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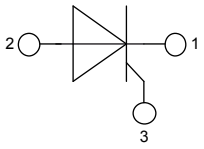
Medium SCR

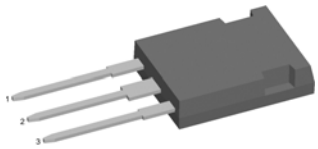
Single Thyristor

V_{RRM} = 1200 V
$I_{T(RMS)}$ = 126 A
$I_{T(AV)M}$ = 80 A

Part number

CLA 80 E 1200 HF





Backside: anode

Features / Advantages:

- Thyristor for line frequency
- Planar passivated chip
- Long-term stability of blocking currents and voltages

Applications:

- Motor control
- Power converter
- AC power controller
- Switch mode and resonant mode power supplies
- Light and temperature control

Package:

- Housing: PLUS247
- Industry standard outline
- 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 = 1200 V	T_{VJ} = 25°C			50	µA
		V_R = 1200 V	T_{VJ} = 125°C			5	mA
V_T	*forward voltage*	I_F = 80 A	T_{VJ} = 25°C			1.40	V
		I_F = 160 A				1.77	V
		I_F = 80 A	T_{VJ} = 125°C			1.38	V
		I_F = 160 A				1.67	V
$I_{T(AV)M}$	*max. average forward current*	T_C = 115°C	T_{VJ} = 150°C			80	A
$I_{T(RMS)}$	*RMS forward current*	180° sine				126	A
V_{T0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.90	V
r_T	*slope resistance* }					6	mΩ
R_{thJC}	*thermal resistance junction to case*					0.20	K/W
T_{VJ}	*virtual junction temperature*			-40		150	°C
P_{tot}	*total power dissipation*		T_C = 25°C			625	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_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			900	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			970	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			765	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			825	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			4.05	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			3.92	kA²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			2.93	kA²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			2.83	kA²s
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		36		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			150	A/µs
		f = 50 Hz; t_P = 200 µs				
		I_G = 0.3 A; 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			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			38	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*				5	mA
I_L	*latching current*	t_p = 10 µs T_{VJ} = 25 °C			150	mA
		I_G = 0.3 A; di_G/dt = 0.3 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_R = ½ V_{DRM} T_{VJ} = 25 °C			2	µs
		I_G = 0.3 A; di_G/dt = 0.3 A/µs				
t_q	*turn-off time*	V_R = 100 V; I_T = 48 A T_{VJ} = 25 °C		150		µs
		V_D = ⅔ V_{DRM}; t_p = 200 µs				
		di/dt = 20 A/µs; dv/dt = 20 V/µs				

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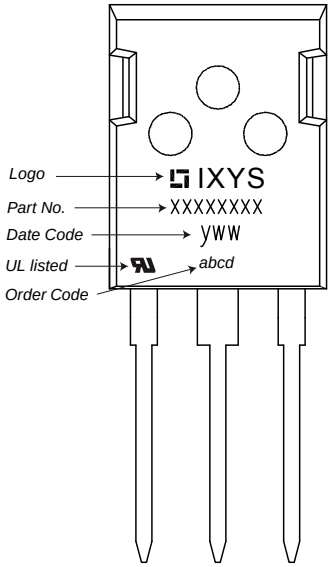
Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per pin [1]			70	A
R_{thCH}	*thermal resistance case to heatsink*			0.25		K/W
T_{stg}	*storage temperature*		-55		150	°C
Weight				6		g
F_C	*mounting force with clip*		20		120	N

[1] I_{RMS} is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.
In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

Product Marking



Part number

C = Thyristor (SCR)
L = Medium SCR
A = (up to 1200V)
80 = Current Rating [A]
E = Single Thyristor
1200 = Reverse Voltage [V]
HF = PLUS247 (3)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	CLA 80 E 1200 HF	CLA80E1200HF	Tube	30	508680

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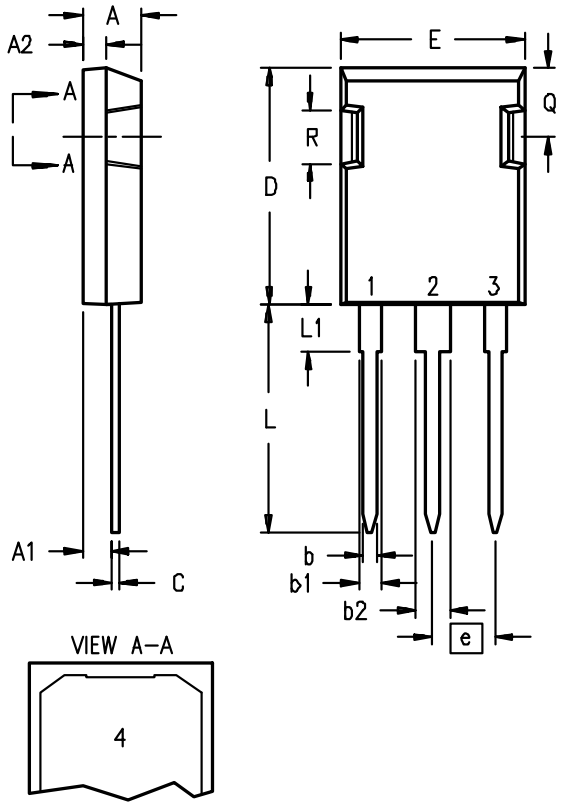
Outlines PLUS247



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	0.19	0.205
A1	2.29	2.54	0.09	0.1
A2	1.91	2.16	0.075	0.085
b	1.14	1.4	0.045	0.055
b1	1.91	2.13	0.075	0.084
b2	2.92	3.12	0.115	0.123
C	0.61	0.8	0.024	0.031
D	20.8	21.34	0.819	0.84
E	15.75	16.13	0.62	0.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	0.78	0.8
L1	3.81	4.32	0.15	0.17
Q	5.59	6.2	0.22	0.244
R	4.32	4.83	0.17	0.19