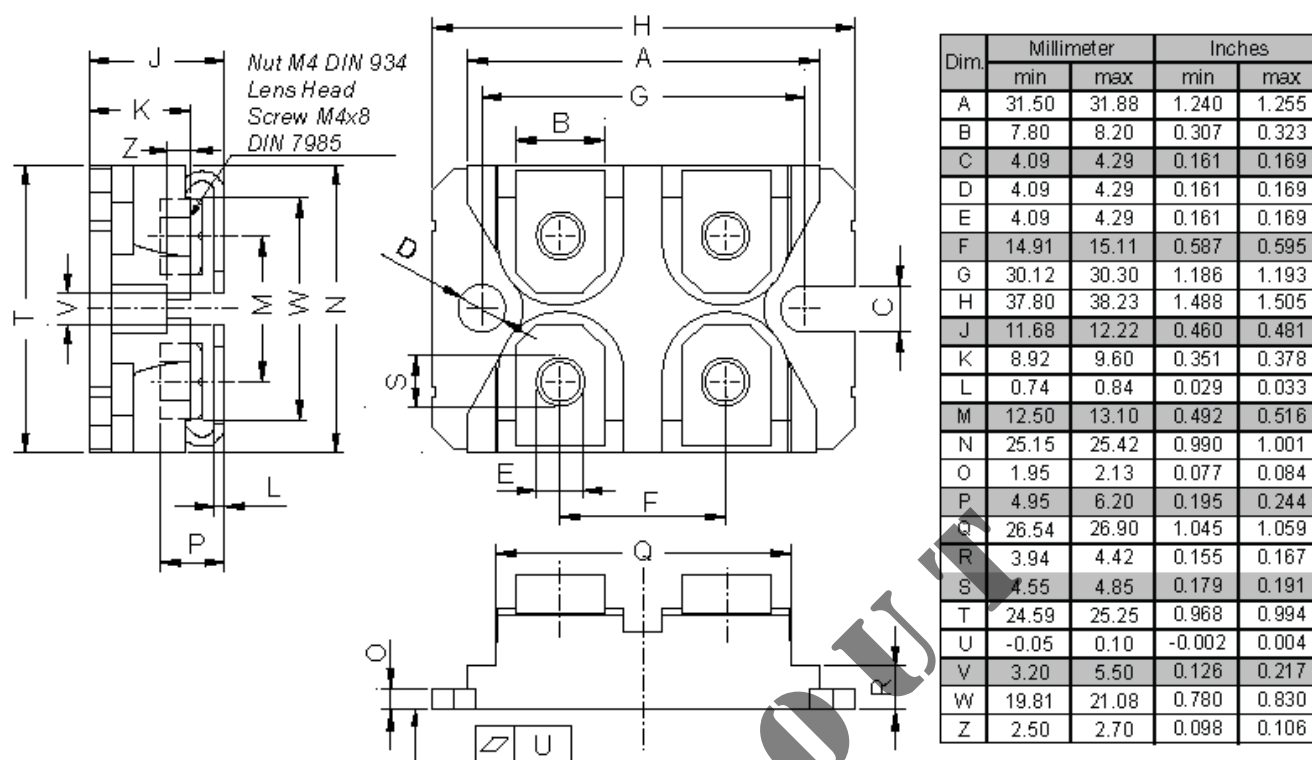
Recommended replacement:
DPF60X400NA, DSEI2x31-04C

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)



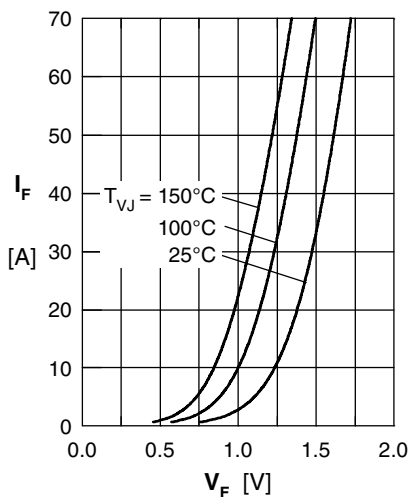


Fig. 1 Forward current I_F vs. V_F

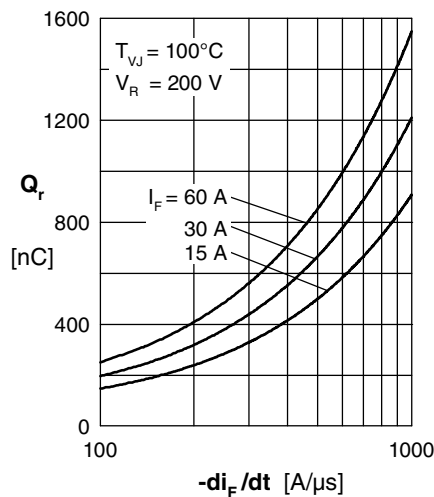


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

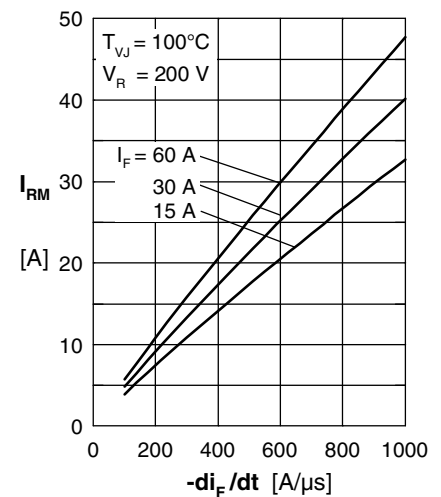


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

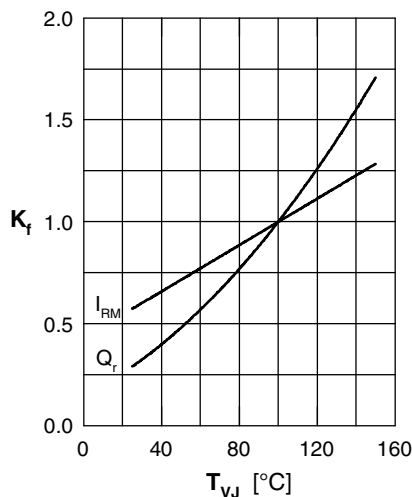


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

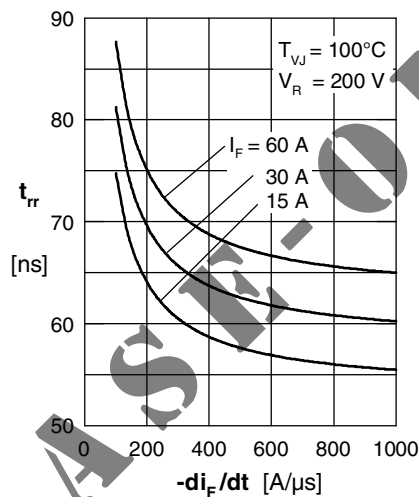


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

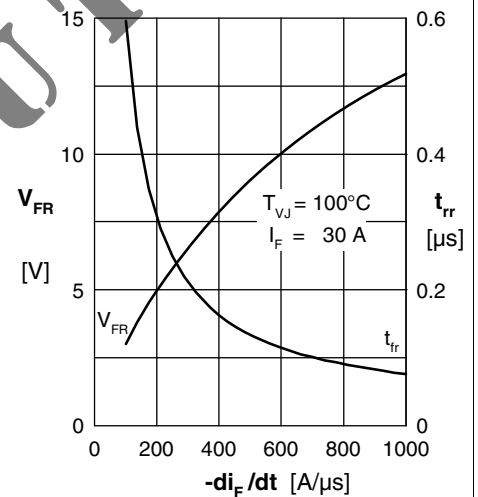


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

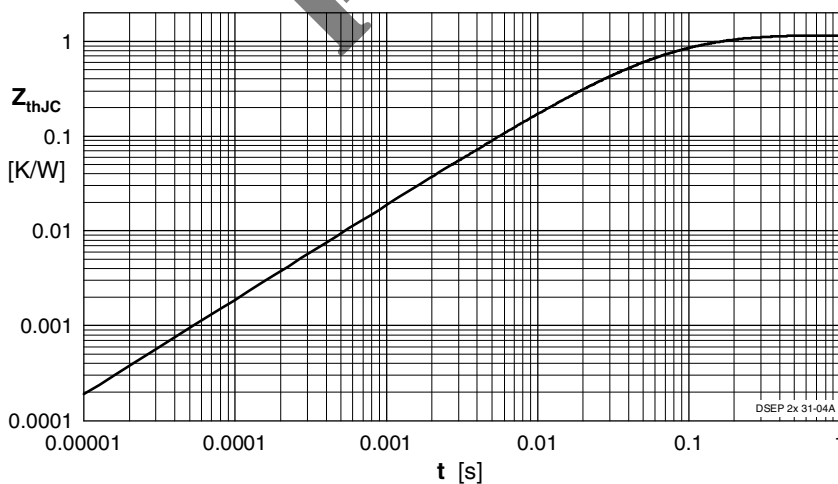


Fig. 7 Transient thermal resistance junction to case

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