

High Efficiency Thyristor

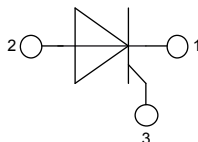
Single Thyristor

$$\begin{aligned} V_{RRM} &= 1200 \text{ V} \\ I_{T(AV)M} &= 5 \text{ A} \\ I_{T(RMS)} &= 7.8 \text{ A} \end{aligned}$$

Part number

CLA 5 E 1200 UC

Marking on Product: C5TLUE



Backside: anode

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:

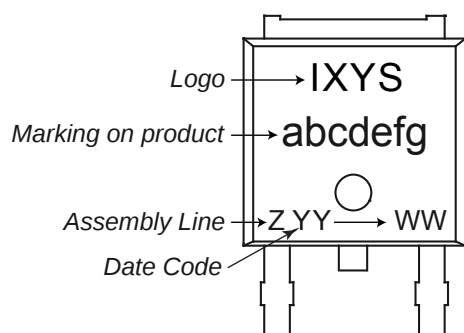
- Housing: TO-252 (DPak)
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	Unit
$V_{RSM/DSM}$	max. non-repetitive reverse/forward blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$			1300	V
$V_{RRM/DRM}$	max. repetitive reverse/forward blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V
I_{RD}	reverse current, drain current	$V_{RD} = 1200 \text{ V}$			10	μA
		$V_{RD} = 1200 \text{ V}$			1	mA
V_T	forward voltage drop	$I_T = 5 \text{ A}$			1.30	V
		$I_T = 10 \text{ A}$			1.60	V
		$I_T = 5 \text{ A}$			1.30	V
		$I_T = 10 \text{ A}$			1.60	V
$I_{T(AV)M}$	average forward current	$T_C = 125^{\circ}\text{C}$			5	A
$I_{T(RMS)}$	RMS forward current	180° sine			7.8	A
V_{T0}	threshold voltage	$T_{VJ} = 150^{\circ}\text{C}$			0.90	V
r_T	slope resistance				85	m Ω
R_{thJC}	thermal resistance junction to case				2.50	K/W
T_{VJ}	virtual junction temperature		-40		150	$^{\circ}\text{C}$
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			50	W
P_{GM}	max. gate power dissipation	$t_p = 30 \mu\text{s}$			5	W
		$t_p = \mu\text{s}$			2.5	W
P_{GAV}	average gate power dissipation				0.25	W
I_{TSM}	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$			50	A
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$			54	A
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$			43	A
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$			46	A
I^2t	value for fusing	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$			13	A ² s
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$			12	A ² s
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$			9.0	A ² s
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$			8.8	A ² s
C_J	junction capacitance	$V_R = 400 \text{ V}$ $f = 1 \text{ MHz}$		2		pF

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$(di/dt)_{cr}$	critical rate of rise of current	$T_{VJ} = 150^{\circ}\text{C}$ repetitive, $I_T = 10\text{ A}$ $f = 50\text{ Hz}$; $t_p = 200\text{ }\mu\text{s}$ $I_G = 0.1\text{ A}$; $di_G/dt = 0.1\text{ A}/\mu\text{s}$			150	$\text{A}/\mu\text{s}$
		$V_D = \frac{2}{3} V_{DRM}$ non-repetitive, $I_T = 5\text{ A}$			500	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	critical rate of rise of voltage	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = 150^{\circ}\text{C}$ $R_{GK} = \infty$; method 1 (linear voltage rise)			500	$\text{V}/\mu\text{s}$
V_{GT}	gate trigger voltage	$V_D = 6\text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = -40^{\circ}\text{C}$			1.8 1.9	V V
I_{GT}	gate trigger current	$V_D = 6\text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = -40^{\circ}\text{C}$			20 40	mA mA
V_{GD}	gate non-trigger voltage	$V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = 150^{\circ}\text{C}$			0.2	V
I_{GD}	gate non-trigger current				1	mA
I_L	latching current	$t_p = 10\text{ }\mu\text{s}$ $T_{VJ} = 25^{\circ}\text{C}$ $I_G = 0.1\text{ A}$; $di_G/dt = 0.1\text{ A}/\mu\text{s}$			45	mA
I_H	holding current	$V_D = 6\text{ V}$ $R_{GK} = \infty$ $T_{VJ} = 25^{\circ}\text{C}$			30	mA
t_{gd}	gate controlled delay time	$V_D = \frac{1}{2} V_{DRM}$ $T_{VJ} = 25^{\circ}\text{C}$ $I_G = 0.1\text{ A}$; $di_G/dt = 0.1\text{ A}/\mu\text{s}$			2	μs
t_q	turn-off time	$V_R = 100\text{ V}$; $I_T = 5\text{ A}$ $T_{VJ} = 150^{\circ}\text{C}$ $V_D = \frac{2}{3} V_{DRM}$; $t_p = 200\text{ }\mu\text{s}$ $di/dt = 10\text{ A}/\mu\text{s}$; $dv/dt = 20\text{ V}/\mu\text{s}$		150		μs

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			20	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
T_{stg}	storage temperature		-55		150	°C
Weight				0.3		g
F_c	mounting force with clip		20		60	N

Product Marking

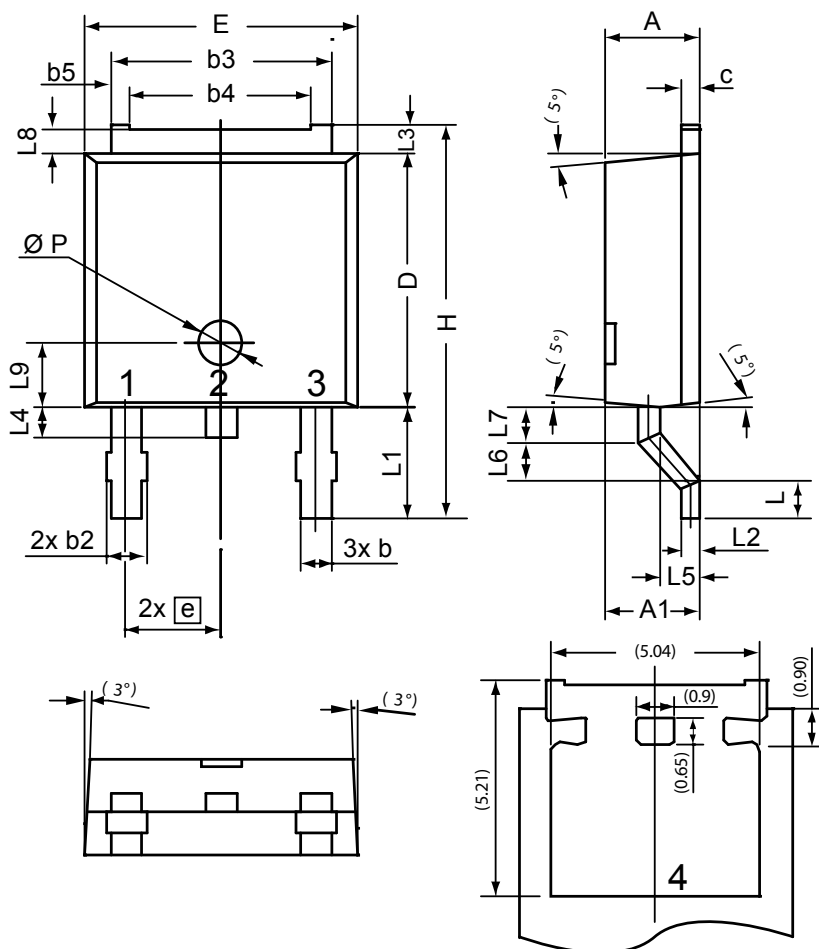


- a) C = Semiconductor
- b) 5 = Current Rating
- c) T = Voltage Class
- d) L = Technology
- e) U = Package
- f) E = Configuration

Part number

- C = Thyristor (SCR)
- L = High Efficiency Thyristor
- A = (up to 1200 V)
- 5 = Current Rating [A]
- E = Single Part
- 1200 = Reverse Voltage [V]
- UC = TO-252AA (DPak)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	CLA 5 E 1200 UC	C5TLUE	Tape & Reel	2500	509799

Outlines TO-252 (DPak)


Dim.	Millimeters		Inches	
	min	max	min	max
A	2.20	2.40	0.087	0.094
A1	2.10	2.50	0.083	0.098
b	0.66	0.86	0.026	0.034
b2	-	0.96	-	0.038
b3	5.04	5.64	0.198	0.222
b4	4.34 BSC		0.171 BSC	
b5	0.50 BSC		0.020 BSC	
c	0.40	0.60	0.016	0.024
D	5.90	6.30	0.232	0.248
E	6.40	6.80	0.252	0.268
e	2.10	2.50	0.083	0.098
H	9.20	9.80	0.362	0.386
L	0.55	1.02	0.022	0.040
L1	2.50	2.90	0.098	0.114
L2	0.40	0.60	0.016	0.024
L3	0.50	0.90	0.020	0.035
L4	0.60	1.00	0.024	0.039
L5	0.82	1.22	0.032	0.048
L6	0.79	0.99	0.031	0.039
L7	0.81	1.01	0.032	0.040
L8	0.40	0.80	0.016	0.031
L9	1.50 BSC		0.059 BSC	
Ø P	1.00 BSC		0.039 BSC	