

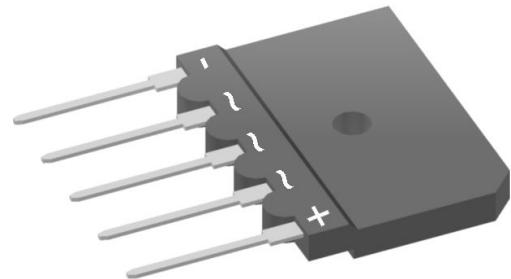
High Voltage Standard Rectifier

3~ Rectifier
$V_{RRM} = 2200 \text{ V}$
$I_{DAV} = 40 \text{ A}$
$I_{FSM} = 370 \text{ A}$

3~ Rectifier Bridge

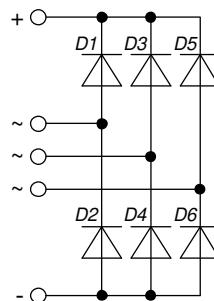
Part number

DNA40U2200GU



Backside: isolated

 E72873



Features / Advantages:

- Low forward voltage drop
- Planar passivated chips
- Easy to mount with one screw
- Space and weight savings

Applications:

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: GUFP

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

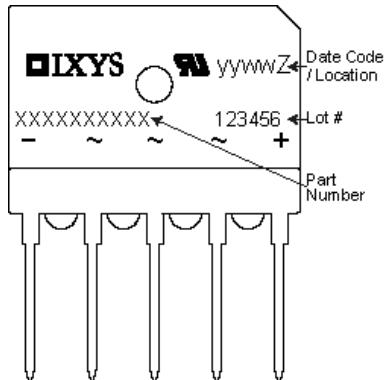
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Rectifier

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^\circ\text{C}$			2300	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^\circ\text{C}$			2200	V
I_R	reverse current	$V_R = 2200 \text{ V}$ $V_R = 2200 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		40 1.5	μA mA
V_F	forward voltage drop	$I_F = 10 \text{ A}$ $I_F = 30 \text{ A}$ $I_F = 10 \text{ A}$ $I_F = 30 \text{ A}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		1.06 1.28 0.92 1.23	V V V V
I_{DAV}	bridge output current	$T_C = 90^\circ\text{C}$ rectangular $d = 1/3$	$T_{VJ} = 175^\circ\text{C}$		40	A
V_{F0} r_F	threshold voltage slope resistance } for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.74 16.3	V $\text{m}\Omega$
R_{thJC}	thermal resistance junction to case				4.3	K/W
R_{thCH}	thermal resistance case to heatsink			0.5		K/W
P_{tot}	total power dissipation		$T_C = 25^\circ\text{C}$		35	W
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$ $t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0 \text{ V}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = 0 \text{ V}$		370 400 315 340	A
I^2t	value for fusing	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$ $t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$ $t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$ $V_R = 0 \text{ V}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = 0 \text{ V}$		685 665 495 480	A^2s A^2s A^2s A^2s
C_J	junction capacitance	$V_R = 700 \text{ V}; f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$	7		pF

Package GUFP			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			70	A
T_{VJ}	virtual junction temperature		-40		175	°C
T_{op}	operation temperature		-40		150	°C
T_{stg}	storage temperature		-40		150	°C
Weight				8.5		g
M_D	mounting torque		0.8		1.2	Nm
F_c	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface / striking distance through air		terminal to terminal	6.7	5.4	mm
$d_{Spb/Apb}$			terminal to backside	10.0	8.0	mm
V_{ISOL}	isolation voltage	t = 1 second t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		2500 2100	V V



Part description

D = Diode
N = High Voltage Standard Rectifier
A = (\geq 2000V)
40 = Current Rating [A]
U = 3~ Rectifier Bridge
2200 = Reverse Voltage [V]
GU = GUFP

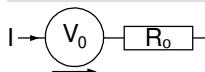
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DNA40U2200GU	DNA40U2200GU	Tube	14	514970

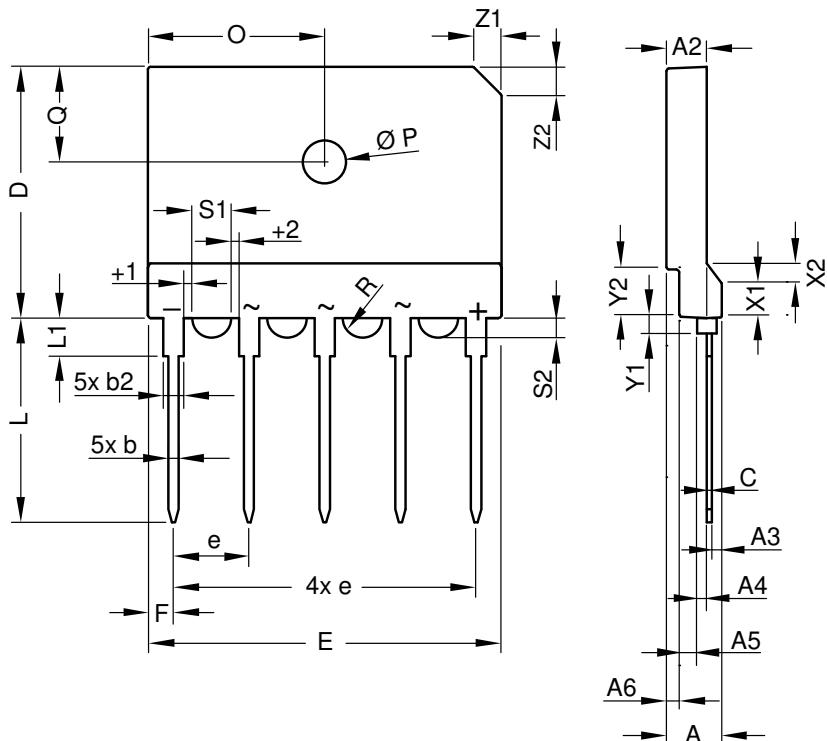
Similar Part	Package	Voltage class
DMA40U1800GU	GUFP	1800
GUO40-16NO1	GUFP	1600
GUO40-12NO1	GUFP	1200
GUO40-08NO1	GUFP	800

Equivalent Circuits for Simulation

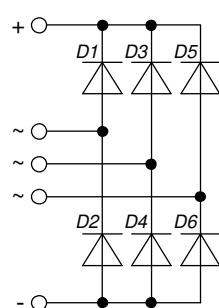
* on die level

$T_{VJ} = 175^\circ\text{C}$

	Rectifier
$V_{0\max}$	threshold voltage 0.74 V
$R_{0\max}$	slope resistance * 13.7 mΩ

Outlines GUFP


Dim.	Millimeter			Inches		
	min	typ.	max	min	typ.	max
A	5.40	5.50	5.60	0.213	0.217	0.221
A2	3.90	4.00	4.10	0.154	0.158	0.162
A3	0.95	1.00	1.10	0.037	0.039	0.043
A4	0.95	1.00	1.05	0.037	0.039	0.041
A5	1.60	1.70	1.80	0.063	0.067	0.071
A6	1.25	1.30	1.35	0.049	0.051	0.053
b	0.95	1.00	1.05	0.037	0.039	0.041
b2	1.95	2.00	2.05	0.077	0.079	0.081
C	0.45	0.50	0.55	0.018	0.020	0.022
D	24.80	25.00	25.20	0.977	0.985	0.993
E	34.70	35.00	35.30	1.367	1.379	1.391
e	BSC	7.50		BSC	0.296	
F	2.40	2.50	2.60	0.095	0.099	0.102
L	20.30	20.40	20.50	0.800	0.804	0.808
L1	3.70	3.75	3.80	0.146	0.148	0.150
O	17.40	17.50	17.60	0.686	0.690	0.693
$\emptyset P$	4.10	4.20	4.30	0.162	0.165	0.169
Q	9.20	9.30	9.40	0.362	0.366	0.370
$\emptyset_{1/2} R$		1.77			0.070	
s1	3.45	3.50	3.55	0.136	0.138	0.140
s2	1.45	1.50	1.55	0.057	0.059	0.061
t1	0.95	1.00	1.05	0.037	0.039	0.041
t2	0.95	1.00	1.05	0.037	0.039	0.041
x1	3.20	3.30	3.40	0.126	0.130	0.134
x2	1.90	2.00	2.10	0.075	0.079	0.083
y1	1.60	1.65	1.70	0.063	0.065	0.067
y2	4.65	4.70	4.75	0.183	0.185	0.187
z1	2.80	2.90	3.00	0.110	0.114	0.118



Rectifier

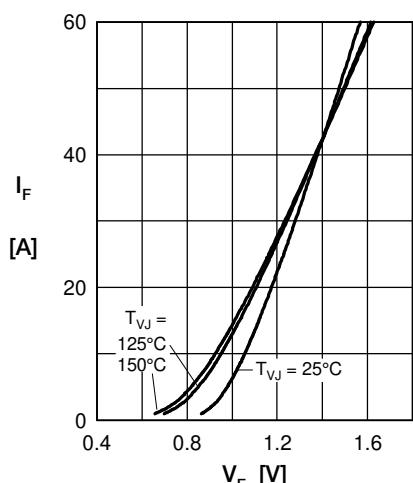


Fig. 1 Forward current vs.
voltage drop per diode

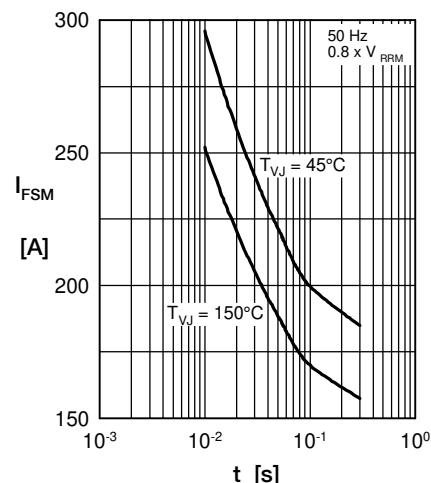


Fig. 2 Surge overload current
vs. time per diode

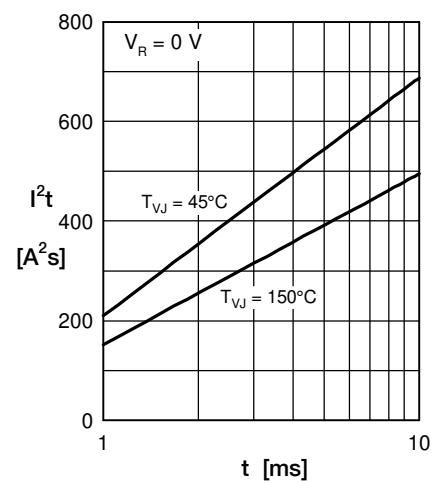


Fig. 3 I^2t vs. time per diode

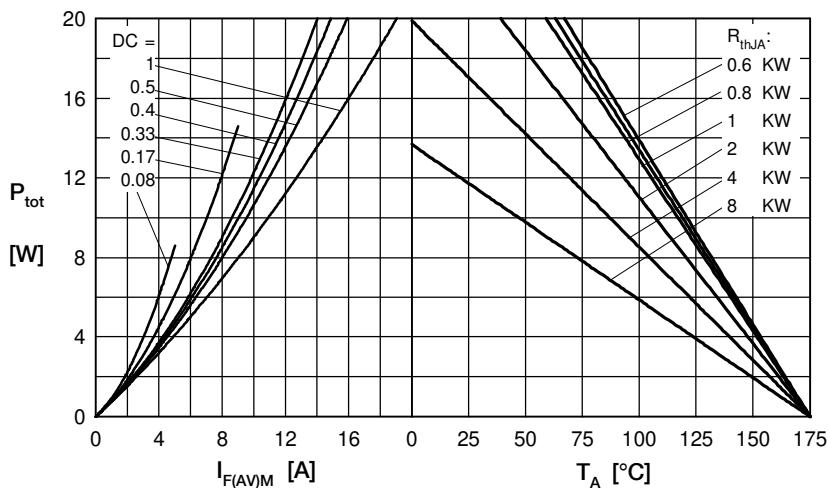


Fig. 4 Power dissipation vs. forward current
and ambient temperature per diode

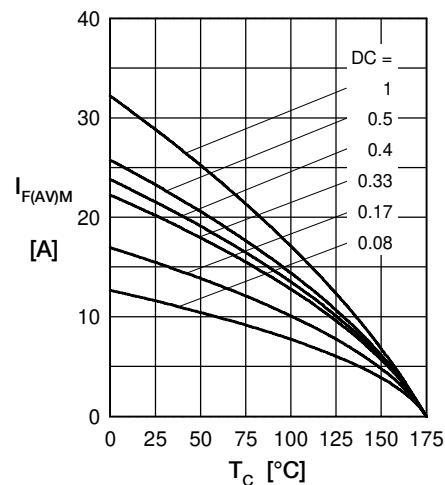


Fig. 5 Max. forward current vs.
case temperature per diode

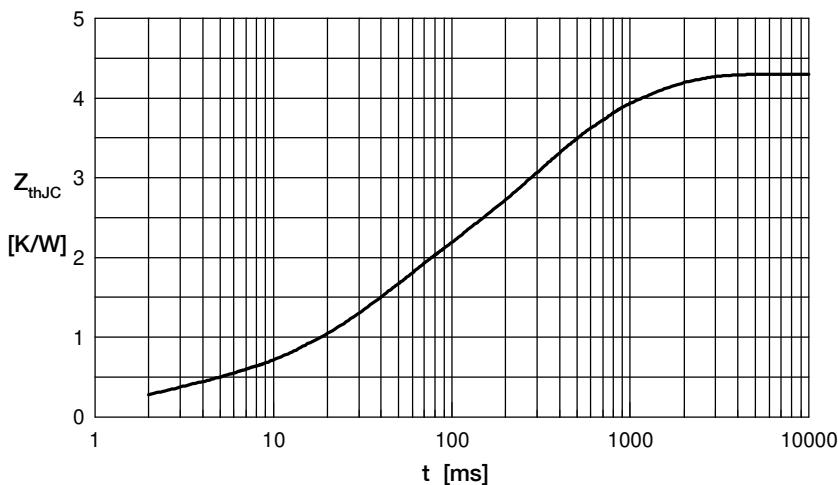


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.302	0.002
2	1.252	0.032
3	1.582	0.227
4	1.164	0.820

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ Р В 0015-002 и ЭС РД 009

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