IXYS

tentative

## High Efficiency Thyristor

Phase leg

V_{RRM} = **1200 V**
$I_{T(AV)M}$ = **40 A**
$I_{T(RMS)}$ = **63 A**

Part number

CLA 40 P 1200 FC
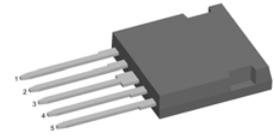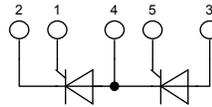
Backside: isolated

Features / Advantages:
- Thyristor for line frequency
- Planar passivated chip
- Long-term stability

Applications:
- Softstart AC motor control
- DC Motor control
- Power converter
- AC power control
- Lighting and temperature control

Package:
- Housing: i4-Pac
- DCB isolated backside
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage	T_{VJ} = 25°C				1300	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage	T_{VJ} = 25°C				1200	V
$I_{R/D}$	reverse current, drain current	$V_{R/D}$ = 1200 V	T_{VJ} = 25°C			50	µA
		$V_{R/D}$ = 1200 V	T_{VJ} = 125°C			4	mA
V_T	forward voltage drop	I_T = 40 A	T_{VJ} = 25°C			1.25	V
		I_T = 80 A				1.49	V
		I_T = 40 A	T_{VJ} = 125°C			1.19	V
		I_T = 80 A				1.50	V
$I_{T(AV)M}$	average forward current	T_C = 95°C	T_{VJ} = 150°C			40	A
$I_{T(RMS)}$	RMS forward current	180° sine				63	A
V_{T0}	threshold voltage		T_{VJ} = 150°C			0.86	V
r_T	slope resistance } for power loss calculation only					7.9	mΩ
R_{thJC}	thermal resistance junction to case					0.80	K/W
T_{VJ}	virtual junction temperature			-40		150	°C
P_{tot}	total power dissipation	T_C = 25°C				150	W
P_{GM}	max. gate power dissipation	t_P = 30 µs	T_C = 150°C			10	W
		t_P = 300 µs				5	W
P_{GAV}	average gate power dissipation					0.5	W
I_{TSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			550	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			595	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			470	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			505	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			1.52	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.48	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.11	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.06	kA²s
C_J	junction capacitance	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		25		pF

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	Unit
$(di/dt)_{cr}$	critical rate of rise of current	$T_{VJ} = 150°C$ repetitive, $I_T = 40\,A$ $f = 50\,Hz;\ t_P = 200\,µs$			150	A/µs
		$I_G = 0.3A;\ di_G/dt = 0.3\,A/µs$ $V_D = ⅔\,V_{DRM}$ non-repetitive, $I_T = 50\,A$			500	A/µs
$(dv/dt)_{cr}$	critical rate of rise of voltage	$V_D = ⅔\,V_{DRM}$ $T_{VJ} = 150°C$ $R_{GK} = ∞$; method 1 (linear voltage rise)			1000	V/µs
V_{GT}	gate trigger voltage	$V_D = 6\,V$ $T_{VJ} = 25°C$			1.5	V
		$T_{VJ} = -40°C$			1.6	V
I_{GT}	gate trigger current	$V_D = 6\,V$ $T_{VJ} = 25°C$			50	mA
		$T_{VJ} = -40°C$			80	mA
V_{GD}	gate non-trigger voltage	$V_D = ⅔\,V_{DRM}$ $T_{VJ} = 150°C$			0.2	V
I_{GD}	gate non-trigger current				3	mA
I_L	latching current	$t_p = 10\,µs$ $T_{VJ} = 25°C$ $I_G = 0.3A;\ di_G/dt = 0.3\,A/µs$			125	mA
I_H	holding current	$V_D = 6\,V\ \ R_{GK} = ∞$ $T_{VJ} = 25°C$			100	mA
t_{gd}	gate controlled delay time	$V_D = ½\,V_{DRM}$ $T_{VJ} = 25°C$ $I_G = 0.3A;\ di_G/dt = 0.3\,A/µs$			2	µs
t_q	turn-off time	$V_R = 100\,V;\ I_T = 33\,A$ $T_{VJ} = 150°C$ $V_D = ⅔\,V_{DRM};\ t_p = 200\,µs$ $di/dt = 10\,A/µs;\ dv/dt = 20\,V/µs$		200		µs

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per diode unless otherwise specified   20100330

			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			70	A
R_{thCH}	*thermal resistance case to heatsink*			0.20		K/W
T_{stg}	*storage temperature*		-55		150	°C
Weight				9		g
F_C	*mounting force with clip*		20		120	N
V_{ISOL}	*isolation voltage*	t = 1 second	3600			V
		t = 1 minute	3000			V
d_S	*creapage distance on surface*		1.7			mm
d_A	*striking distance through air*		5.5			mm

Product Marking

Logo → ◨ IXYS
Part No. → XXXXXXXXXXXX
UL listed → ⓊⓁ yww
Date Code →
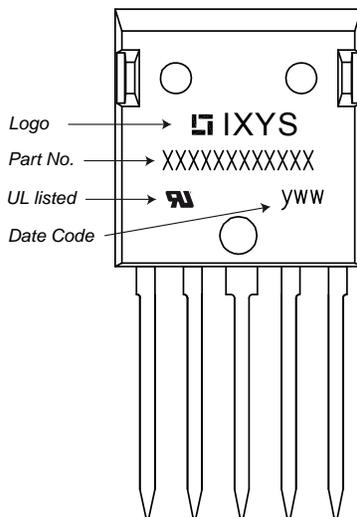
Part number

C = Thyristor (SCR)
L = High Efficiency Thyristor
A = (up to 1200 V)
40 = Current Rating [A]
P = Phase leg
1200 = Reverse Voltage [V]
FC = i4-Pac (5)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	CLA 40 P 1200 FC	CLA40P1200FC	Tube	25	510210

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per diode unless otherwise specified   20100330

tentative

Outlines i4-Pac
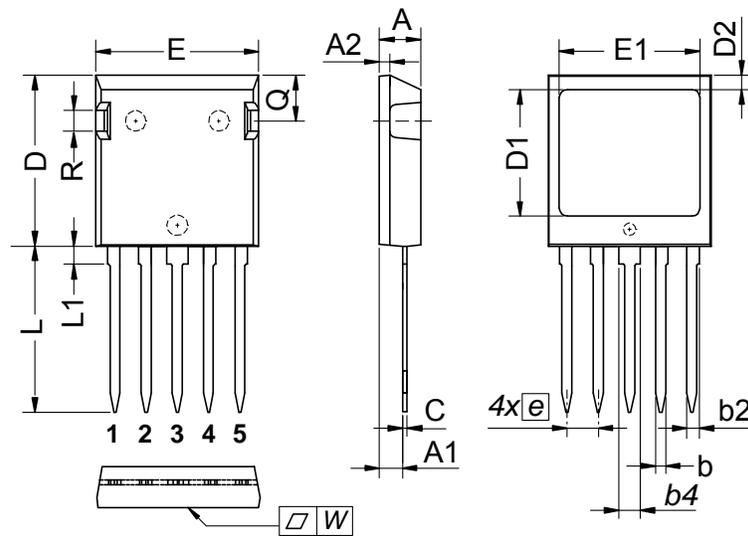
DIM.	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	0.190	0.205
A1	2.59	3.00	0.102	0.118
A2	1.17	2.16	0.046	0.085
b	1.14	1.40	0.045	0.055
b2	1.47	1.73	0.058	0.068
b4	2.54	2.79	0.100	0.110
C	0.51	0.74	0.020	0.029
D	20.80	21.34	0.819	0.840
D1	14.99	15.75	0.590	0.620
D2	1.65	2.03	0.065	0.080
E	19.56	20.29	0.770	0.799
E1	16.76	17.53	0.660	0.690
e	3.81 BSC		0.15 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

---

IXYS reserves the right to change limits, conditions and dimensions.

Data according to IEC 60747 and per diode unless otherwise specified

20100330