advanced

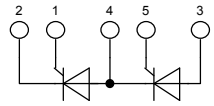
Standard SCR

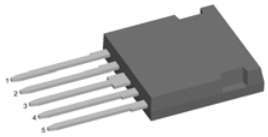
Phase leg

V_{RRM} = 1600 V
$I_{T(RMS)}$ = 47 A
$I_{T(AV)M}$ = 30 A

Part number

CMA 30 P 1600 FC





Backside: Isolated

E72873

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

Ratings

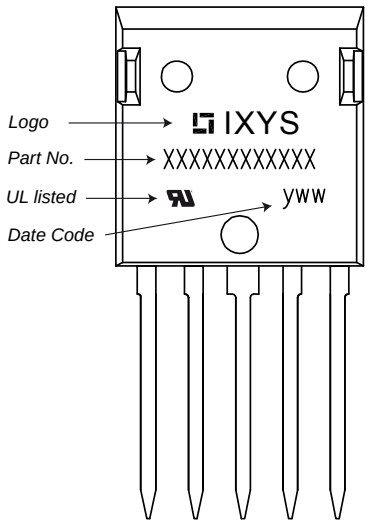
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM/DSM}$	*max. non-repetitive reverse/forward blocking voltage*		T_{VJ} = 25°C			1700	V
$V_{RRM/DRM}$	*max. repetitive reverse/forward blocking voltage*		T_{VJ} = 25°C			1600	V
$I_{R/D}$	*reverse current, drain current*	V_R = 1600 V	T_{VJ} = 25°C			50	µA
		V_R = 1600 V	T_{VJ} = 125°C			2	mA
V_T	*forward voltage*	I_F = 30 A	T_{VJ} = 25°C			1.41	V
		I_F = 60 A				1.78	V
		I_F = 30 A	T_{VJ} = 125°C			1.34	V
		I_F = 60 A				1.80	V
$I_{T(AV)M}$	*max. average forward current*	T_C = 90°C	T_{VJ} = 150°C			30	A
$I_{T(RMS)}$	*RMS forward current*	180° sine				47	A
V_{T0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			0.90	V
r_T	*slope resistance* }					13.8	mΩ
R_{thJC}	*thermal resistance junction to case*					1.05	K/W
T_{VJ}	*virtual junction temperature*			-40		150	°C
P_{tot}	*total power dissipation*		T_C = 25°C			120	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			400	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			430	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			340	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			365	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			800	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			770	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			580	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			555	A²s
C_J	*junction capacitance*	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		16		pF

Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
$(di/dt)_{cr}$	*critical rate of rise of current*	T_{VJ} = 125°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 = 22 A			500	A/µs
$(dv/dt)_{cr}$	*critical rate of rise of voltage*	V_D = ⅔ V_{DRM} T_{VJ} = 125 °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	V
		T_{VJ} = -40 °C			1.2	V
I_{GT}	*gate trigger current*	V_D = 6 V T_{VJ} = 25 °C			65	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 = 0.5 A; di_G/dt = 0.5 A/µs				
t_q	*turn-off time*	V_R = 100 V; I_T = 11 A T_{VJ} = 25 °C		150		µs
		V_D = ⅔ V_{DRM}; t_p = 200 µs				
		di/dt = 10 A/µs; dv/dt = 20 V/µs				

Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per pin [1]			70	A
R_{thCH}	*thermal resistance case to heatsink*			0.20		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*					mm
d_A	*striking distance through air*					mm

[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



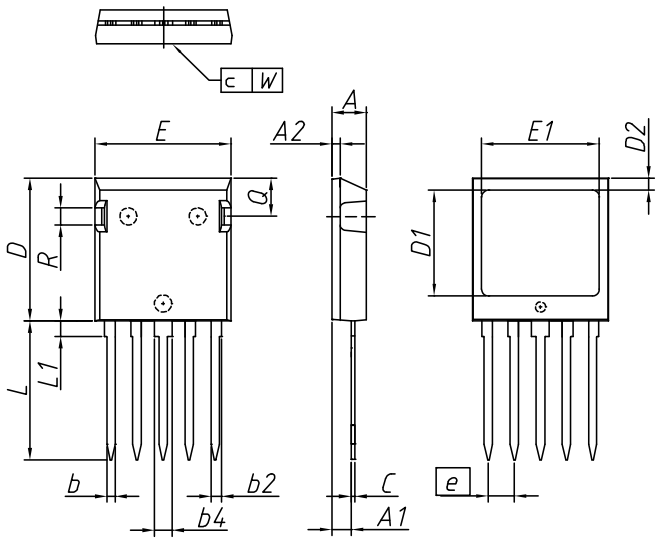
Part number

C = Thyristor (SCR)
M = Standard SCR
A = (up to 1800V)
30 = Current Rating [A]
P = Phase leg
1600 = Reverse Voltage [V]
FC = i4-Pac (5)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	CMA 30 P 1600 FC	CMA30P1600FC	Tube	24	507440

Similar Part	Package	Voltage class
CMA50P1600FC	i4-Pac (5)	1600

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
b1	1,47	1,73	0,058	0,068
b2	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