advanced

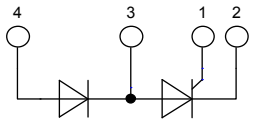
High Efficiency Thyristor

Phase leg

V_{RRM} = 1200 V
$I_{T(AV)M}$ = 100 A
$I_{T(RMS)}$ = 157 A

Part number

CLA 100 PD 1200 NA



Backside: isolated

E72873

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: SOT-227B (minibloc)
- Industry standard outline
- Cu base plate internal DCB isolated
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

Symbol	Definition	Conditions		Ratings 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			10	mA
V_T	*forward voltage drop*	I_T = 100 A	T_{VJ} = 25°C			1.27	V
		I_T = 200 A				1.55	V
		I_T = 100 A	T_{VJ} = 125°C			1.21	V
		I_T = 200 A				1.58	V
$I_{T(AV)M}$	*average forward current*	T_C = 85°C	T_{VJ} = 150°C			100	A
$I_{T(RMS)}$	*RMS forward current*	180° sine				157	A
V_{T0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.83	V
r_T	*slope resistance* }					3.7	mΩ
R_{thJC}	*thermal resistance junction to case*					0.35	K/W
T_{VJ}	*virtual junction temperature*			-40		150	°C
P_{tot}	*total power dissipation*		T_C = 25°C			350	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			1.50	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.62	kA
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.28	kA
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.38	kA
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			11.3	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			10.9	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			8.13	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			7.87	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 = 150 A			150	A/µs
		f = 50 Hz; t_P = 200 µs				
		I_G = 0.5A; di_G/dt = 0.5 A/µs				
		V_D = ⅔ V_{DRM} non-repetitive, I_T = 100 A			500	A/µs
$(dv/dt)_{cr}$	*critical rate of rise of voltage*	V_D = ⅔ V_{DRM} T_{VJ} = 150 °C			1000	V/µs
		R_{GK} = ∞; method 1 (linear voltage rise)				
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			100	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*				5	mA
I_L	*latching current*	t_p = 10 µs T_{VJ} = 25 °C			150	mA
		I_G = 0.5A; di_G/dt = 0.5 A/µs				
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			2	µs
		I_G = 0.5A; di_G/dt = 0.5 A/µs				
t_q	*turn-off time*	V_R = 100 V; I_T = 100 A T_{VJ} = 150 °C		150		µs
		V_D = ⅔ V_{DRM}; t_p = 200 µs				
		di/dt = 10 A/µs; dv/dt = 20 V/µs				

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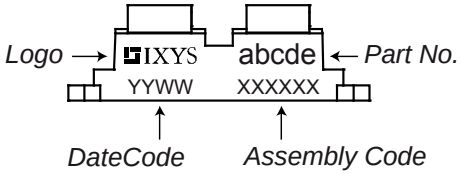
Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per terminal			150	A
R_{thCH}	*thermal resistance case to heatsink*			0.10		K/W
T_{stg}	*storage temperature*		-40		150	°C
Weight				30		g
M_D	*mounting torque*		1.1		1.5	Nm
M_T	*terminal torque*		1.1		1.5	Nm
V_{ISOL}	*isolation voltage*	t = 1 second	3000			V
		t = 1 minute	2500			V
d_S	*creapage distance on surface*		8			mm
d_A	*striking distance through air*		4			mm

Product Marking

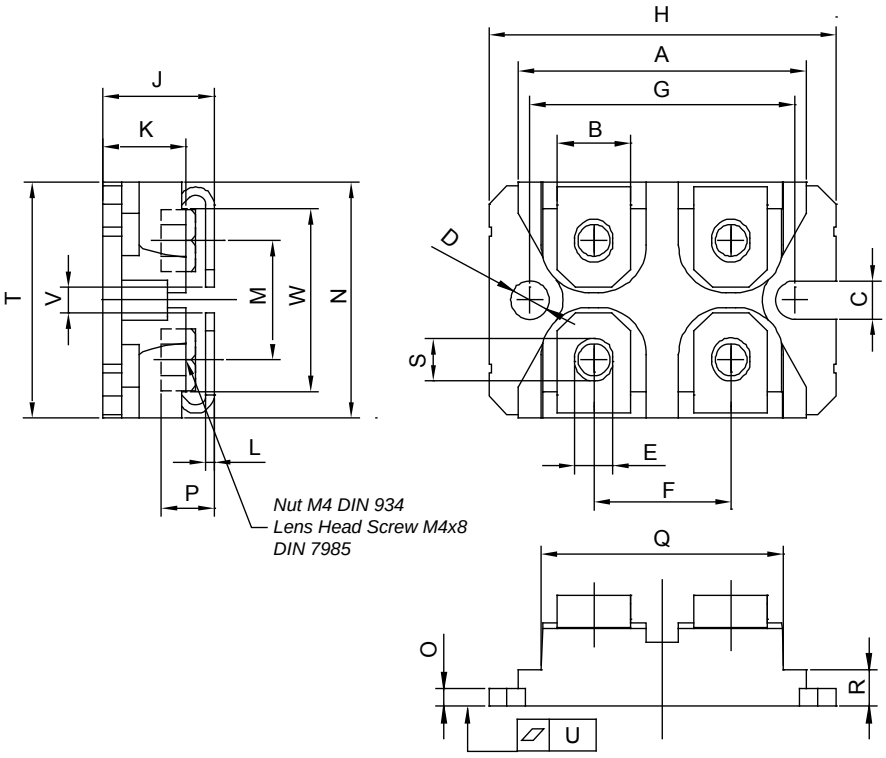


Part number

C = Thyristor (SCR)
L = High Efficiency Thyristor
A = (up to 1200 V)
100 = Current Rating [A]
PD = Phase leg, high-side Thyristor / low-side Diode
1200 = Reverse Voltage [V]
NA = SOT-227B (minibloc)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	CLA 100 PD 1200 NA	CLA100PD1200NA	Tube	10	509048

Outlines SOT-227B (minibloc)



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.50	31.88	1.240	1.255
B	7.80	8.20	.307	.323
C	4.09	4.29	.161	.169
D	4.09	4.29	.161	.169
E	4.09	4.29	.161	.169
F	14.91	15.11	.587	.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.489	1.505
J	11.68	12.22	.460	.481
K	8.92	9.60	.351	.378
L	0.76	0.84	.030	.033
M	12.60	12.85	.496	.506
N	25.15	25.42	.990	1.001
O	1.98	2.13	.078	.084
P	4.95	5.97	.195	.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	.155	.174
S	4.72	4.85	.186	.191
T	24.59	25.07	.968	.987
U	-.05	.10	-.002	.004
V	3.30	4.57	.130	.180
W	19.81	21.08	.780	.830