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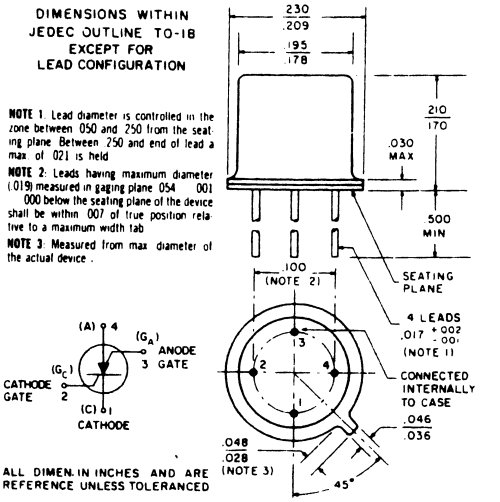
PNPN

3N84,5

- Fourth lead completely eliminates rate effects (dv/dt)
- Dynamic and static breakover voltages are equal
- 40 and 100 volt ratings
- Characterized at temperature extremes
- Low cost
- TO-18 case

absolute maximum ratings:[1] (25°C) (unless otherwise specified)

	3N84	3N85	
Voltage			
Anode to cathode forward and reverse	40	100	volts
Anode gate to anode reverse	40	100	volts
Cathode gate to cathode reverse	5	5	volts
Total Current			
Continuous DC forward[2]	175	175	ma
Peak recurrent forward ($T_A = 100°C$, 100 μsec. pulse width, 1% duty cycle)	0.5	0.5	amps
Peak non-recurrent forward (10 μsec. pulse width)	2.0	2.0	amps
Gate Current (Forward Bias)			
Continuous DC anode gate	10	10	ma
Peak anode gate ($T_A = 100°C$, 100 μsec. pulse width, 1% duty cycle)	10	10	ma
Peak cathode gate ($T_A = 100°C$, 100 μsec. pulse width, 1% duty cycle)	100	100	ma
Continuous DC cathode gate	10	10	ma
Dissipation			
Total power[2]	320	320	mw
Cathode gate power[2]	50	50	mw
Temperature			
Operating Junction	−55 to +125		°C
Storage	−65 to +200		°C



electrical characteristics:[1]

	Symbol[1]	Temp.	3N84[3]	3N85[3]		Typical Curves Fig. #
CUTOFF CHARACTERISTICS						
Forward Blocking Current ($R_{GC} = 10K$, V_{AC} = Rated Voltage)	$I_{B\ max}$	@ 25°C		1.0	μa max	12
		@ 125°C		20	μa max	
Reverse Blocking Current ($R_{GC} = 10K$, V_{CA} = Rated Voltage)	$I_{R\ max}$	@ 25°C		1.0	μa max	12
		@ 125°C		20	μa max	
Cathode Gate Reverse Cutoff Current (at Rated Voltage)	I_{GC}	@ 25°C		20	μa max	
Anode Gate Reverse Cutoff Current (at Rated Voltage)	I_{GA}	@ 25°C		1.0	μa max	
CONDUCTING CHARACTERISTICS						
Forward Voltage (at 175ma Anode Current $R_{GC} = 10K$)	$V_{F\ max}$	@ 25°C	1.9	1.9	V max	6, 7
		@ −55°C	2.5	2.5	V max	
Holding Current ($R_{GC} = 10K$)	$I_{H\ max}$	@ 25°C	2.0	2.0	ma max	8, 9, 11
		@ −55°C	10	10	ma max	
TRIGGERING CHARACTERISTICS						
Cathode Gate Current to Trigger[3] (I_{GTC} from current source, $V_{AC} = 40V$, $R_A = 800\Omega$)	$I_{GTC\ max}$	@ 25°C	10	10	μa max	13
		@ −55°C	100	100	μa max	
Cathode Gate Voltage to Trigger[3] ($V_{AC} = 40V$, $R_A = 800\Omega$, $R_{GC} = 10K$, $R_{GA} = \infty$) I_{GTC} from current source)	$V_{GTC\ max}$	@ 25°C	.65	.65	V max	14
		@ −55°C	1.0	1.0	V max	
	$V_{GTC\ min}$	@ 25°C	0.4	0.4	V min	
		@ 125°C	0.2	0.2	V min	
TRANSIENT CHARACTERISTICS[3]						
Turn-On Time ($V_{AC} = 20V$, $I_A = 100ma$, $I_{GC} = 100\ \mu a$)	$t_{on\ max}$	@ 25°C	1.5	1.5	μs max	3, 10
		@ −55°C	2.0	2.0	μs max	
Recovery Time[3] ($V_{AC} = 20V$, $I_A = 100ma$, $R_{GC} = 10K$)	$t_{rec\ max}$	@ 25°C	15	15	μs max	4, 5, 15, 16
		@ 125°C	25	25	μs max	
Rate of Rise of Forward Blocking Voltage	dv/dt max	@ 25°C	See Note 4		V/μs max	

NOTE 1: Symbols and nomenclature are defined at the top of the next page.
NOTE 2: Derate currents and power linearly to 125°C. The absolute maximum rating at any given temperature shall be in terms of the more conservative of the two parameters, i.e. current or power.
NOTE 3: The 3N84 and 3N85 test conditions include a 220K resistor added from the anode gate to the anode supply voltage. I_K is the only exception, the 220K resistor being deleted.
NOTE 4: The dv/dt rating is unlimited when the anode gate lead is returned to the anode voltage through a current limiting resistor. An example of this technique is shown in Figure 23.