Sonic Fast Recovery Diode

|		
V_{RRM}	=	2 x 1800 V
I_{FAV}	=	60 A
t_{rr}	=	230 ns

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

Part number

DHH55-36N1F

1
3
5
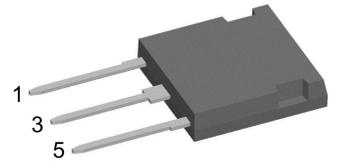
Backside: Isolated

E72873

1   3   5
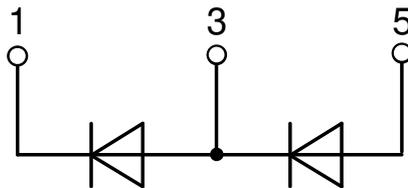
Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power 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: i4-Pac
- Isolation Voltage: 3000 V~
- Industry convenient 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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evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for,
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Fast Diode

<div align="right">Ratings</div>

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage		$T_{VJ} = 25°C$			1800	V
V_{RRM}	max. repetitive reverse blocking voltage		$T_{VJ} = 25°C$			1800	V
I_R	reverse current, drain current	$V_R = 1800$ V	$T_{VJ} = 25°C$			200	µA
		$V_R = 1800$ V	$T_{VJ} = 125°C$			2	mA
V_F	forward voltage drop	$I_F = 60$ A	$T_{VJ} = 25°C$			2.04	V
		$I_F = 120$ A				2.57	V
		$I_F = 60$ A	$T_{VJ} = 125°C$			2.03	V
		$I_F = 120$ A				2.73	V
I_{FAV}	average forward current	$T_C = 50°C$ rectangular $d = 0.5$	$T_{VJ} = 150°C$			60	A
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150°C$			1.28	V
r_F	slope resistance					12	mΩ
R_{thJC}	thermal resistance junction to case					0.6	K/W
R_{thCH}	thermal resistance case to heatsink				0.2		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			210	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; $V_R = 0$ V	$T_{VJ} = 45°C$			700	A
C_J	junction capacitance	$V_R = 1200$ V f = 1 MHz	$T_{VJ} = 25°C$		28		pF
I_{RM}	max. reverse recovery current		$T_{VJ} = 25°C$		60		A
		$I_F = 60$ A; $V_R = 1200$ V	$T_{VJ} = 100°C$		70		A
t_{rr}	reverse recovery time	$-di_F/dt = 800$ A/µs	$T_{VJ} = 25°C$		230		ns
			$T_{VJ} = 100°C$		350		ns

Package   i4-Pac

Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				70	A
T_{VJ}	virtual junction temperature			-55		150	°C
T_{op}	operation temperature			-55		125	°C
T_{stg}	storage temperature			-55		150	°C
Weight					5.5		g
F_C	mounting force with clip			20		120	N
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal		5.5			mm
$d_{Spb/Apb}$		terminal to backside		5.1			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

Product Marking

	UL Logo	
	IXYS ® **RU**	
	ISOPLUS®	
Part Number →	XXXXXXXXX	
Date Code →	yywwZ 1234	
Location →		
Lot# →		
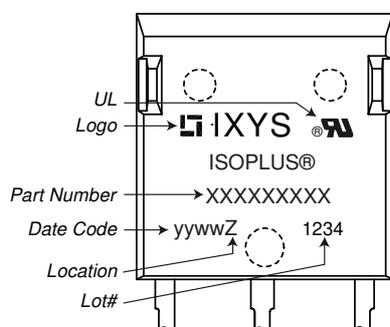
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHH55-36N1F	DHH55-36N1F	Tube	25	500173

Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 150°C$
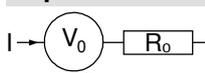
		Fast Diode	
$V_{0\ max}$	threshold voltage	1.28	V
$R_{0\ max}$	slope resistance *	9.5	mΩ

Outlines   i4-Pac
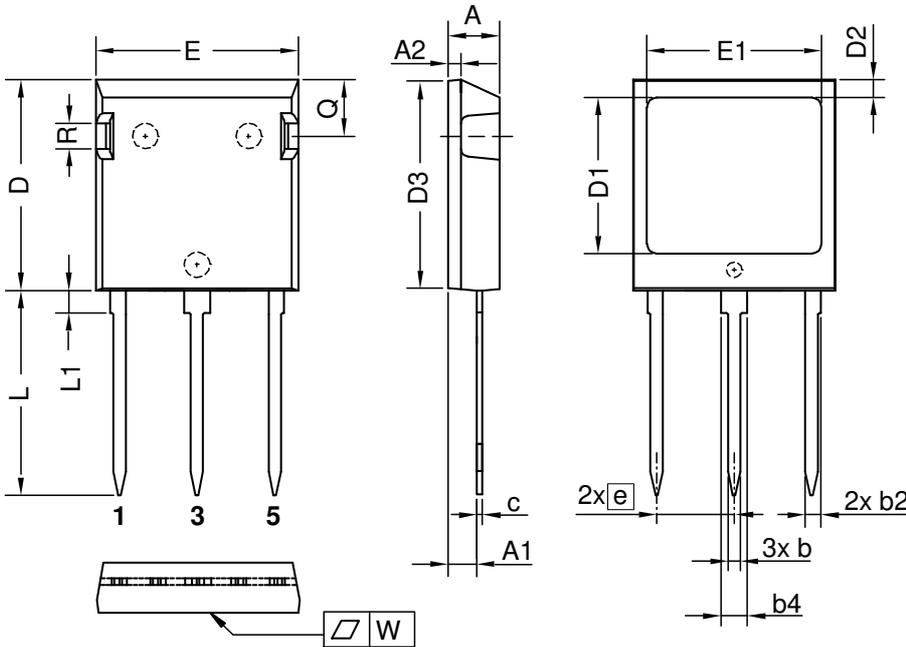
Dim.	Millimeter min	Millimeter max	Inches min	Inches max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4	2.54	2.79	0.100	0.110
c	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
D3	20.30	20.70	0.799	0.815
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	7.62 BSC		0.300 BSC	
L	19.81	21.34	0.780	0.840
L1	2.11	2.59	0.083	0.102
Q	5.33	6.20	0.210	0.244
R	2.54	4.57	0.100	0.180
W	-	0.10	-	0.004

Die konvexe Form des Substrates ist typ. < 0.05 mm über der Kunststoffoberfläche der Bauteilunterseite
The convex bow of substrate is typ. < 0.05 mm over plastic surface level of device bottom side
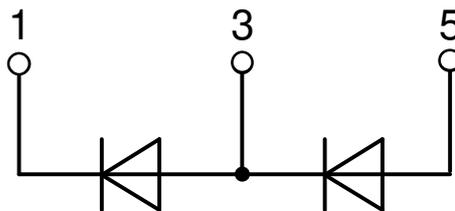
Fast Diode
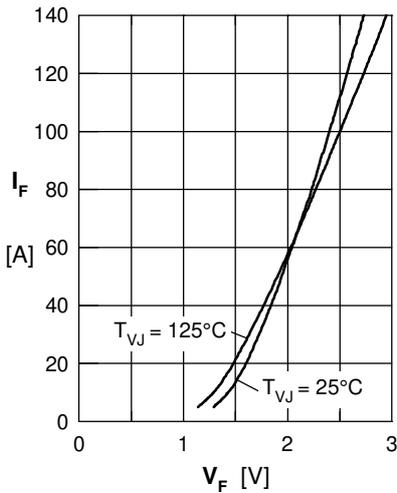
Fig. 1 Typ. rward current
I_F versus V_F
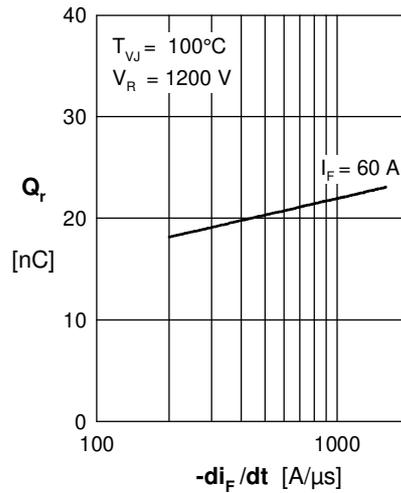
Fig. 2 Typ. reverse recovery charge
Q_r versus $-di_F/dt$
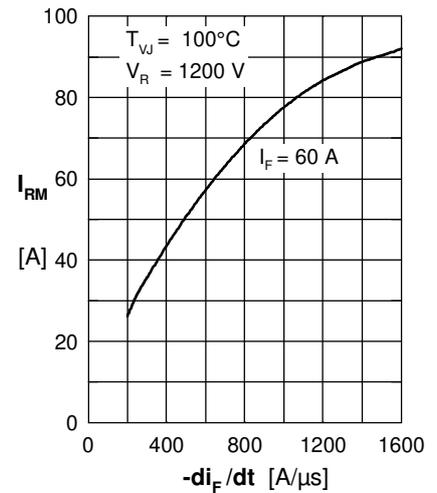
Fig. 3 Typ. peak reverse current
I_{RM} versus $-di_F/dt$
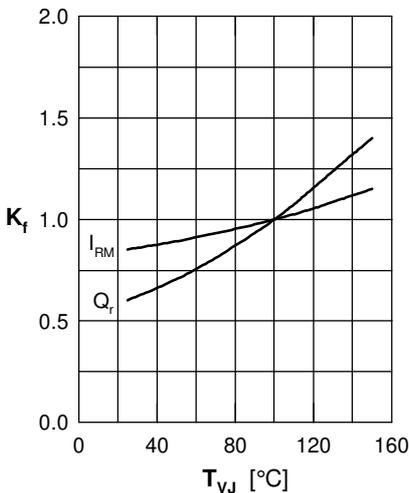
Fig. 4 Dynamic parameters
Q_r, I_{RM} versus T_{VJ}
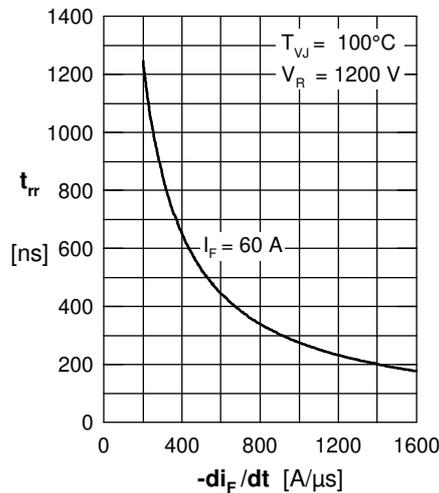
Fig. 5 Typ. recovery time
t_{rr} versus $-di_F/dt$
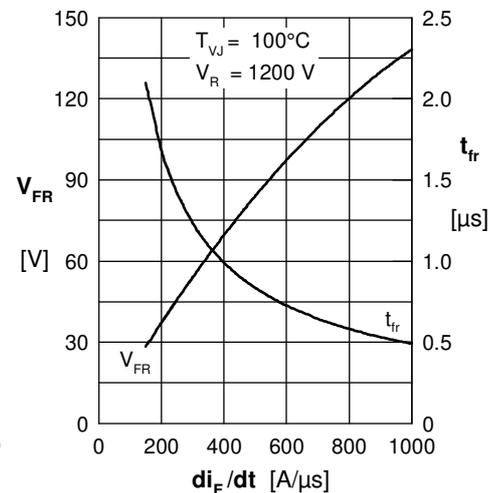
Fig. 6 Typ. peak forward voltage
V_{FR} & typ. forward recovery
time t_{fr} versus di_F/dt
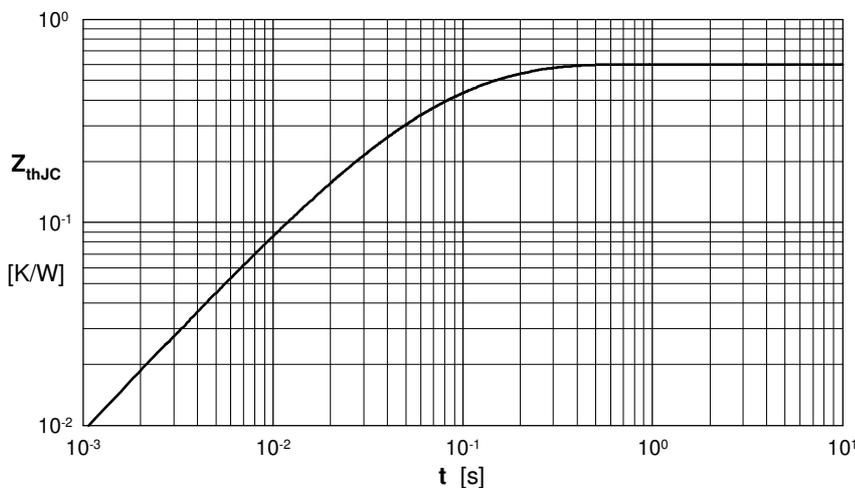
Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.212	0.0055
2	0.248	0.0092
3	0.063	0.0007
4	0.077	0.0391

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