

# DIGITRON SEMICONDUCTORS

GA200-GA201A

SILICON CONTROLLED RECTIFIER  
NANOSECOND SWITCHING

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

## MAXIMUM RATINGS

Ratings	Symbol	GA200 GA200A	GA201 GA201A	GB200 GB200A	GB201 GB201A
Repetitive peak off state voltage	$V_{DRM}$	60V	100V	60V	100V
Repetitive peak on state current	$I_{TRM}$	Up to 100A			
DC on state current 70°C ambient 70°C case	$I_T$	200mA 400mA		- 6A	
Peak gate current	$I_{GM}$	250mA		250mA	
Average gate current	$I_{G(AV)}$	25mA		50mA	
Reverse gate current	$I_{GR}$	3mA		3mA	
Reverse gate voltage	$V_{GR}$	5V		5V	
Thermal resistance	$R_{\theta CA}$	300°C/W			
Storage temperature range	$T_{stg}$	-65° to 200°C			
Operating temperature range	$T_J$	-65° to 150°C			

## ELECTRICAL CHARACTERISTICS (@ 25°C unless otherwise noted)

Test	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Delay time	$t_d$	-	20	30	ns	$I_G = 20mA, I_T = 1A$ $I_G = 30mA, I_T = 1A$
Rise time (GA200, GA200A, GB200, GB200A)	$t_r$	-	15	25	ns	$V_D = 60V, I_T = 1A(1)$ $V_D = 60V, I_T = 30A(1)$
Rise time (GA201, GA201A, GB201, GB201A)	$t_r$	-	10	20	ns	$V_D = 100V, I_T = 1A(1)$ $V_D = 100V, I_T = 30A(1)$
Gate trigger on pulse width	$t_{pg(on)}$	-	0.02	0.05	μs	$I_G = 10mA, I_T = 1A$
Circuit commutated turn-off time (GA200, GA201, GB200, GB201) (GA200A, GA201A, GB200A, GB201A)	$t_q$	-	0.8	2.0	μs	$I_T = 1A, I_R = 1A, R_{GK} = 1K$
Off-state current	$I_{DRM}$	-	0.01	0.1	μA	$V_{DRM} = \text{Rating}, R_{GK} = 1K$
		-	20	100	μA	$V_{DRM} = \text{rating}, R_{GK} = 1K, 150°C$
Reverse current	$I_{RRM}$	-	1.0	10	mA	$V_{RRM} = 30V, R_{GK} = 1K(2)$
Reverse gate current	$I_{GR}$	-	0.01	0.1	mA	$V_{GRM} = 5V$
Gate trigger current	$I_{GT}$	-	10	200	μA	$V_D = 5V, R_{GS} = 10K$
Gate trigger voltage	$V_{GT}$	0.4	0.6	0.75	V	$V_D = 5V, R_{GS} = 100\Omega, T = 25°C$
		0.10	0.20	-	V	$T = 150°C$
On-state voltage	$V_T$	-	1.1	1.5	V	$I_T = 2A$
Holding current	$I_H$	0.3	2.0	5.0	mA	$V_D = 5V, R_{GK} = 1K, T = 25°C$
		0.05	0.2	-	mA	$T = 150°C$
Off-state voltage - critical rate of rise	$dv/dt$	20	40	-	V/μs	$V_D = 30V, R_{GK} = 1K$

Note 1:  $I_G = 10mA$ , Pulse test: Duty cycle < 1%.

Note 2: Pulse test intended to guarantee reverse anode voltage capability for pulse commutation. Device should not be operated in the reverse blocking mode on a continuous basis.

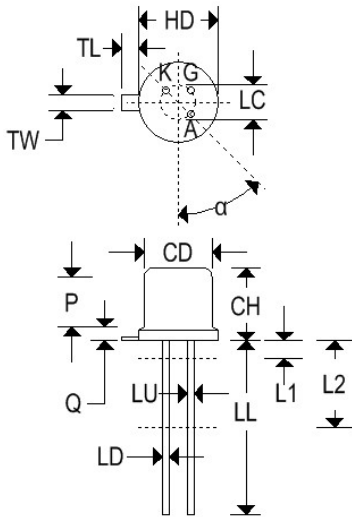
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## MECHANICAL CHARACTERISTICS

Case	TO-18
Marking	Alpha-numeric
Pin out	See below

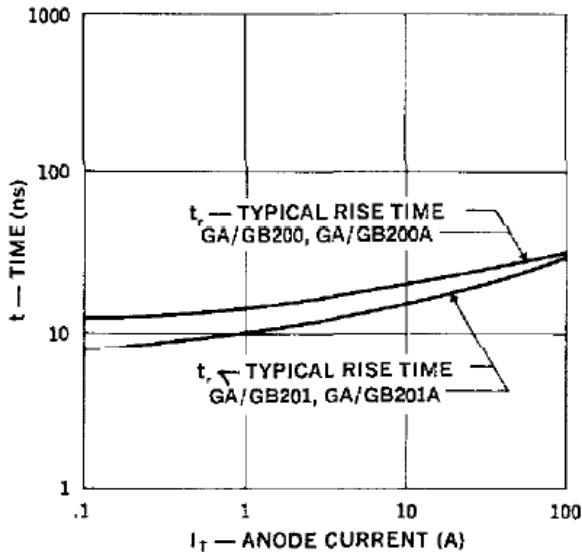


	TO-18			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.209	0.230	5.310	5.840
B	0.178	0.195	4.520	4.950
C	0.170	0.210	4.320	5.330
D	0.016	0.021	0.406	0.533
E	-	0.030	-	0.762
F	0.016	0.019	0.406	0.483
G	0.100 BSC		2.540 BSC	
H	0.036	0.046	0.914	1.170
J	0.028	0.048	0.711	1.220
K	0.500	-	12.700	-
L	0.250	-	6.350	-
M	45° BSC		45° BSC	
N	0.050 BSC		1.270 BSC	
P	-	0.050	-	1.270

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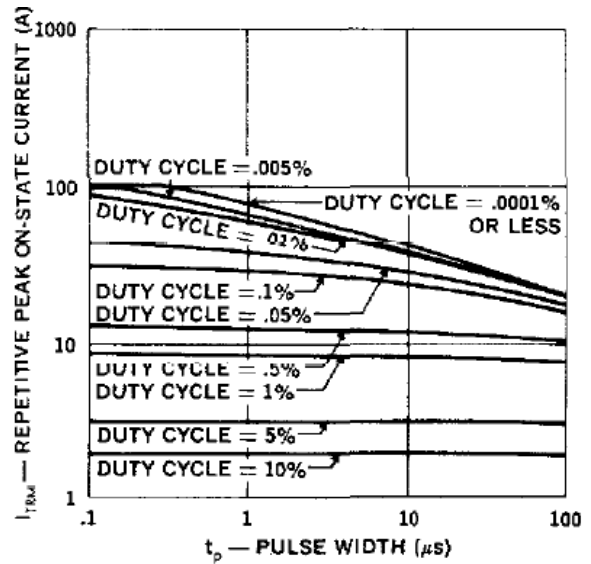
SILICON CONTROLLED RECTIFIER  
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SWITCHING SPEED (TYPICAL) GA/GB200 SERIES

NOTES:

1.  $V_D$  = Rated  $V_{DRM}$
2.  $T_A$  = 25°C
3.  $I_G$  = 20mA
4.  $t_d$  = 20ns, typically for all types independent of anode current

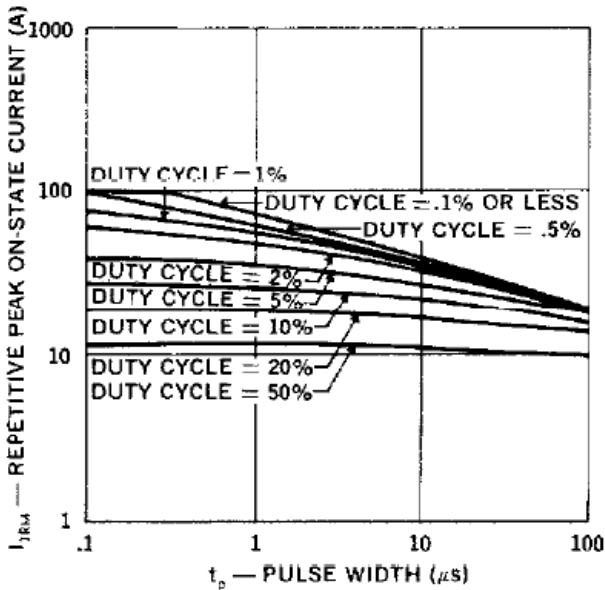


PEAK CURRENT VS. PULSE WIDTH  
(GA200 SERIES)

1. Data based on on-state voltage graph at  $T_J$  = 150°C. Blocking voltage may be applied immediately after termination of current pulse
2.  $T_A$  = 75°C

ON-STATE CURRENT VS. VOLTAGE  
(GA/GB200 SERIES)

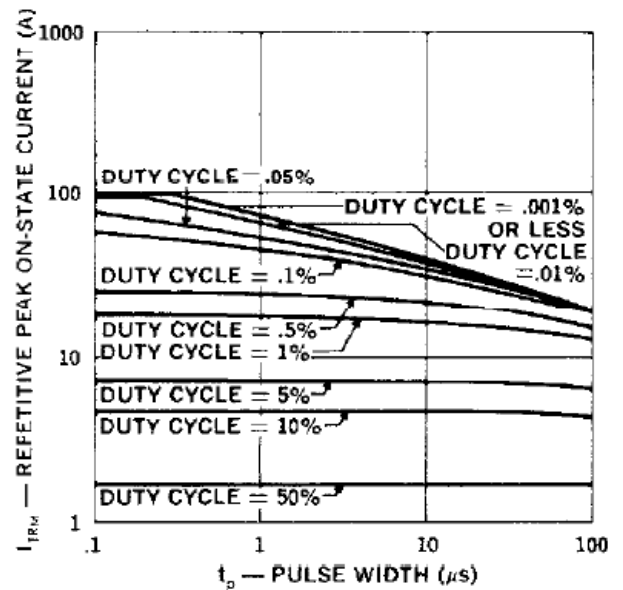
SURGE RATING MAXIMUM  
(GA/GB200 SERIES)



PEAK CURRENT VS. PULSE WIDTH  
(GB200 SERIES)

NOTES:

1. Data based on on-state voltage graph at  $T_J$  = 150°C. Blocking voltage may be applied immediately after termination of current pulse.
2.  $T_C$  = 75°C



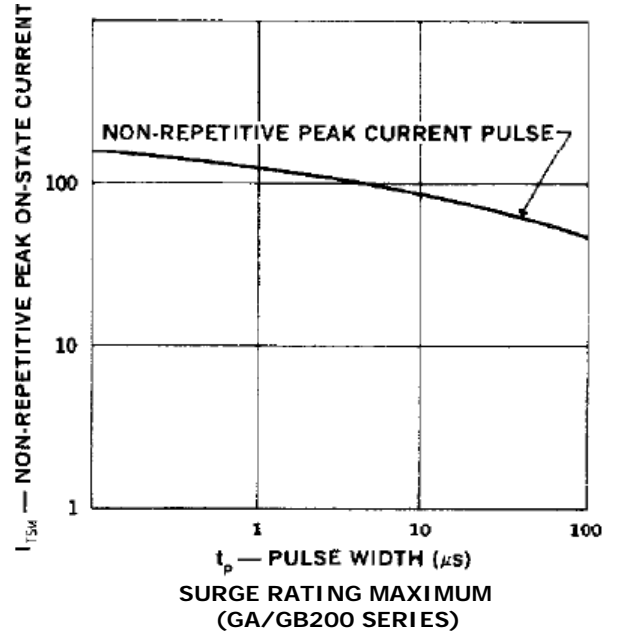
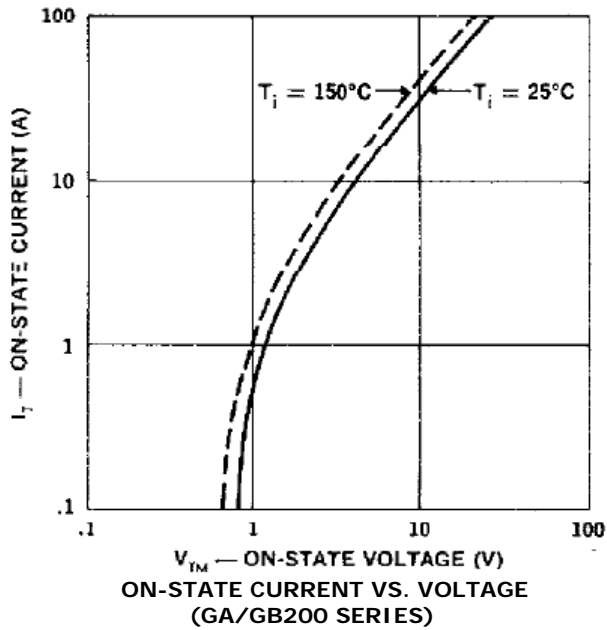
PEAK CURRENT VS. PULSE WIDTH  
(GB200 SERIES)

1. Data based on on-state voltage graph at  $T_J$  = 150°C. Blocking voltage may be applied immediately after termination of current pulse
2.  $T_A$  = 75°C

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NOTES:

1. Blocking voltage may not be applied for 0.001 seconds after termination of surge pulse as junction temperature will exceed  $150^\circ$ .
2.  $T_C = 75^\circ\text{C}$