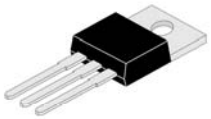
TO-220 Plastic-Encapsulate Thyristors-SCR

CYN1025



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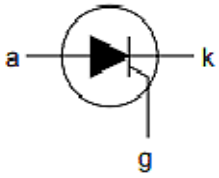


TO-220 Leaded
Plastic Package
RoHS compliant

Features

SYMBOL	VALUE	UNIT
$I_{T(RMS)}$	25	A
V_{DRM}/V_{RRM}	1000	V
I_{GT}	40	mA

APPLICATIONS: Suitable for general purpose applications. They provide a superior performance in surge current capabilities.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER			SYMBOL	VALUE	UNIT
RMS on-state current (180° conduction angle)		Tc = 100°C	$I_{T(RMS)}$	25	A
Average on-state current (180° conduction angle)		Tc = 100°C	$T_{(AV)}$	16	A
Non repetitive surge peak on-state current	tp = 8.3ms	Tj = 25°C	I_{TSM}	314	A
	tp = 10ms			300	
I²t Value for fusing	tp = 10ms	Tj = 25°C	I²t	450	A^2S
Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100 ns	F = 60Hz	Tj = 125°C	dI/dt	50	A/µs
Peak gate current	tp = 20 µs	Tj = 125°C	I_{GM}	4	A
Average gate power dissipation		Tj = 125°C	$P_{G(AV)}$	1	W
Storage junction temperature range			T_{stg}	-40 to +150	°C
Operating junction temperature range			T_j	-40 to +125	°C
Maximum peak reverse gate voltage			V_{RGM}	5	V

THERMAL RESISTANCES

Junction to case (DC)	$R_{th(j-c)}$	1.0	°C/W
Junction to ambient (DC)	$R_{th(j-a)}$	60	°C/W

S = Copper surface under tab

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Triggering gate current		I_{GT}	V_D = 12V R_L = 33Ω	4	--	40	mA
Triggering gate voltage		V_{GT}		--	--	1.3	
Non-triggering gate voltage	T_j = 125°C	V_{GD}	V_D = V_{DRM} R_L = 3.3kΩ	0.2	--	--	V
Holding current		I_H	I_T = 500mA Gate open	--	--	50	V
Latching current		I_L	I_G = 1.2 I_{GT}	--	--	90	mA
Critical rate of rise of off-state voltage	T_j = 125°C	dV/dt	V_D = 67% VDRM Gate open	1000	--	--	V/µs
Peak on-state voltage drop	T_j = 25°C	V_{TM}	I_{TM} = 50 A tp = 380 µs	--	--	1.6	V
Threshold voltage	T_j = 125°C	V_{t0}	Threshold voltage	--	--	0.77	V
Dynamic on-state resistance	T_j = 125°C	R_d	Dynamic resistance	--	--	14	mΩ
Maximum leakage current	T_j = 25°C	I_{DRM}	V_{DRM} = V_{RRM}	--	--	5	µA
Maximum Reverse leakage current	T_j = 125°C	I_{RRM}		--	--	4	mA

TYPICAL CHARACTERISTICS CURVES

Fig 1: Maximum average power dissipation versus average on-state current.

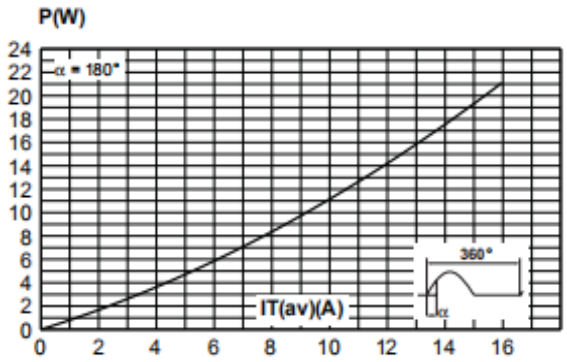


Fig 2: Average and D.C. on-state current versus case temperature.

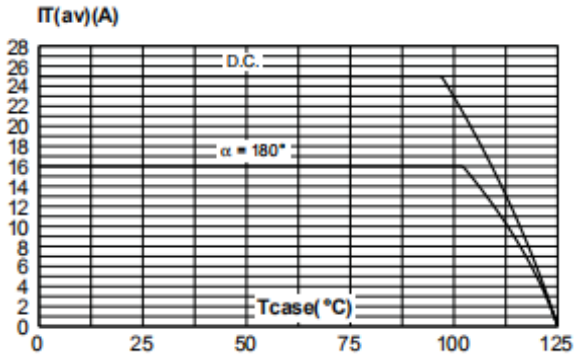


Fig 3. Average and D.C. on-state current versus ambient temperature (copper surface under tab: S = 1 cm²

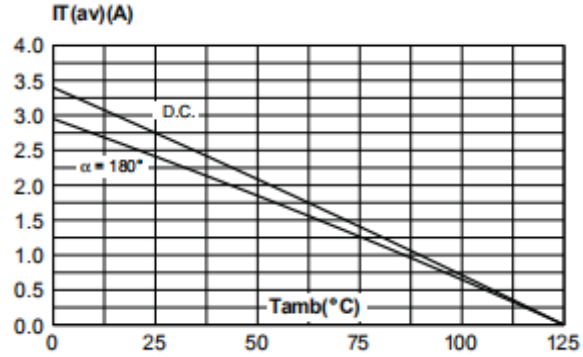


Fig 4. Relative variation of thermal impedance versus pulse duration.

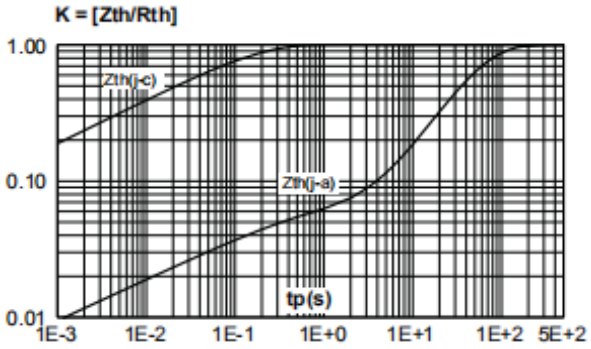


Fig 5: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

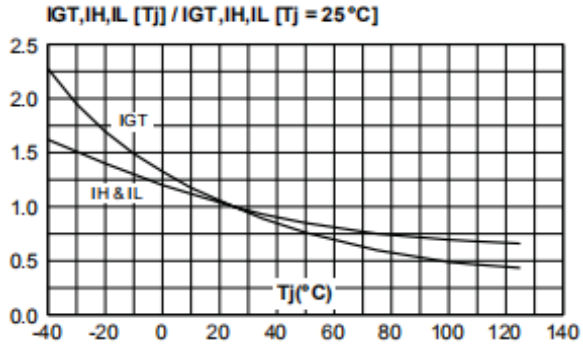
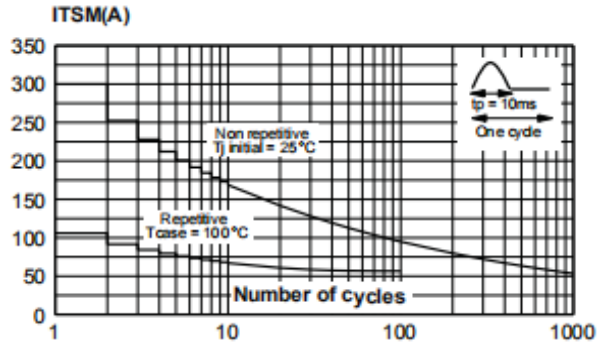


Fig 6: Surge peak on-state current versus number of cycles.



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TYPICAL CHARACTERISTICS CURVES

Fig 7. Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms, and corresponding values of I^2t.

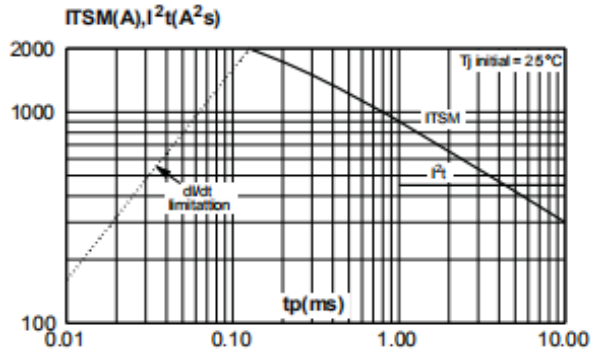


Fig 8. On-state characteristics (maximum values).

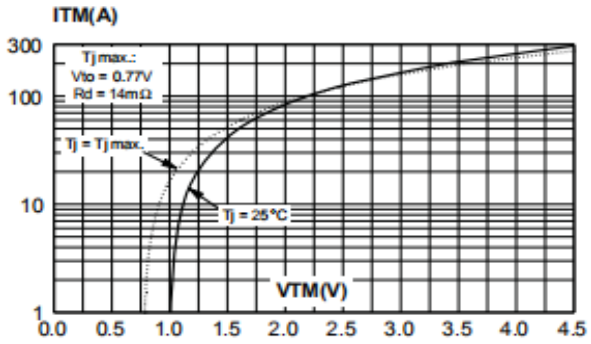
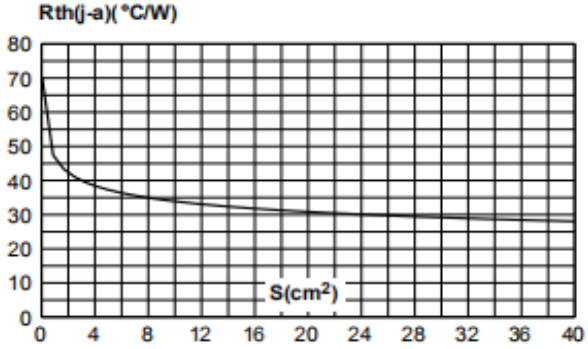
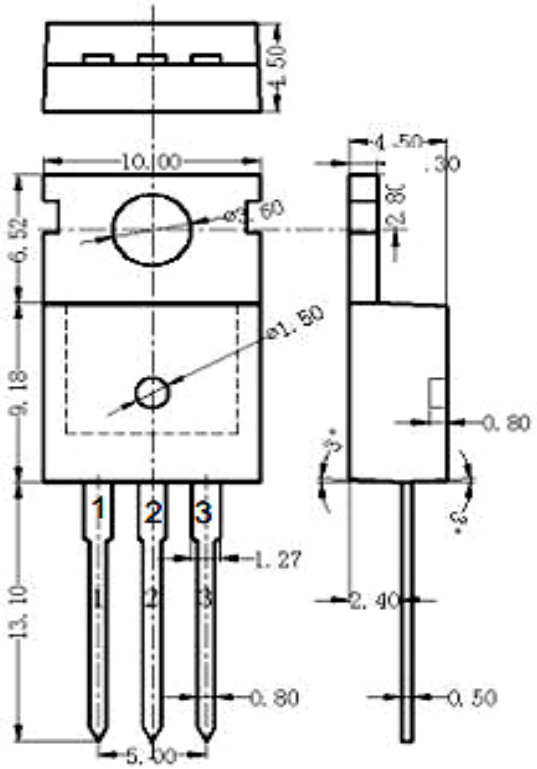


Fig 9. Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 µm)



PACKAGE DETAILS

TO-220 Leaded Plastic Package



Unit: mm

PIN CONFIGURATION

1. Cathode
2. Anode
3. Gate

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

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Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).
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