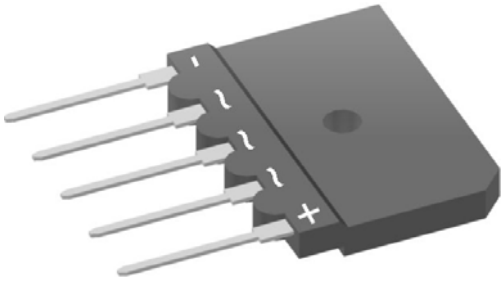
Standard Rectifier

3 ~ Rectifier		
V_{RRM}	=	1200 V
I_{DAV}	=	40 A
I_{FSM}	=	370 A

3~ Rectifier Bridge

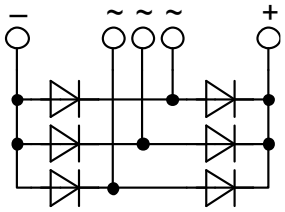
Part number

GUO40-12NO1



Backside: isolated

E326641



Features / Advantages:

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

Applications:

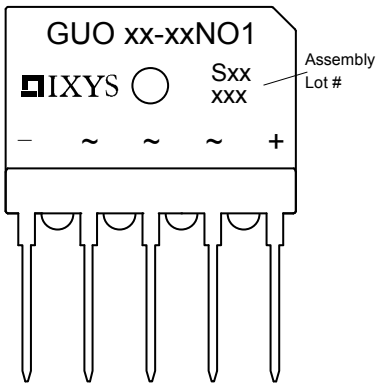
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package:

- Housing: GUFP
- Industry standard outline
- Plastic overmolded tab for electrical isolation
- Isolation Voltage 2500 V
- Epoxy meets UL 94V-0
- RoHS compliant

Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current, drain current*	V_R = 1200 V	T_{VJ} = 25°C			50	µA
		V_R = 1200 V	T_{VJ} = 150°C			1.5	mA
V_F	*forward voltage drop*	I_F = 12.5 A	T_{VJ} = 25°C			1.15	V
		I_F = 25 A				1.30	V
		I_F = 12.5 A	T_{VJ} = 125°C			1.05	V
		I_F = 25 A				1.20	V
I_{DAV}	*bridge output current*	T_C = 85°C	T_{VJ} = 175°C			40	A
		120° sine					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.86	V
r_F	*slope resistance* }					12.9	mΩ
R_{thJC}	*thermal resistance junction to case*					4.30	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			35	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			370	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			400	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 175°C			315	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			340	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			685	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			665	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 175°C			495	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			480	A²s
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		11		pF

Package GUFP				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per terminal				70	A
T_{stg}	*storage temperature*			-55		150	°C
T_{VJ}	*virtual junction temperature*			-40		175	°C
Weight					8.5		g
M_D	*mounting torque*			0.8		1.2	Nm
F_C	*mounting force with clip*			20		120	N
V_{ISOL}	*isolation voltage*	t = 1 second		2500			V
		t = 1 minute		2000			V
$d_{Spp/App}$	*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

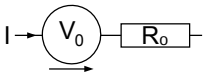


Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	GUO40-12NO1	GUO40-12NO1	Tube	15	504430

Similar Part	Package	Voltage class
GUO40-16NO1	GUFP	1600
GUO40-08NO1	GUFP	800

Equivalent Circuits for Simulation

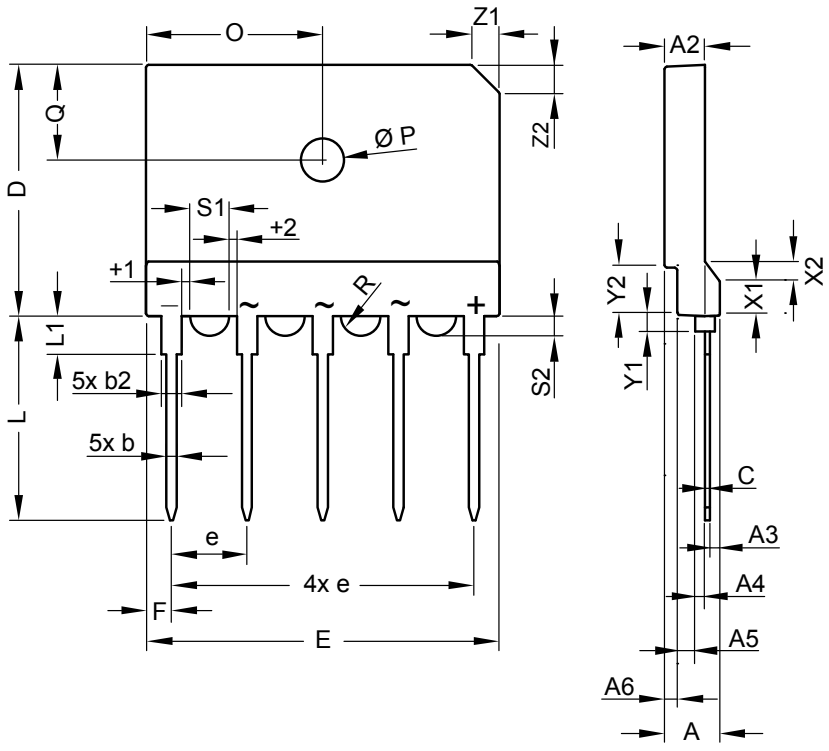
T_{VJ} = 175°C



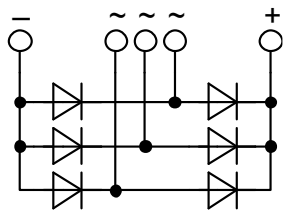
Rectifier

$V_{0\,max}$	*threshold voltage*	0.86	V
$R_{0\,max}$	*slope resistance*	10.3	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
Ø 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
$^{Ø}/_{2}$ 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

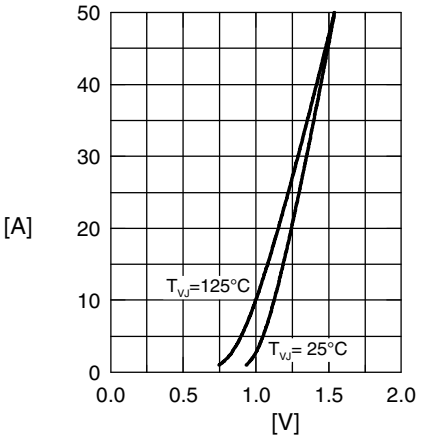


Fig. 1 Forward current versus voltage drop per diode

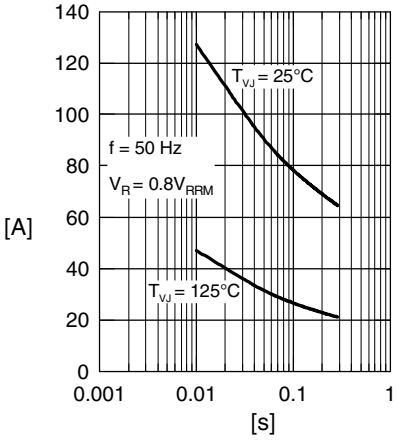


Fig. 2 Surge overload current

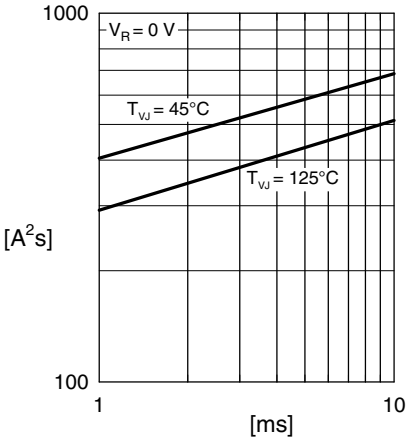


Fig. 3 I^2t versus time per diode

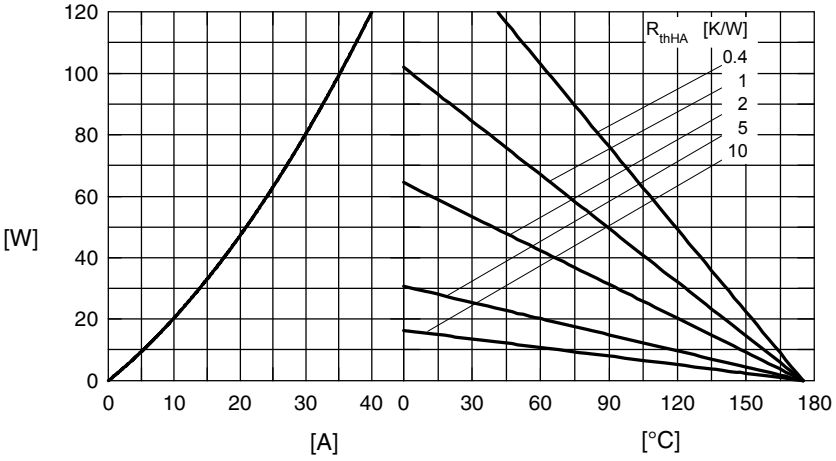


Fig. 4 Power dissipation versus direct output current and ambient temperature, sine 180°

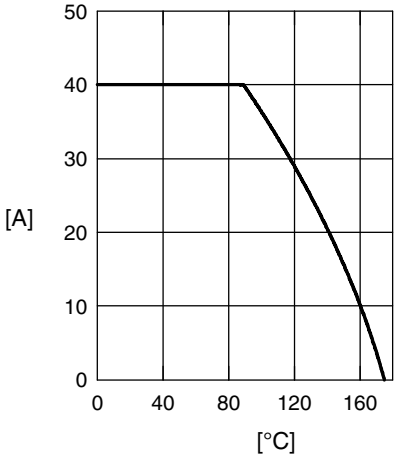


Fig. 5 Max. forward current vs. case temperature

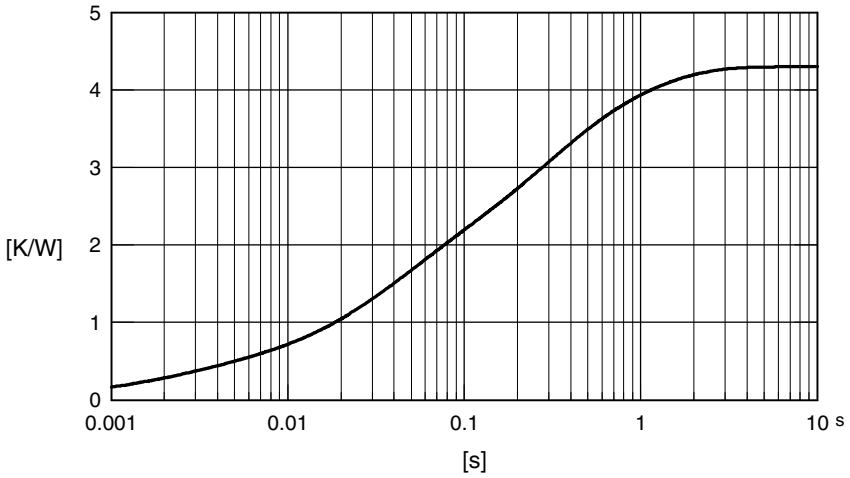


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.302	0.002
2	1.252	0.032
3	1.582	0.227
4	1.164	0.82