

HiPerFRED

$$V_{RRM} = 600\text{ V}$$

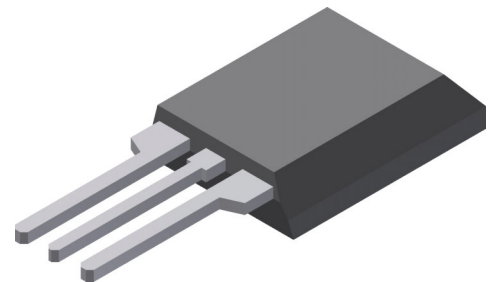
$$I_{FAV} = 2 \times 30\text{ A}$$

$$t_{rr} = 25\text{ ns}$$

High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Common Cathode

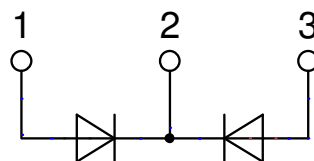
Part number

DSEC59-06BC



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: ISOPLUS220

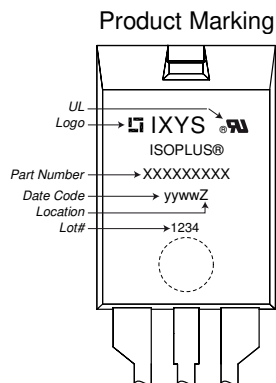
- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

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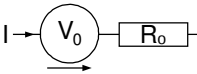
Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V _{RSM}	max. non-repetitive reverse blocking voltage	T _{VJ} = 25°C				600	V
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				600	V
I _R	reverse current, drain current	V _R = 600 V	T _{VJ} = 25°C			250	μA
		V _R = 600 V	T _{VJ} = 150°C			2	mA
V _F	forward voltage drop	I _F = 30 A	T _{VJ} = 25°C			2,51	V
		I _F = 60 A				3,19	V
		I _F = 30 A	T _{VJ} = 150°C			1,61	V
		I _F = 60 A				2,24	V
I _{FAV}	average forward current	T _C = 110°C rectangular d = 0.5	T _{VJ} = 175°C			30	A
V _{F0}	threshold voltage	} for power loss calculation only		T _{VJ} = 175°C		0,84	V
r _F	slope resistance					19,6	mΩ
R _{thJC}	thermal resistance junction to case					1,1	K/W
R _{thCH}	thermal resistance case to heatsink				0,5		K/W
P _{tot}	total power dissipation	T _C = 25°C				135	W
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		250	A
C _J	junction capacitance	V _R = 400 V f = 1 MHz		T _{VJ} = 25°C	26		pF
I _{RM}	max. reverse recovery current	} I _F = 30 A; V _R = 300 V -di _F /dt = 200 A/μs		T _{VJ} = 25°C	2,5		A
t _{rr}	reverse recovery time			T _{VJ} = 100°C	4,5		A
				T _{VJ} = 25°C	25		ns
				T _{VJ} = 100°C	70		ns

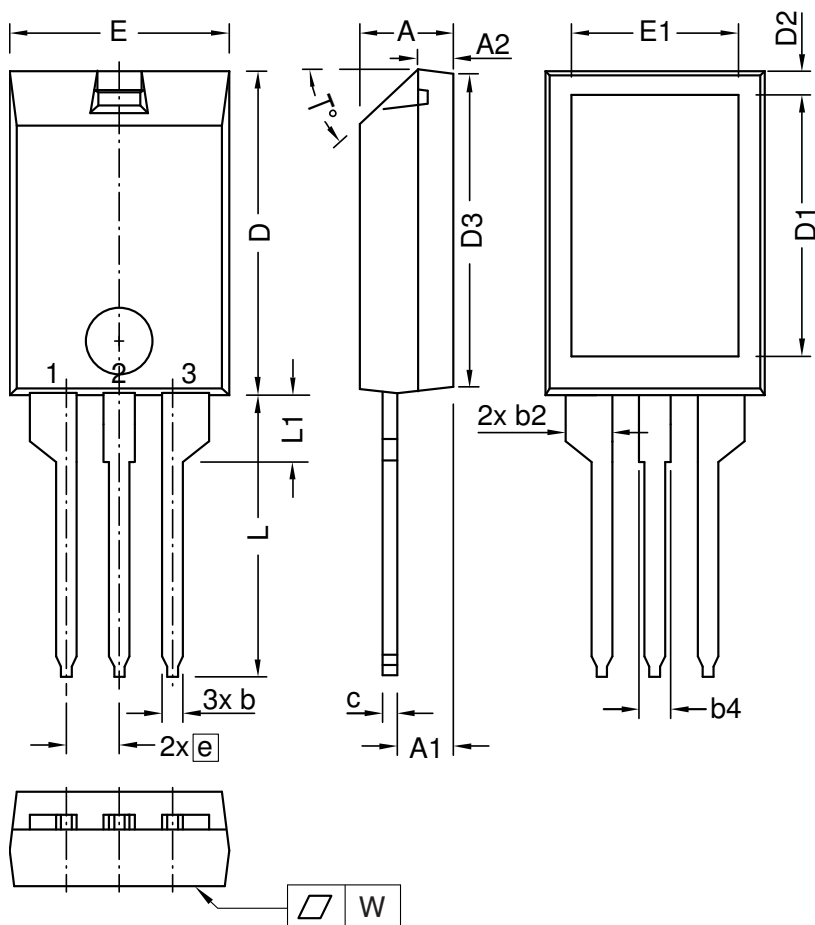
Package ISOPLUS220				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal ¹⁾				35	A
T _{VJ}	virtual junction temperature			-55		175	°C
T _{op}	operation temperature			-55		150	°C
T _{stg}	storage temperature			-55		150	°C
Weight					2		g
F _C	mounting force with clip			20		60	N
d _{Spp/App}	creepage distance on surface / striking distance through air	terminal to terminal		1,0			mm
d _{Spb/Apb}		terminal to backside		3,0			mm
V _{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; I _{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEC59-06BC	DSEC59-06BC	Tube	50	505124

Similar Part	Package	Voltage class
DSEC60-06B	TO-247AD (3)	600
DSEC60-06A	TO-247AD (3)	600
DHG60C600HB	TO-247AD (3)	600

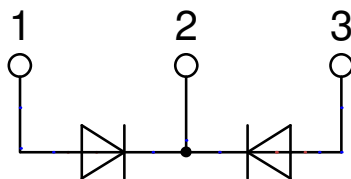
Equivalent Circuits for Simulation			* on die level	$T_{VJ} = 175^{\circ}\text{C}$
		Fast Diode		
$V_{0\text{ max}}$	threshold voltage	0,84		V
$R_{0\text{ max}}$	slope resistance *	16,4		mΩ

Outlines ISOPLUS220


Dim.	Millimeters		Inches	
	min	max	min	max
A	4.00	5.00	0.157	0.197
A1	2.50	3.00	0.098	0.118
A2	1.60	1.80	0.063	0.071
b	0.90	1.30	0.035	0.051
b2	2.35	2.55	0.093	0.100
b4	1.25	1.65	0.049	0.065
c	0.70	1.00	0.028	0.039
D	15.00	16.00	0.591	0.630
D1	12.00	13.00	0.472	0.512
D2	1.10	1.50	0.043	0.059
D3	14.90	15.50	0.587	0.610
E	10.00	11.00	0.394	0.433
E1	7.50	8.50	0.295	0.335
e	2.54 BSC		0.100 BSC	
L	13.00	14.50	0.512	0.571
L1	3.00	3.50	0.118	0.138
T°	42.5	47.5		
W	-	0.1	-	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-273 gemäß JEDEC außer D und D1.
 This drawing will meet all dimensions requirement of JEDEC outline TO-273 except D and D1.



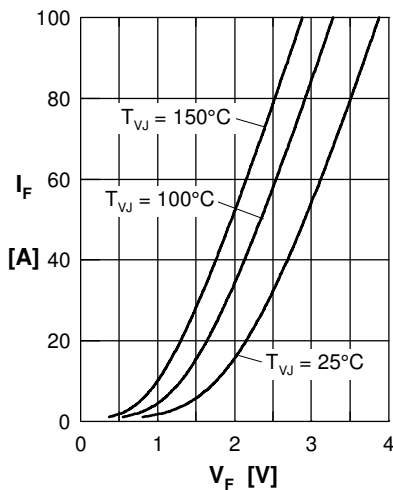
Fast Diode


Fig. 1 Forward current
 I_F versus V_F

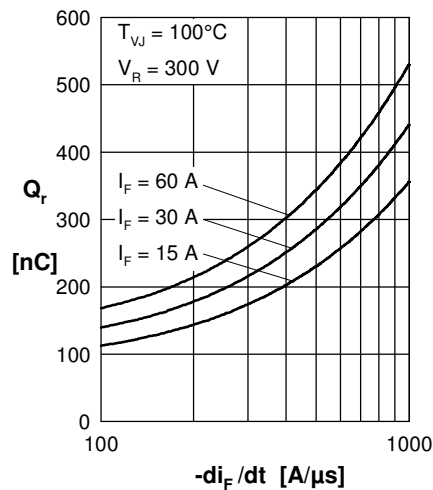


Fig. 2 Typ. reverse recov. charge
 Q_r versus $-di_F/dt$

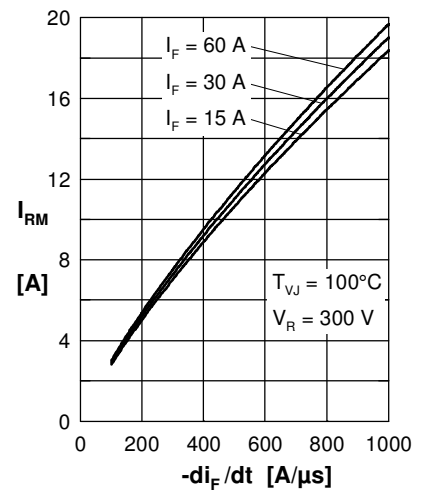


Fig. 3 Typ. peak reverse current
 I_{RM} versus $-di_F/dt$

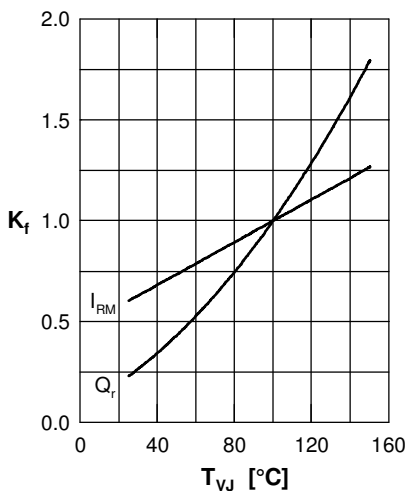


Fig. 4 Dynamic parameters
 Q_r , I_{RM} versus T_{VJ}

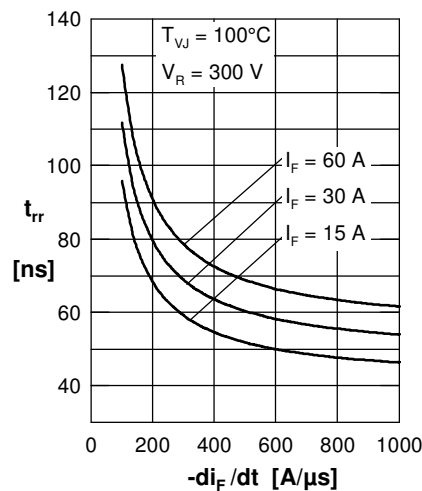


Fig. 5 Typ. recovery time
 t_{rr} versus $-di_F/dt$

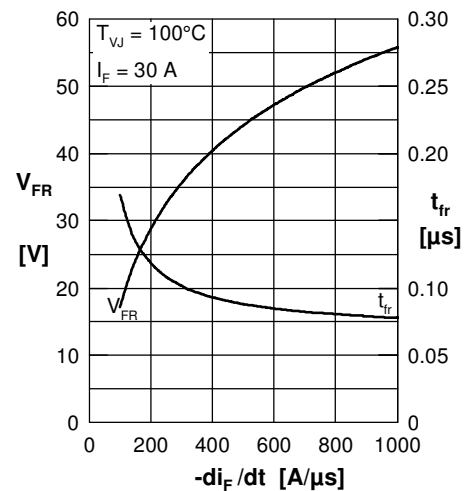


Fig. 6 Typ. peak forward voltage
 V_{FR} and t_{fr} versus di_F/dt

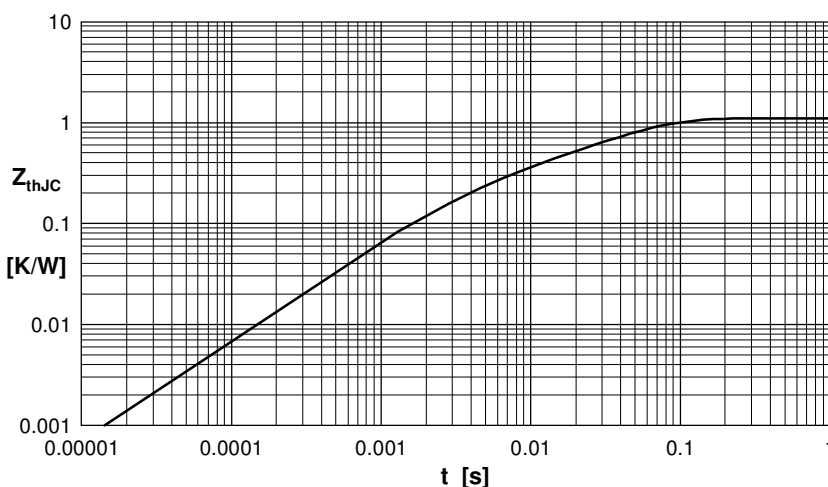


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.030	0.0005
2	0.100	0.0050
3	0.360	0.0200
4	0.610	0.0500