

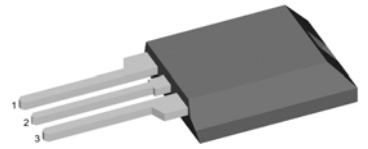
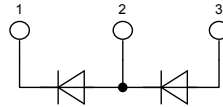
HiPerFRED

High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Phase leg

$V_{RRM} = 600\text{ V}$
 $I_{FAV} = 15\text{ A}$
 $t_{rr} = 25\text{ ns}$

Part number

DSEE15-12CC



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)

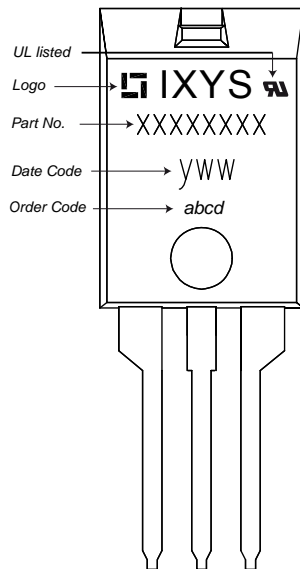
Package:

- Housing: ISOPLUS220
- Industry standard outline
- DCB isolated backside
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

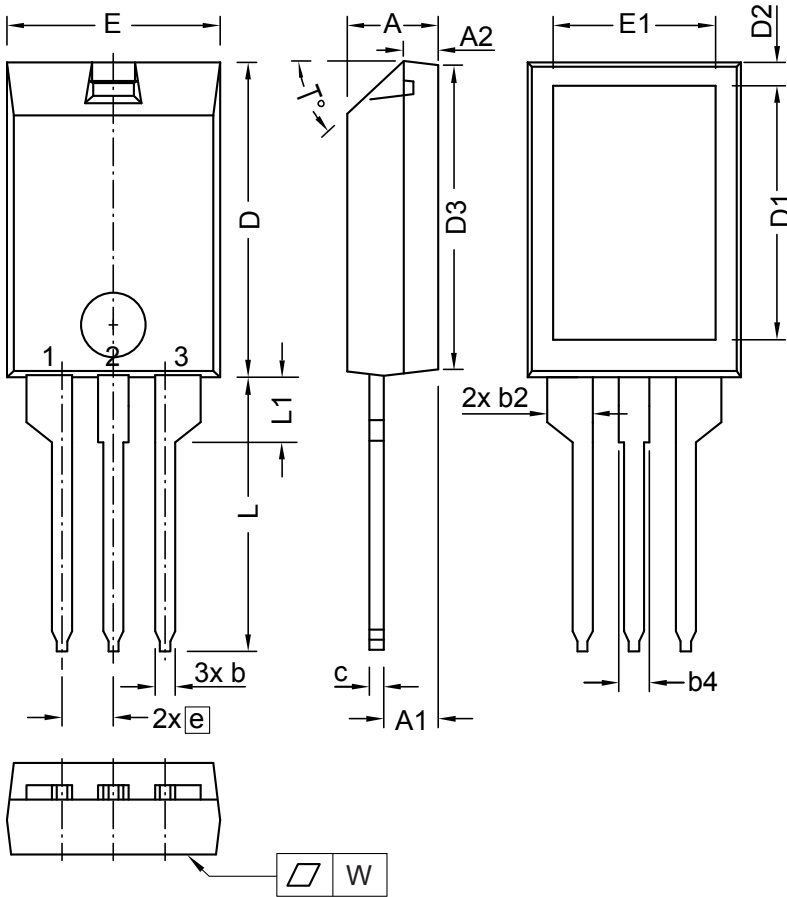
Ratings

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
V_{RRM}	max. repetitive reverse voltage				600	V
I_R	reverse current	$V_R = 600\text{ V}$			100	μA
		$V_R = 600\text{ V}$			0.5	mA
V_F	forward voltage	$I_F = 15\text{ A}$			2.04	V
		$I_F = 30\text{ A}$			2.25	V
		$I_F = 15\text{ A}$			1.35	V
		$I_F = 30\text{ A}$			1.59	V
I_{FAV}	average forward current	rectangular $d = 0.5$			15	A
V_{F0}	threshold voltage	} for power loss calculation only			0.99	V
r_F	slope resistance				15	m Ω
R_{thJC}	thermal resistance junction to case				1.60	K/W
T_{VJ}	virtual junction temperature		-55		175	$^{\circ}\text{C}$
P_{tot}	total power dissipation				95	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			110	A
I_{RM}	max. reverse recovery current				11	A
		$I_F = 15\text{ A}; V_R = 300\text{ V}$			19	A
t_{rr}	reverse recovery time	$-di_F/dt = 600\text{ A}/\mu\text{s}$			25	ns
					83	ns
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$			12	pF

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per terminal			35	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
T_{stg}	storage temperature		-55		150	°C
Weight				2		g
F_C	mounting force with clip		20		60	N
V_{ISOL}	isolation voltage	t = 1 second	3600			V
		t = 1 minute	3000			V
$d_{Spp/App}$	creepage striking distance on surface through air	terminal to terminal	1.0			mm
$d_{Spb/Apb}$	creepage striking distance on surface through air	terminal to backside	3.0			mm

Product Marking


Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DSEE15-12CC	DSEE15-12CC	Tube	50	500725

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. <math>< 0.04\text{ mm}</math> über der Kunststoffoberfläche der Bauteilunterseite
 The convex bow of substrate is typ. <math>< 0.04\text{ mm}</math> 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.

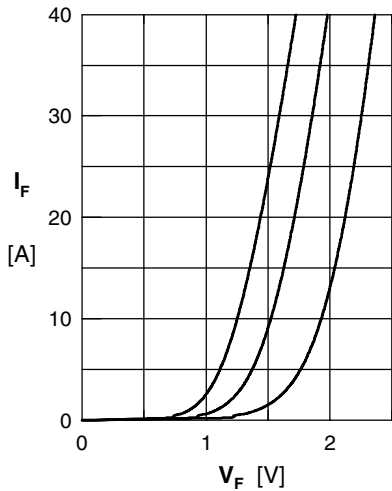


Fig. 1 Forward current I_F vs. V_F

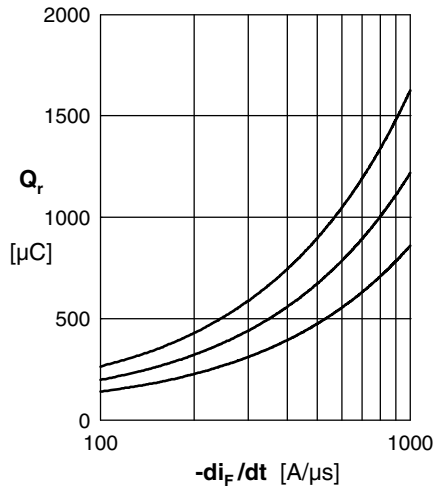


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

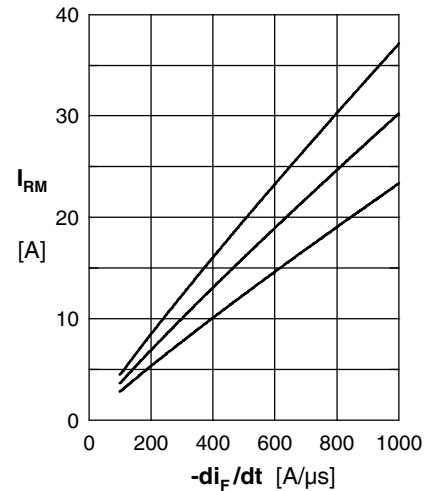


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

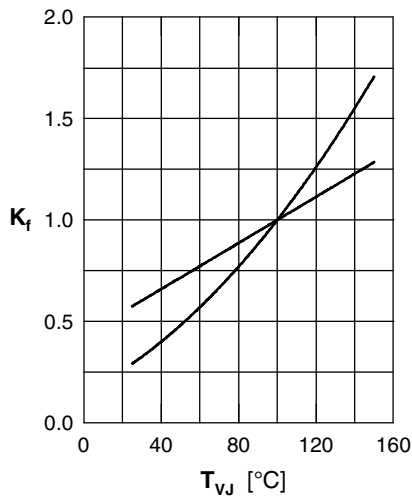


Fig. 4 Dynamic parameters K_f , I_{RM} versus T_{VJ}

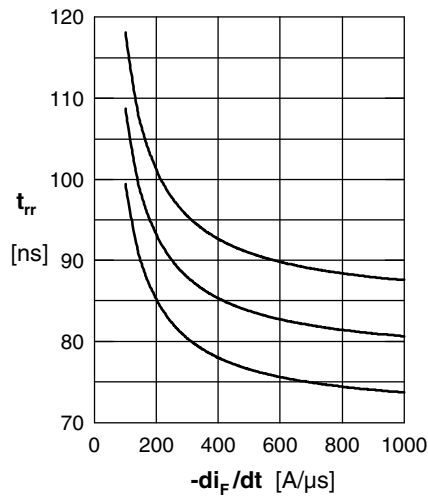


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

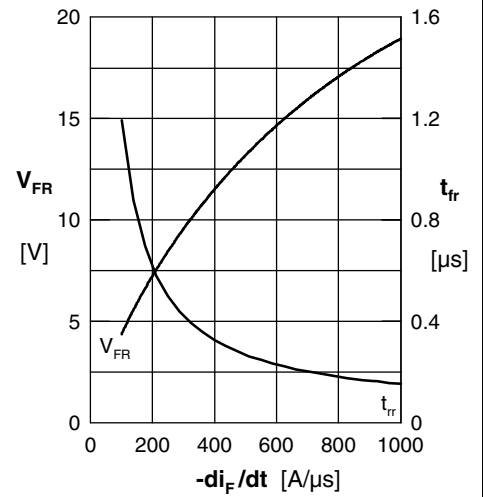


Fig. 6 Typ. peak forward voltage V_{FR} and typ. forward recovery time t_{fr} versus di_F/dt

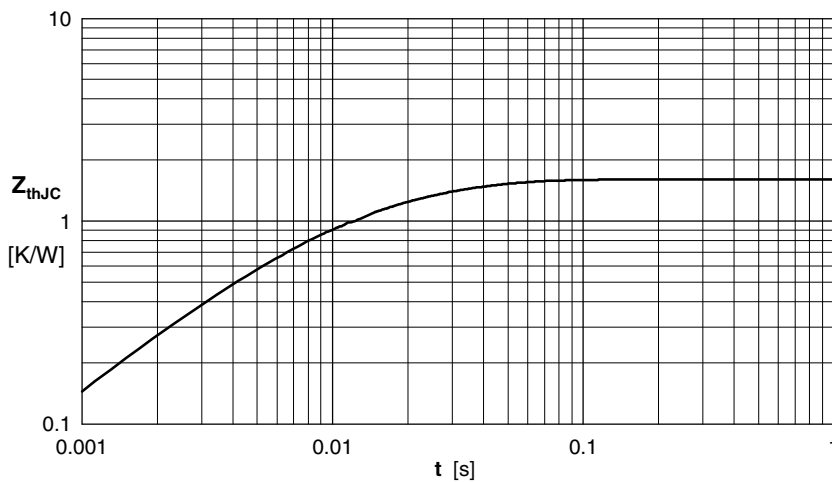


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.908	0.0052
2	0.350	0.0003
3	0.342	0.017