

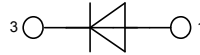
# High Voltage Standard Rectifier

Single Diode

$V_{RRM} = 2200\text{ V}$   
 $I_{FAV} = 30\text{ A}$   
 $V_F = 1.25\text{ V}$

Part number

**DNA 30 E 2200 PA**



Backside: anode

**Features / Advantages:**

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

**Applications:**

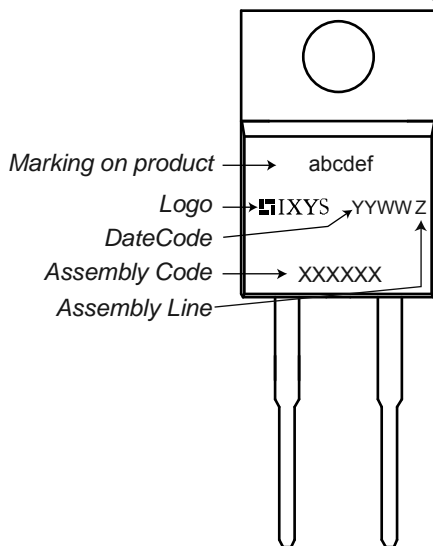
- Diode for main rectification
- For single and three phase bridge configurations

**Package:**

- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
$V_{RRM}$	max. repetitive reverse voltage				2200	V	
$I_R$	reverse current	$V_R = 2200\text{ V}$			40	$\mu\text{A}$	
		$V_R = 2200\text{ V}$			1.5	mA	
$V_F$	forward voltage	$I_F = 30\text{ A}$			1.28	V	
		$I_F = 60\text{ A}$			1.53	V	
		$I_F = 30\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.25	V
		$I_F = 60\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.61	V
$I_{FAV}$	average forward current	rectangular $d = 0.5$			30	A	
$V_{FO}$	threshold voltage	} for power loss calculation only			0.88	V	
$r_F$	slope resistance				12.9	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				0.70	K/W	
$T_{VJ}$	virtual junction temperature		-55		175	$^\circ\text{C}$	
$P_{tot}$	total power dissipation				210	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			370	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			400	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			315	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			340	A
$I^2t$	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			685	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			665	A <sup>2</sup> s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			495	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			480	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 700\text{ V}; f = 1\text{ MHz}$			7	pF	

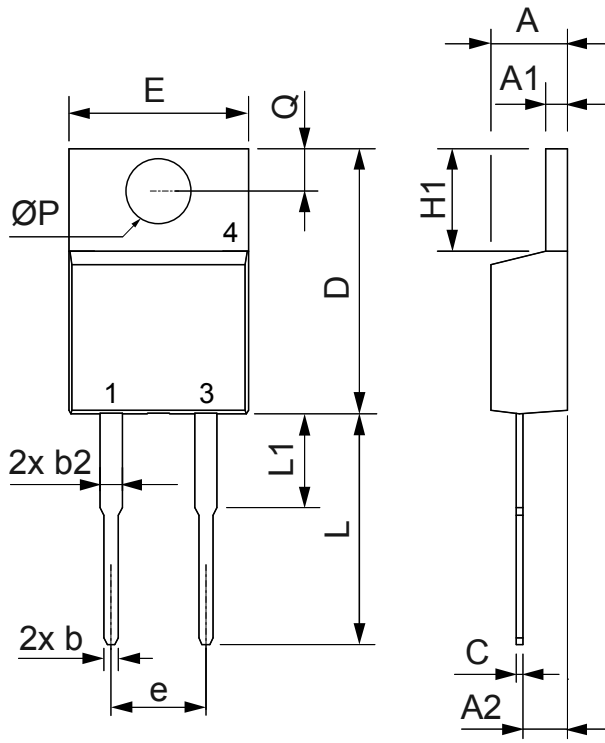
Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal			35	A
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N

**Product Marking**

**Part number**

- D = Diode
- N = High Voltage Standard Rectifier
- A = ( $\geq 2200$  V)
- 30 = Current Rating [A]
- E = Single Diode
- 2200 = Reverse Voltage [V]
- PA = TO-220AC (2)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DNA 30 E 2200 PA	DNA30E2200PA	Tube	50	507762

Similar Part	Package	Voltage class
DNA30E2200PC	TO-263AB (D2Pak)	2200
DNA30EM2200PC	TO-263AB (D2Pak)	2200
DNA30E2200FE	i4-Pac (2HV)	2200

**Outlines TO-220**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08	BSC	0.200	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
$\text{ØP}$	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

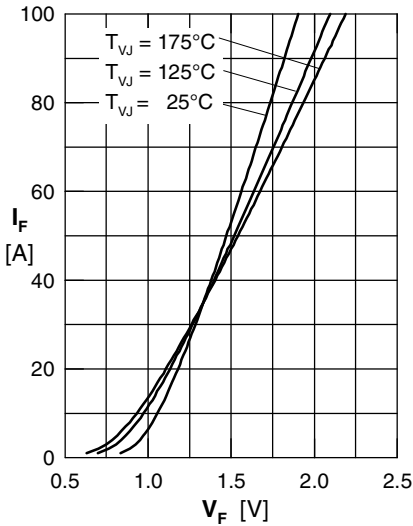


Fig. 1 Forward current versus voltage drop per diode

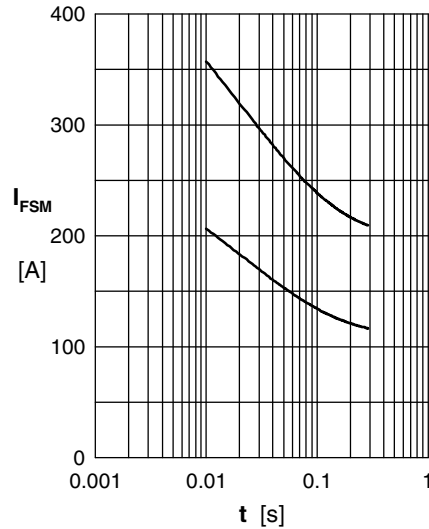


Fig. 2 Surge overload current

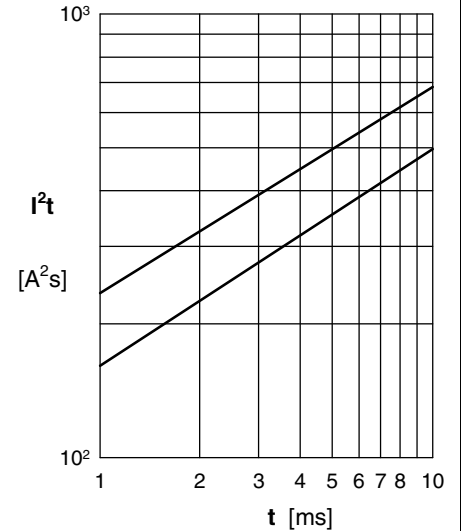


Fig. 3  $I^2t$  versus time per diode

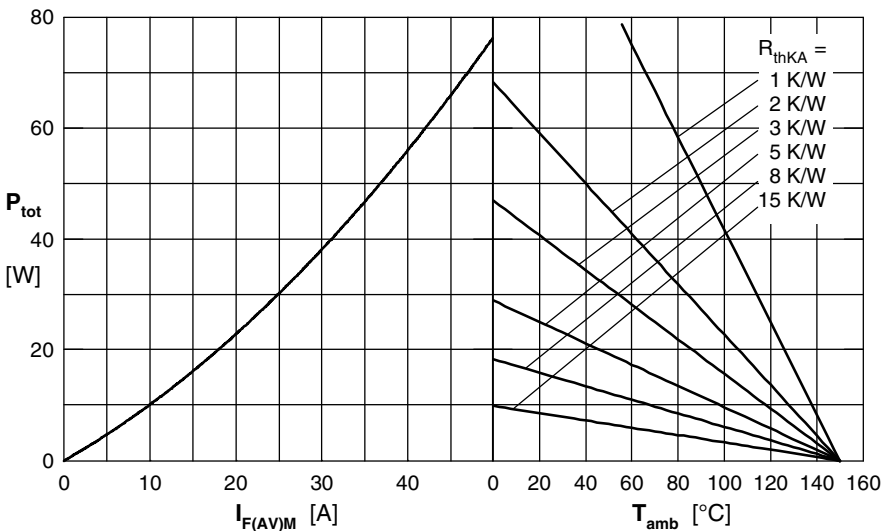


Fig. 4 Power dissipation vs. direct output current & ambient temperature, sine 180°

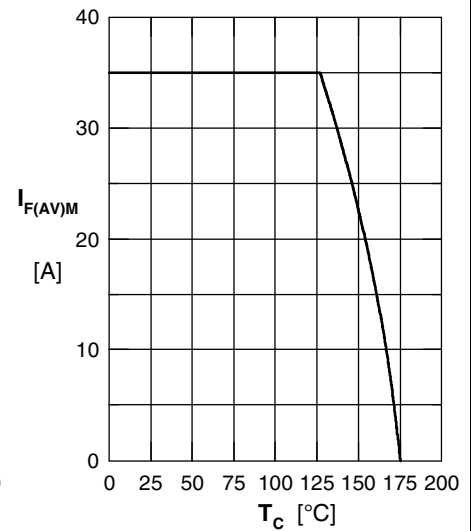


Fig. 5 Max. forward current versus case temperature, sine 180°

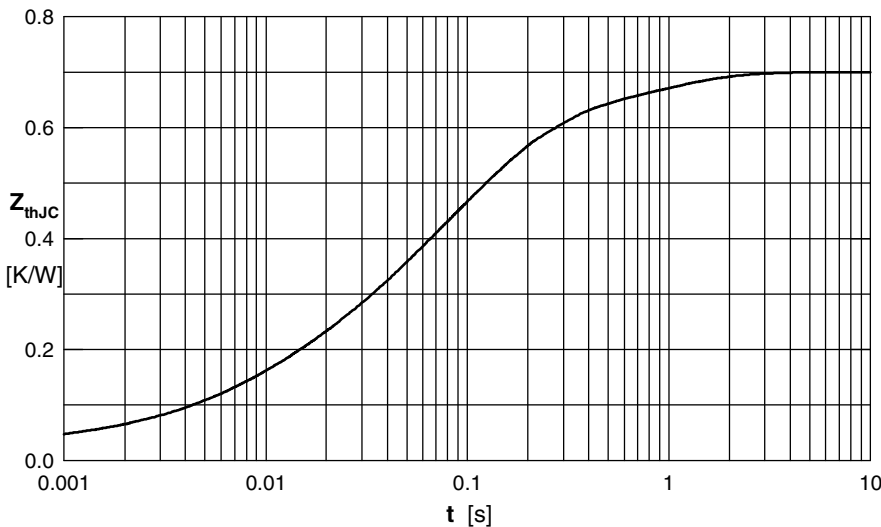


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.03	0.0003
2	0.072	0.0065
3	0.131	0.027
4	0.367	0.105
5	0.1	0.8