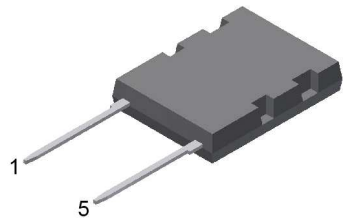
High Voltage Standard Rectifier

V_{RRM}	=	2200 V
I_{FAV}	=	120 A
V_F	=	1.23 V

Single Diode

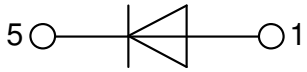
Part number

DNA120E2200KO



Backside: isolated

E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:

- Diode for main rectification
- For single and three phase bridge configurations

Package: ISOPLUS264

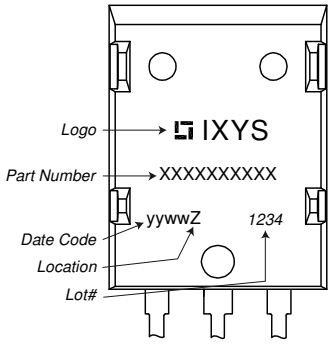
- Isolation Voltage: 3600 V~
- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

Rectifier

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			2300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			2200	V
I_R	*reverse current*	V_R = 2200 V	T_{VJ} = 25°C			100	µA
		V_R = 2200 V	T_{VJ} = 150°C			3.5	mA
V_F	*forward voltage drop*	I_F = 120 A	T_{VJ} = 25°C			1.31	V
		I_F = 240 A				1.64	V
		I_F = 120 A	T_{VJ} = 150°C			1.23	V
		I_F = 240 A				1.68	V
I_{FAV}	*average forward current*	T_C = 125°C	T_{VJ} = 175°C			120	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.75	V
r_F	*slope resistance* }					3.8	mΩ
R_{thJC}	*thermal resistance junction to case*					0.25	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.2		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			600	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			2.00	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			2.16	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.70	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.84	kA
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			20.0	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			19.4	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			14.5	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			14.0	kA²s
C_J	*junction capacitance*	V_R = 700 V; f = 1 MHz	T_{VJ} = 25°C		88		pF

Package ISOPLUS264				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					10		g
F_C	*mounting force with clip*			20		120	N
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	13.8			mm
$d_{Spb/Apb}$			*terminal to backside*	5.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V

Product Marking



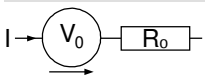
Part description

D = Diode
N = High Voltage Standard Rectifier
A = (>= 2000V)
120 = Current Rating [A]
E = Single Diode
2200 = Reverse Voltage [V]
KO = ISOPLUS264 (2HV)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DNA120E2200KO	DNA120E2200KO	Tube	25	523314

Equivalent Circuits for Simulation

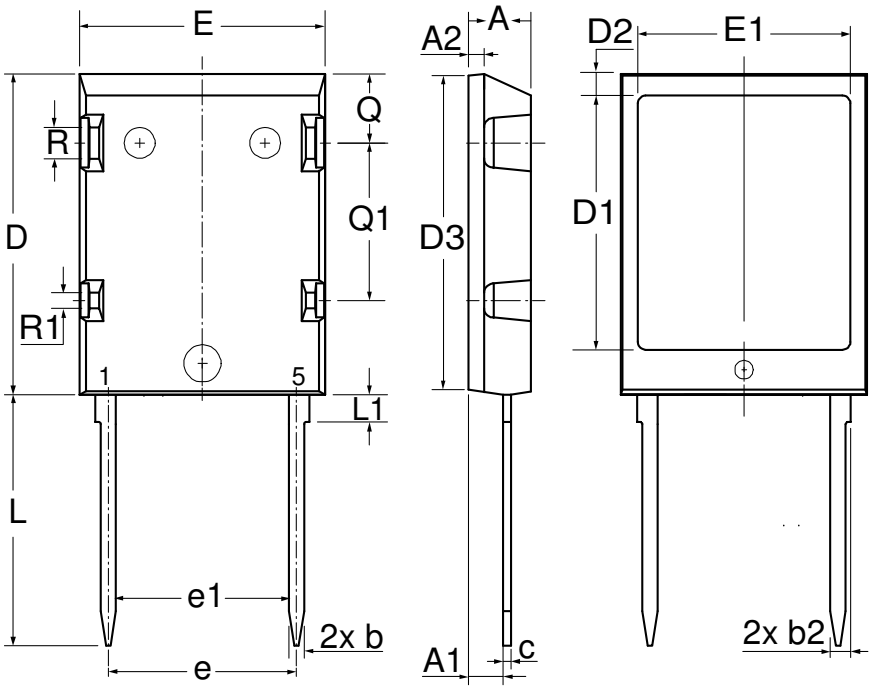
** on die level* T_{VJ} = 175°C

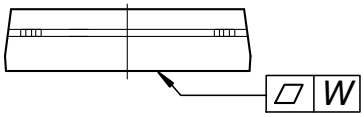


Rectifier

$V_{0\ max}$	*threshold voltage*	0.75	V
$R_{0\ max}$	*slope resistance **	1.2	mΩ

Outlines ISOPLUS264

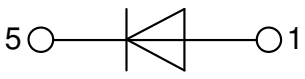




Die konvexe Form des Substrates ist typ. < 0.05 mm über der Kunststoffoberfläche der Bauteilunterseite

The convex bow of substrate is typ. < 0.05 mm over plastic surface level of device bottom side

Dim.	Millimeter		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	1.40	0.046	0.055
b	1.14	1.40	0.045	0.055
b2	1.60	1.83	0.063	0.072
c	0.51	0.74	0.020	0.029
D	25.91	26.42	1.020	1.040
D1	20.34	20.85	0.801	0.821
D2	1.65	2.03	0.065	0.080
D3	25.29	25.78	1.000	1.020
E	19.56	20.29	0.770	0.799
E1	16.97	17.53	0.668	0.690
e	15.24	BSC	0.600	BSC
e1	14.10	BSC	0.555	BSC
L	19.81	20.83	0.780	0.820
L1	2.03	2.59	0.080	0.102
Q	5.33	5.97	0.210	0.235
Q1	12.45	13.03	0.490	0.513
R	3.81	4.57	0.150	0.180
R1	2.54	3.30	0.100	0.130
W	-	0.10	-	0.004



Rectifier

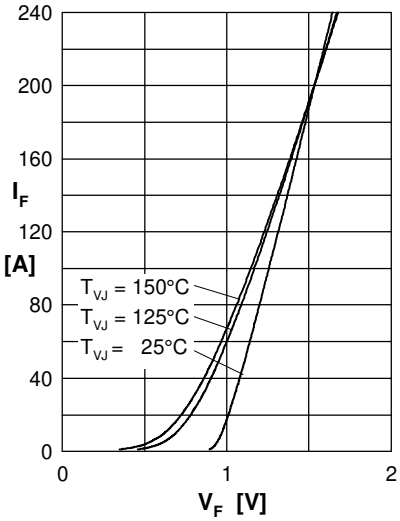


Fig. 1 Forward current versus voltage drop per diode

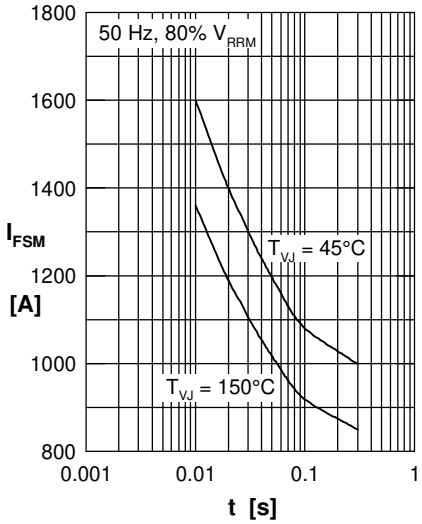


Fig. 2 Surge overload current

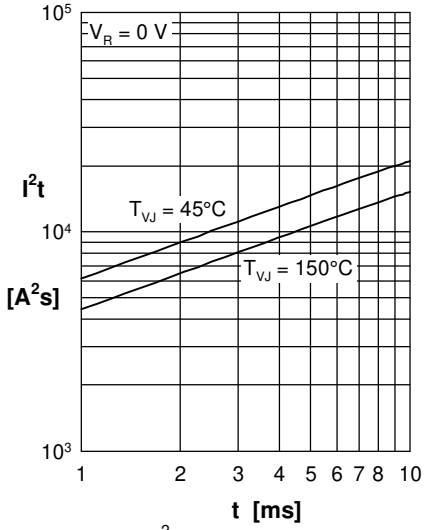


Fig. 3 I^2t versus time per diode

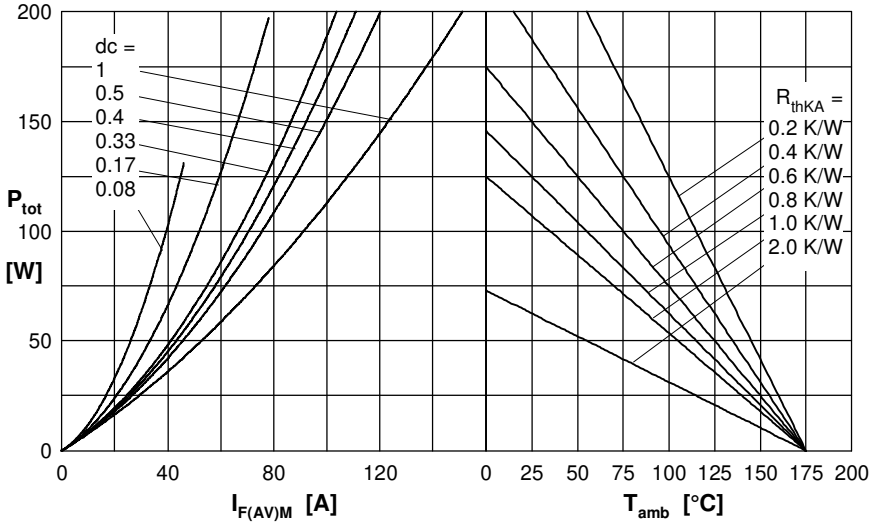


Fig. 4 Power dissipation versus direct output current & ambient temperature

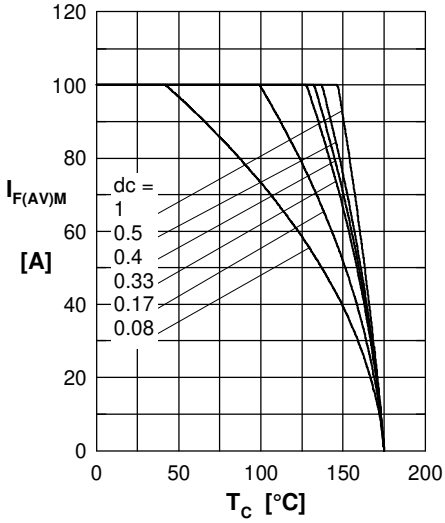


Fig. 5 Max. forward current versus case temperature

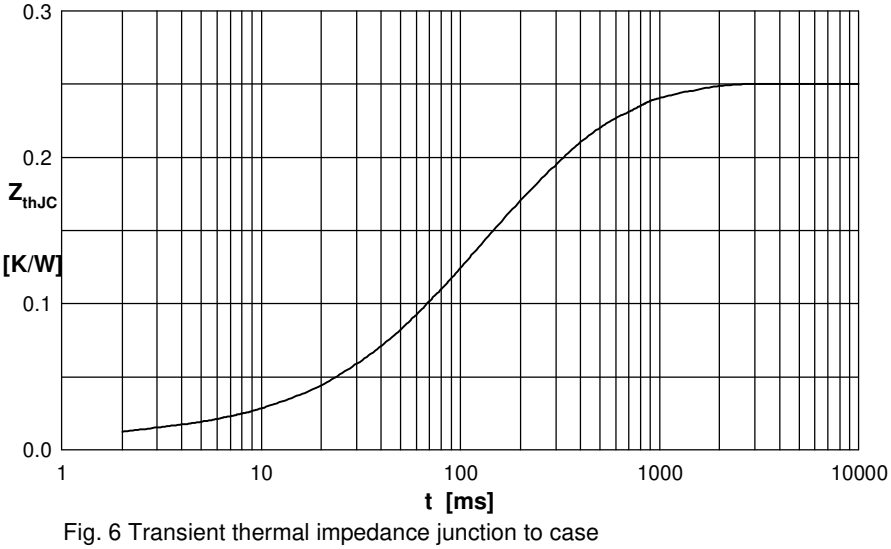


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.01	0.001
2	0.05	0.050
3	0.12	0.150
4	0.07	0.500