

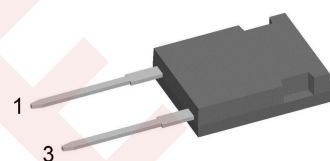
HiPerDynFRED

V_{RRM}	=	1200 V
I_{FAV}	=	15 A
t_{rr}	=	15 ns

High Performance Dynamic Fast Recovery Diode
 Extreme Low Loss and Soft Recovery
 Single Diode

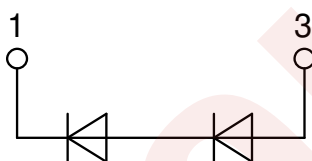
Part number

DSEP15-12CR



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
- 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: ISOPLUS247

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

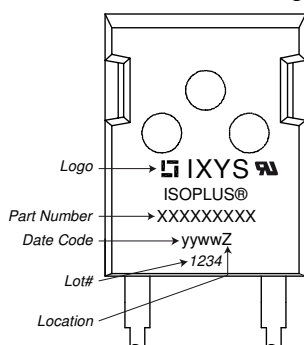
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Fast Diode				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V _{RSM}	max. non-repetitive reverse blocking voltage	T _{VJ} = 25°C				1200	V	
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				1200	V	
I _R	reverse current, drain current	V _R = 1200 V	T _{VJ} = 25°C			100	μA	
		V _R = 1200 V	T _{VJ} = 150°C			0.5	mA	
V _F	forward voltage drop	I _F = 15 A	T _{VJ} = 25°C			4.04	V	
		I _F = 30 A				4.45	V	
		I _F = 15 A	T _{VJ} = 150°C			2.67	V	
		I _F = 30 A				3.10	V	
I _{FAV}	average forward current	T _C = 135°C rectangular d = 0.5	T _{VJ} = 175°C			15	A	
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 175°C		1.82	V	
r _F	slope resistance					29.8	mΩ	
R _{thJC}	thermal resistance junction to case					1	K/W	
R _{thCH}	thermal resistance case to heatsink				0.3		K/W	
P _{tot}	total power dissipation	T _C = 25°C				150	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		110	A	
C _J	junction capacitance	V _R = 400 V f = 1 MHz		T _{VJ} = 25°C	9		pF	
I _{RM}	max. reverse recovery current	} I _F = 15 A; V _R = 800 V -di _F /dt = 600 A/μs		T _{VJ} = 25 °C	10		A	
				T _{VJ} = 125 °C	15		A	
t _{rr}	reverse recovery time			T _{VJ} = 25 °C	15		ns	
				T _{VJ} = 125 °C	110		ns	

Package ISOPLUS247				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				70	A
T_{VJ}	virtual junction temperature			-55		175	°C
T_{op}	operation temperature			-55		150	°C
T_{stg}	storage temperature			-55		150	°C
Weight					6		g
F_C	mounting force with clip			20		120	N
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to terminal		5.4			mm
$d_{Spb/Apb}$		terminal to backside		4.1			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3600			V
		t = 1 minute		3000			V

Product Marking



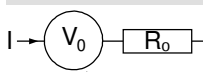
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEP15-12CR	DSEP15-12CR	Tube	30	482137

Similar Part	Package	Voltage class
DSEP12-12A	TO-220AC (2)	1200
DSEP12-12B	TO-220AC (2)	1200

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175^{\circ}\text{C}$



Fast Diode

$V_{0\max}$ threshold voltage

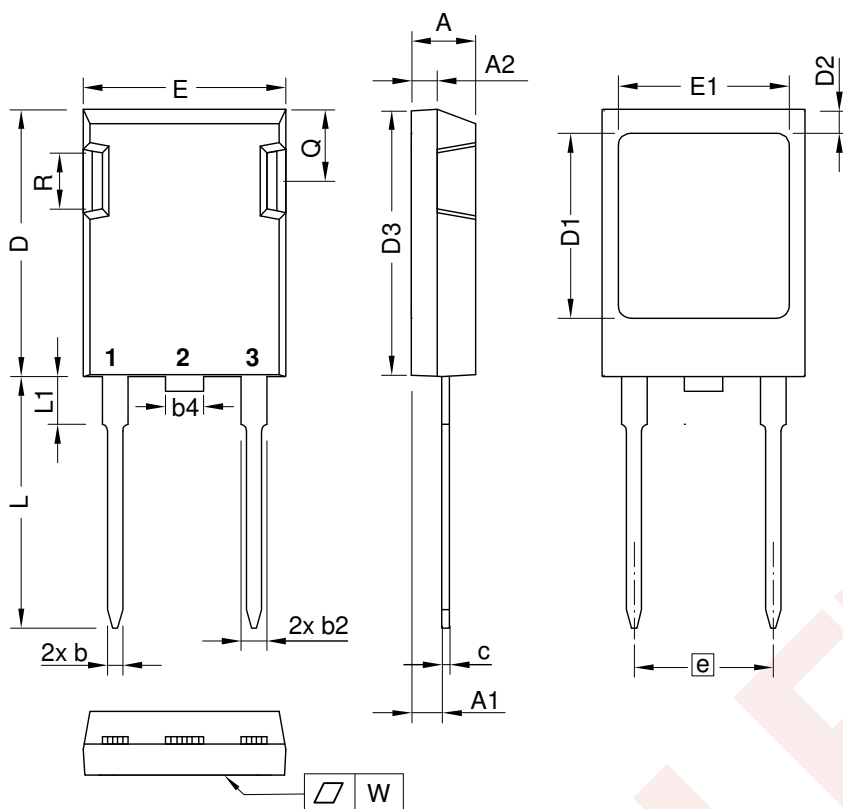
1.82

V

$R_{0\max}$ slope resistance *

23.5

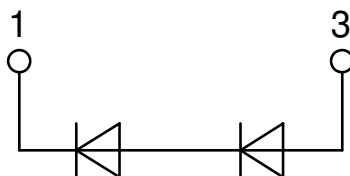
mΩ

Outlines ISOPLUS247


Dim.	Millimeter		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b2	1.91	2.20	0.075	0.087
b4	2.92	3.24	0.115	0.128
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
D1	15.75	16.26	0.620	0.640
D2	1.65	2.15	0.065	0.085
D3	20.30	20.70	0.799	0.815
E	15.75	16.13	0.620	0.635
E1	13.21	13.72	0.520	0.540
e	10.90	BSC	0.429	BSC
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
Q	5.59	6.20	0.220	0.244
R	4.25	5.50	0.167	0.217
W	-	0.10	-	0.004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite
 The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und L_{max} .
 This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except L_{max} .



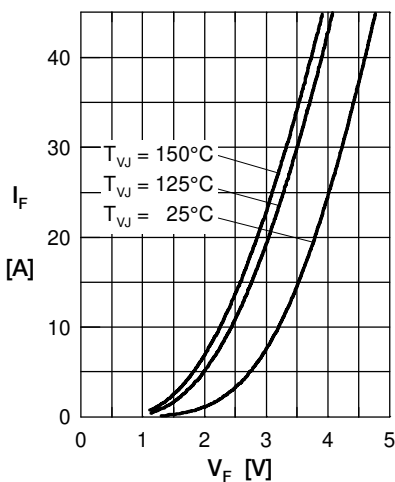
Fast Diode


Fig. 1 Forward current I_F versus V_F

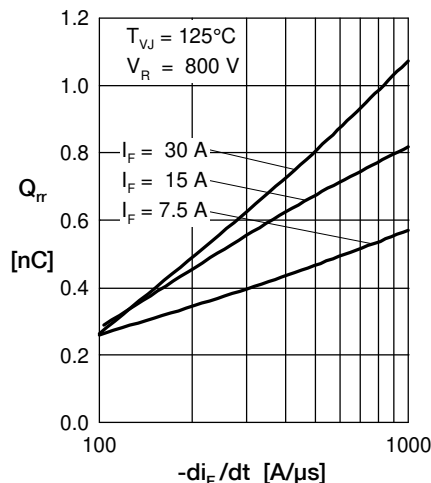


Fig. 2 Typ. reverse recov charge Q_{rr} versus $-di_F/dt$

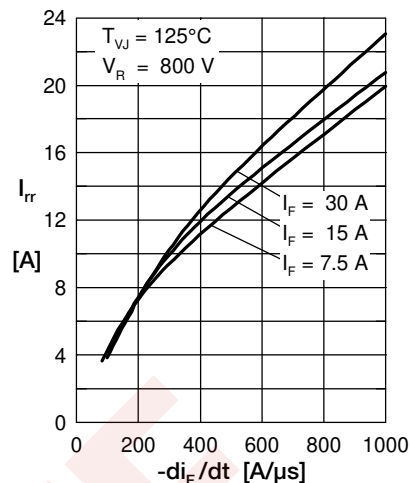


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

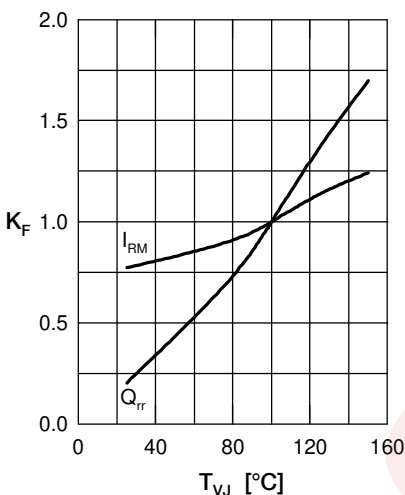


Fig. 4 Typ. dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

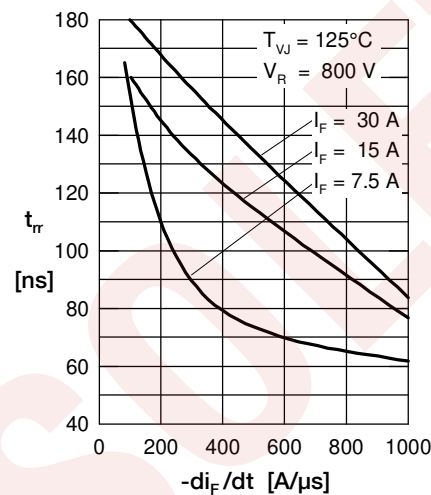


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

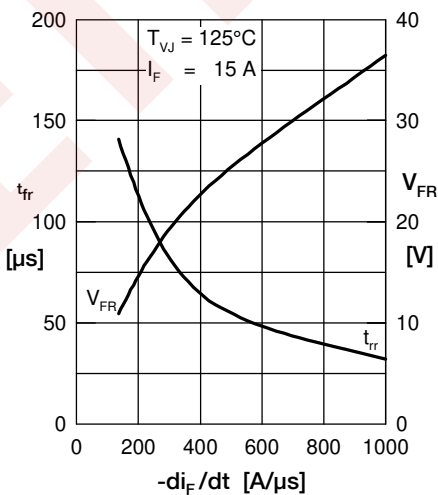


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

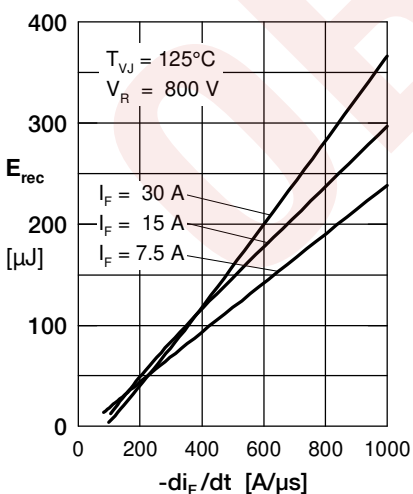


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

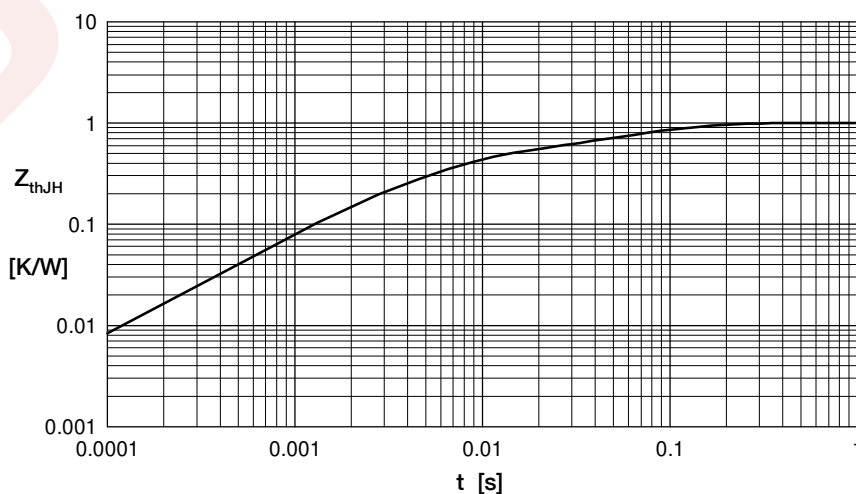


Fig. 8 Transient thermal resistance junction to case