Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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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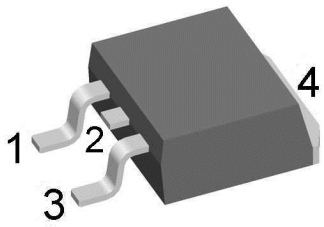
High Efficiency Thyristor

V_{RRM}	=	800 V
I_{TAV}	=	20 A
V_T	=	1.31 V

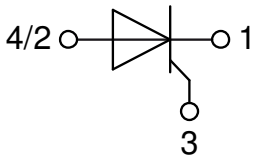
Single Thyristor

Part number

CS19-08ho1S



Backside: anode



Features / Advantages:

- Thyristor for line frequency
- Planar passivated chip
- Long-term stability

Applications:

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

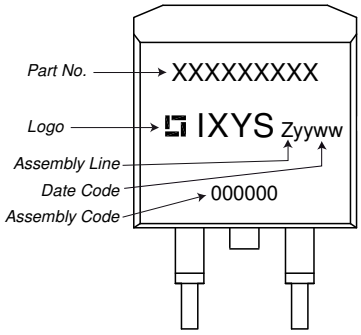
Package: TO-263 (D2Pak)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Thyristor				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
$V_{RSM/DSM}$	*max. non-repetitive reverse/forward blocking voltage*		T_{VJ} = 25°C			900	V
$V_{RRM/DRM}$	*max. repetitive reverse/forward blocking voltage*		T_{VJ} = 25°C			800	V
$I_{R/D}$	*reverse current, drain current*	$V_{R/D}$ = 800 V	T_{VJ} = 25°C			50	µA
		$V_{R/D}$ = 800 V	T_{VJ} = 125°C			1	mA
V_T	*forward voltage drop*	I_T = 20 A	T_{VJ} = 25°C			1.32	V
		I_T = 40 A				1.65	V
		I_T = 20 A	T_{VJ} = 125°C			1.31	V
		I_T = 40 A				1.73	V
I_{TAV}	*average forward current*	T_C = 110°C	T_{VJ} = 125°C			20	A
$I_{T(RMS)}$	*RMS forward current*	180° sine				31	A
V_{T0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 125°C			0.86	V
r_T	*slope resistance* }					22	mΩ
R_{thJC}	*thermal resistance junction to case*					0.7	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			170	W
I_{TSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			180	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			195	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 125°C			155	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			165	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			160	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			160	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 125°C			120	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			115	A²s
C_J	*junction capacitance*	V_R = 230 V f = 1 MHz	T_{VJ} = 25°C		9		pF
P_{GM}	*max. gate power dissipation*	t_P = 30 µs	T_C = 125°C			5	W
		t_P = 300 µs				2.5	W
P_{GAV}	*average gate power dissipation*					0.5	W
$(di/dt)_{cr}$	*critical rate of rise of current*	T_{VJ} = 150°C; f = 50 Hz	repetitive, I_T = 60 A			150	A/µs
		t_P = 200 µs; di_G/dt = 0.15 A/µs;					
		I_G = 0.15 A; V = ⅔ V_{DRM}	non-repet., I_T = 20 A			500	A/µs
$(dv/dt)_{cr}$	*critical rate of rise of voltage*	V = ⅔ V_{DRM}	T_{VJ} = 150°C			500	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			2.5	V
I_{GT}	*gate trigger current*	V_D = 6 V	T_{VJ} = 25°C			28	mA
			T_{VJ} = -40°C			50	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*					3	mA
I_L	*latching current*	t_p = 10 µs	T_{VJ} = 25°C			75	mA
		I_G = 0.1 A; di_G/dt = 0.1 A/µs					
I_H	*holding current*	V_D = 6 V R_{GK} = ∞	T_{VJ} = 25°C			50	mA
t_{gd}	*gate controlled delay time*	V_D = ½ V_{DRM}	T_{VJ} = 25°C			2	µs
		I_G = 0.1 A; di_G/dt = 0.1 A/µs					
t_q	*turn-off time*	V_R = 100 V; I_T = 20 A; V = ⅔ V_{DRM}	T_{VJ} = 100 °C		150		µs
		di/dt = 10 A/µs dv/dt = 20 V/µs t_p = 200 µs					

Package TO-263 (D2Pak)			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			35	A
T_{VJ}	*virtual junction temperature*		-40		125	°C
T_{op}	*operation temperature*		-40		100	°C
T_{stg}	*storage temperature*		-40		150	°C
Weight				2		g
F_C	*mounting force with clip*		20		60	N

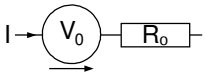
Product Marking



Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	CS19-08ho1S	CS19-08ho1S	Tape & Reel	800	489204
Alternative	CS19-08ho1S-TUB	CS19-08ho1S	Tube	50	473332

Similar Part	Package	Voltage class
CS19-08ho1	TO-220AB (3)	800
CS19-12ho1	TO-220AB (3)	1200
CS19-12ho1S	TO-263AB (D2Pak) (2)	1200

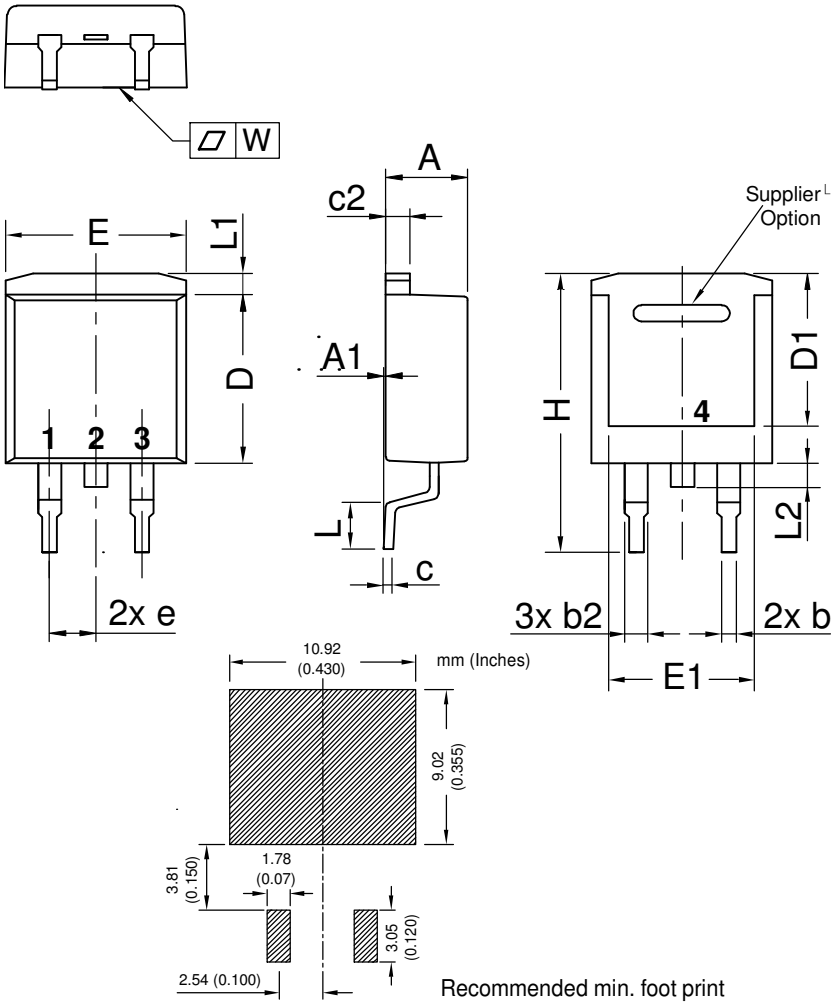
Equivalent Circuits for Simulation ** on die level* T_{VJ} = 125 °C



Thyristor

$V_{0\,max}$	*threshold voltage*	0.86	V
$R_{0\,max}$	*slope resistance **	19	mΩ

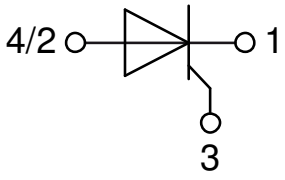
Outlines TO-263 (D2Pak)



Recommended min. foot print

Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	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	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2,54 BSC		0,100 BSC	
e1	4.28		0.169	
H	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.



Thyristor

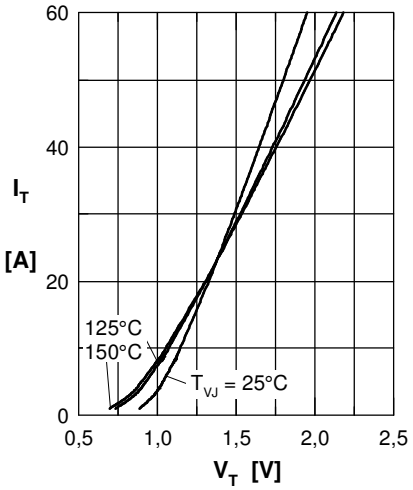


Fig. 1 Forward characteristics

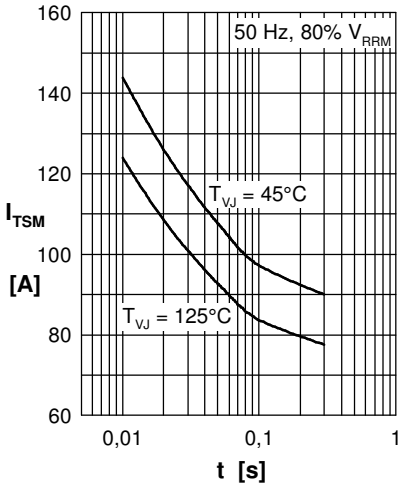


Fig. 2 Surge overload current

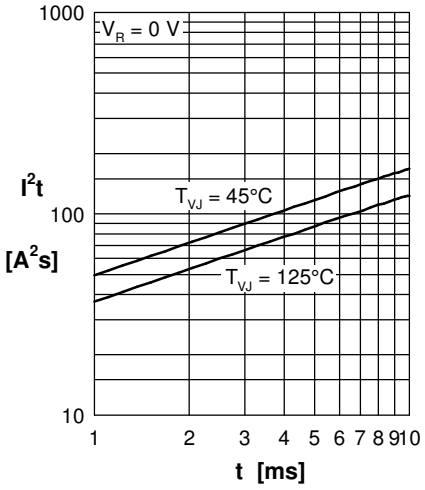


Fig. 3 I^2t versus time (1-10 ms)

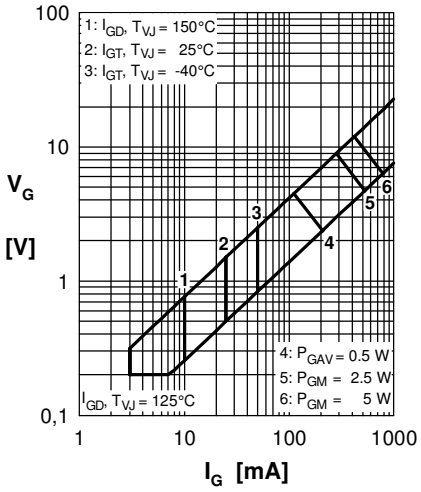


Fig. 4 Gate trigger characteristics

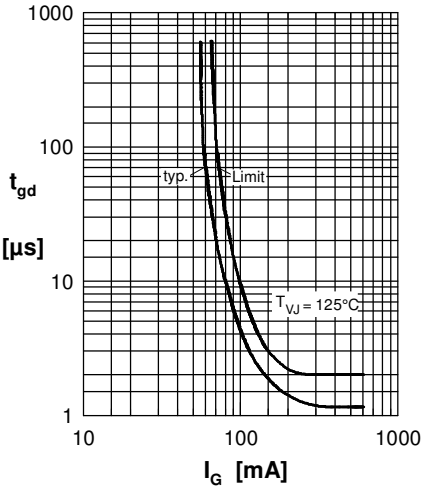


Fig. 5 Gate controlled delay time

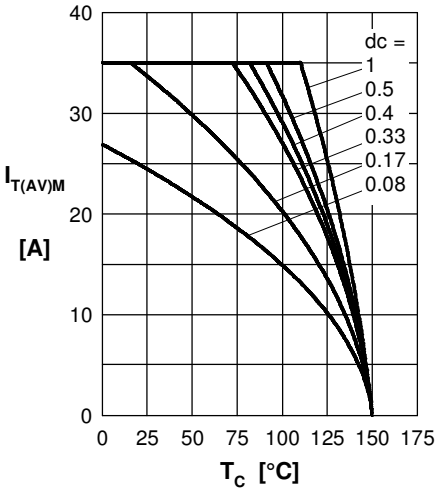


Fig. 6 Max. forward current at case temperature

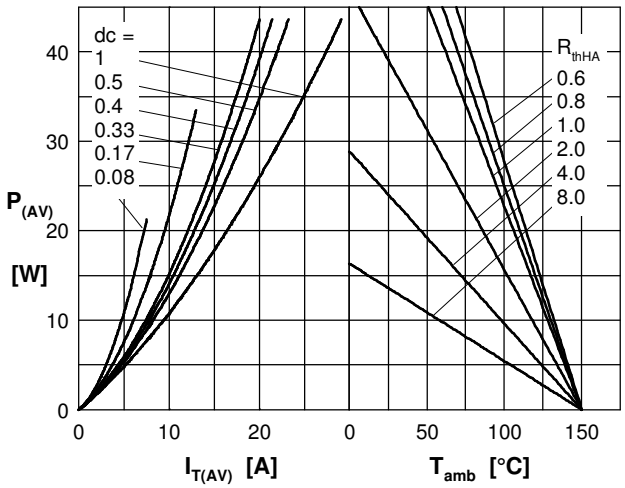


Fig. 7a Power dissipation versus direct output current
Fig. 7b and ambient temperature

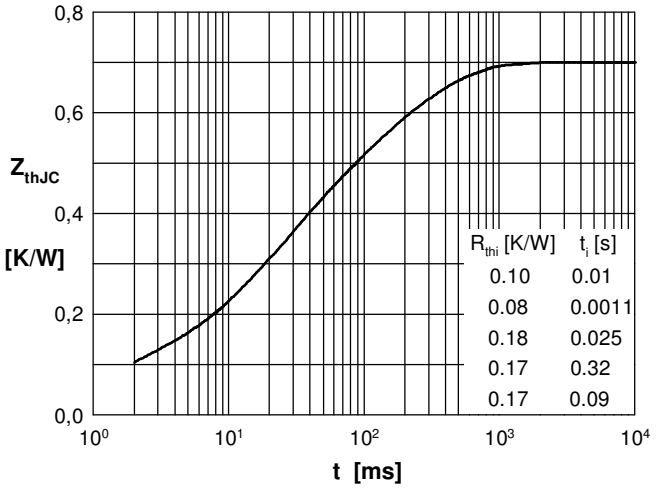


Fig. 8 Transient thermal impedance junction to case