# imall

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With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## CLA30MT1200NPZ

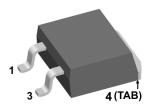
## **High Efficiency Thyristor**

$V_{\text{RRM}}$	=	1200 V
I <sub>tav</sub>	=	15 A
Vτ	=	1,35 V

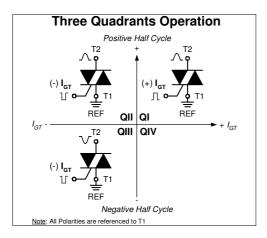
Three Quadrants operation: QI - QIII 1~ Triac

### Part number

### CLA30MT1200NPZ

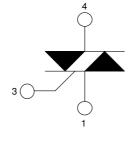


Backside: anode/cathode



### Features / Advantages:

- Triac for line frequency
- Three Quadrants Operation - QI - QIII
- Planar passivated chip
- Long-term stability
- of blocking currents and voltages



### **Applications:**

- Line rectifying 50/60 Hz
- Softstart AC motor control
- DC Motor control
- Power converter
- AC power control
- Lighting and temperature control

### Package: TO-263 (D2Pak-HV)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- High creepage distance between terminals

### Terms Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application and assertion and applications and principles of the product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you. Should you intend to use the product in aviation, in health or live endangering or life support applications, please notify. For any such application we urgently recommend to perform joint risk and quality assessments;
the conclusion of quality agreements;

- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

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

# LIXYS

# CLA30MT1200NPZ

Rectifier				1	Ratings		
Symbol	Definition	Conditions		min.	typ.	max.	Uni
V <sub>RSM/DSM</sub>	max. non-repetitive reverse/forwa	5 5	$T_{VJ} = 25^{\circ}C$			1300	١
V <sub>RRM/DRM</sub>	max. repetitive reverse/forward blo		$T_{VJ} = 25^{\circ}C$			1200	١
R/D	reverse current, drain current	$V_{R/D} = 1200 V$	$T_{VJ} = 25^{\circ}C$			10	μA
		V <sub>R/D</sub> = 1200 V	$T_{VJ} = 125^{\circ}C$			1,5	m/
V <sub>T</sub>	forward voltage drop	$I_{T} = 15 A$	$T_{VJ} = 25^{\circ}C$			1,35	١
		$I_{\tau} = 30 \text{ A}$				1,68	١
		$I_{T} = 15 A$	$T_{VJ} = 125 \degree C$			1,35	١
		$I_{T} = 30 \text{ A}$				1,79	١
TAV	average forward current	$T_c = 120^{\circ}C$	$T_{vJ} = 150 ^{\circ}\text{C}$			15	1
I <sub>RMS</sub>	RMS forward current per phase	180° sine				33	1
V <sub>T0</sub>	threshold voltage	ss calculation only	$T_{vJ} = 150^{\circ}C$			0,89	۱
r <sub>T</sub>	slope resistance					30	mΩ
$\mathbf{R}_{thJC}$	thermal resistance junction to case	e				0,95	K/W
<b>R</b> <sub>thCH</sub>	thermal resistance case to heatsir	nk			0,25		K/W
P <sub>tot</sub>	total power dissipation		$T_c = 25^{\circ}C$			130	N
I <sub>TSM</sub>	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{vJ} = 45^{\circ}C$			170	ļ
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			185	ļ
		t = 10 ms; (50 Hz), sine	$T_{vJ} = 150^{\circ}C$			145	ŀ
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			155	1
l²t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}C$			145	A <sup>2</sup>
		t = 8,3 ms; (60 Hz), sine	$V_R = 0 V$			140	A²
		t = 10 ms; (50 Hz), sine	$T_{vJ} = 150^{\circ}C$			105	A²s
		t = 8,3 ms; (60 Hz), sine	$V_{R} = 0 V$			100	A²s
C	junction capacitance	$V_{R}$ = 400 V f = 1 MHz	$T_{VJ} = 25^{\circ}C$		9		pF
P <sub>GM</sub>	max. gate power dissipation	t <sub>P</sub> = 30 μs	$T_c = 150^{\circ}C$			5	W
		t <sub>P</sub> = 300 μs				1	W
P <sub>GAV</sub>	average gate power dissipation					0,2	W
(di/dt) <sub>cr</sub>	critical rate of rise of current	$T_{vJ} = 150 ^{\circ}C; f = 50 \text{Hz}$ re	epetitive, $I_{T} = 45 \text{ A}$			150	A/μ
		$t_{P}$ = 200 µs; di <sub>G</sub> /dt = 0,3 A/µs; -					
		$I_{G} = 0.3 \text{ A}; \text{ V} = \frac{2}{3} \text{ V}_{DRM}$ no	on-repet., $I_{T} = 15 A$			500	A/μ
(dv/dt) <sub>cr</sub>	critical rate of rise of voltage	$V = \frac{2}{3} V_{DRM}$	$T_{vJ} = 150^{\circ}C$			500	V/µs
		R <sub>GK</sub> = ∞; method 1 (linear volta	ige rise)				
V <sub>gt</sub>	gate trigger voltage	$V_{D} = 6 V$	$T_{vJ} = 25^{\circ}C$			1,3	١
			$T_{vJ} = -40^{\circ}C$			1,6	١
I <sub>GT</sub>	gate trigger current	$V_{D} = 6 V$	$T_{vJ} = 25^{\circ}C$			± 40	m/
		2	T <sub>vJ</sub> = -40°C			± 60	
V <sub>gd</sub>	gate non-trigger voltage	$V_{D} = \frac{2}{3} V_{DBM}$	T <sub>v.i</sub> = 150°C			0,2	
I <sub>GD</sub>	gate non-trigger current		**			± 1	m/
	latching current	t <sub>p</sub> = 10 μs	$T_{vJ} = 25 °C$			70	m/
		$I_{g} = 0,3A; di_{g}/dt = 0,3A/\mu s$					
I <sub>H</sub>	holding current	$\frac{V_{\rm D} = 6  \text{V}  \text{R}_{\rm GK} = \infty}{V_{\rm D} = 6  \text{V}  \text{R}_{\rm GK} = \infty}$	T <sub>vJ</sub> = 25°C			50	m/
	gate controlled delay time	$V_{\rm D} = \frac{1}{2} V_{\rm DRM}$	$T_{VJ} = 25^{\circ}C$			2	Ì
t <sub>gd</sub>	gue controlled delay lime					2	μ
t <sub>q</sub>	turn off time	$I_{\rm G} = 0.3 \text{A};  \text{di}_{\rm G}/\text{dt} = 0.3 \text{A}/\mu\text{s}$			150		
	turn-off time	$V_{\rm B} = 100 \text{ V}; I_{\rm T} = 15 \text{ A}; \text{ V} = \frac{2}{3}$	′3 V <sub>DBM</sub> I <sub>VJ</sub> = 125 °C		150		μ

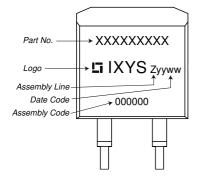
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## CLA30MT1200NPZ

Package TO-263 (D2Pak-HV)			Ratings				
Symbol	Definition Co	onditions		min.	typ.	max.	Unit
I <sub>RMS</sub>	RMS current pe	r terminal				35	A
T <sub>vj</sub>	virtual junction temperature			-40		150	°C
T <sub>op</sub>	operation temperature			-40		125	°C
T <sub>stg</sub>	storage temperature			-40		150	°C
Weight					1,5		g
F <sub>c</sub>	mounting force with clip			20		60	Ν
d <sub>Spp/App</sub>	creepage distance on surface   striking distanc	o through air	terminal to terminal	4,2			mm
$\mathbf{d}_{Spb/Apb}$		e through all	terminal to backside	4,7			mm

### **Product Marking**



### Part description

- C = Thyristor (SCR) L = High Efficiency Thyristor
- A = (up to 1200V)
- 30 = Current Rating [A]
- MT = 1~ Triac
- 1200 = Reverse Voltage [V]
- $\begin{array}{l} N = \mbox{Three Quadrants operation: QI QIII} \\ PZ = \mbox{TO-263AB (D2Pak) (2HV)} \end{array}$

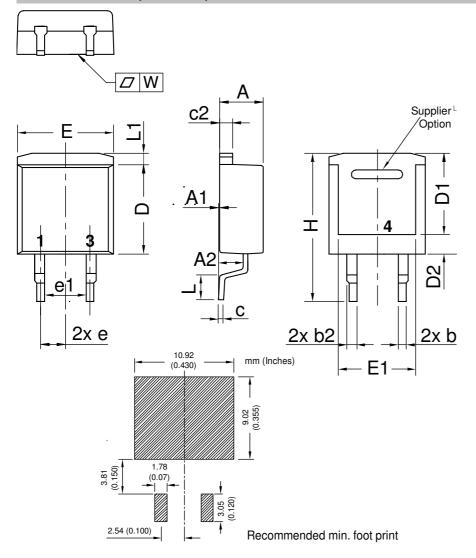
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	CLA30MT1200NPZ	CLA30MT1200NPZ	Tape & Reel	800	516960

Similar Part	Package	Voltage class
CLA30MT1200NPB	TO-220AB (3)	1200

Equiva	lent Circuits for	Simulation	* on die level	T <sub>vj</sub> = 150 °C
	)[R]-	Thyristor		
V <sub>0 max</sub>	threshold voltage	0,89		V
$\mathbf{R}_{0 \max}$	slope resistance *	27		mΩ

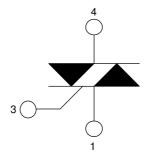
# CLA30MT1200NPZ

### Outlines TO-263 (D2Pak-HV)



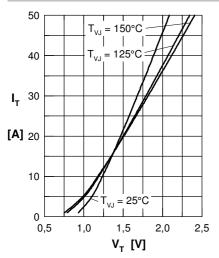
Dim.	Millimeter		Inches	
Dim.	min	max	min	max
Α	4.06	4.83	0.160	0.190
A1	typ.	typ. 0.10		0.004
A2	2.	41	0.0	95
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
С	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2	2.3		91
Е	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
е	2,54 BSC		0,100	BSC
e1	4.28		0.169	
Н	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

All dimensions conform with and/or within JEDEC standard.



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### Thyristor



140

120

100

80

60

1000

100

10

1

10

0,01

 $T_{VJ} = 125^{\circ}C$ 

Fig. 2 Surge overload current

 $v_1 = 125^{\circ}$ 

1000

100

I<sub>G</sub> [mA]

Fig. 5 Gate controlled delay time

I<sub>TSM</sub>

[A]

Fig. 1 Forward characteristics

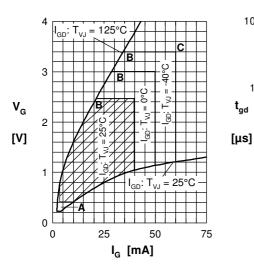


Fig. 4 Gate trigger characteristics

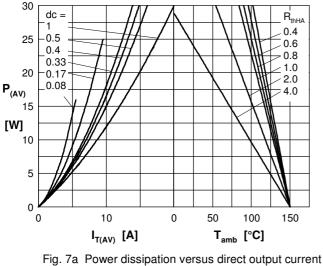
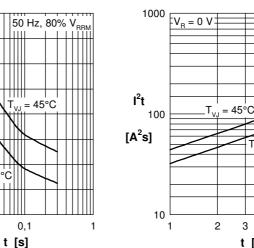
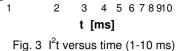


Fig. 7a Power dissipation versus direct output curre Fig. 7b and ambient temperature

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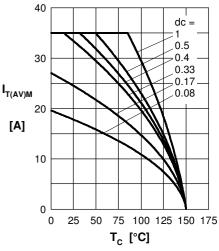


Fig. 6 Max. forward current at case temperature

