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 10	30 -	ns	I_G = 20mA, I_T = 1A I_G = 30mA, I_T = 1A
Rise time (GA200, GA200A, GB200, GB200A)	t_r	- -	15 25	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	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 0.3	2.0 0.5	µs	I_T = 1A, I_R = 1A, R_{GK} = 1K
Off-state current	I_{DRM}	-	0.01	0.1	µA	V_{DRM} = Rating, R_{GK} = 1K
		-	20	100	µA	V_{DRM} = 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} = 100Ω, 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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D I G I T R O N S E M I C O N D U C T O R S

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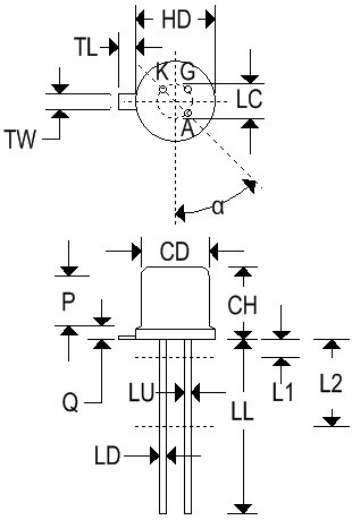
MECHANICAL CHARACTERISTICS

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°C BSC		45° BSC	
N	0.050 BSC		1.270 BSC	
P	-	0.050	-	1.270

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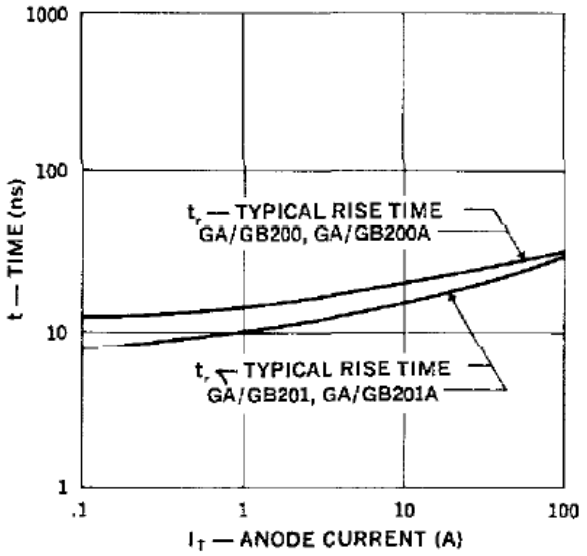
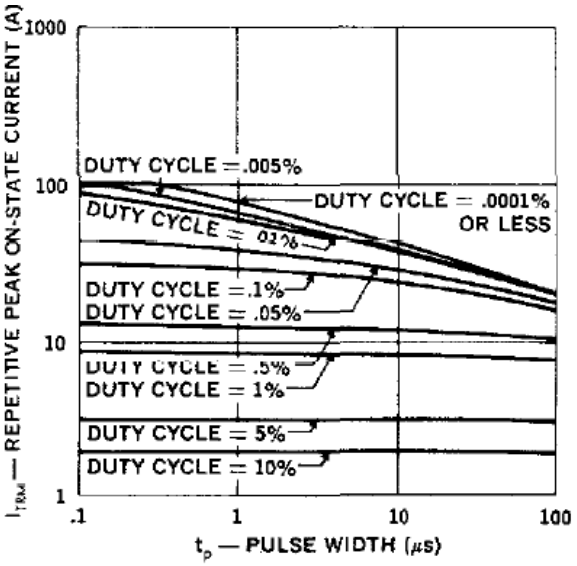


SWITCHING SPEED (TYPICAL) GA/GB200 SERIES

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

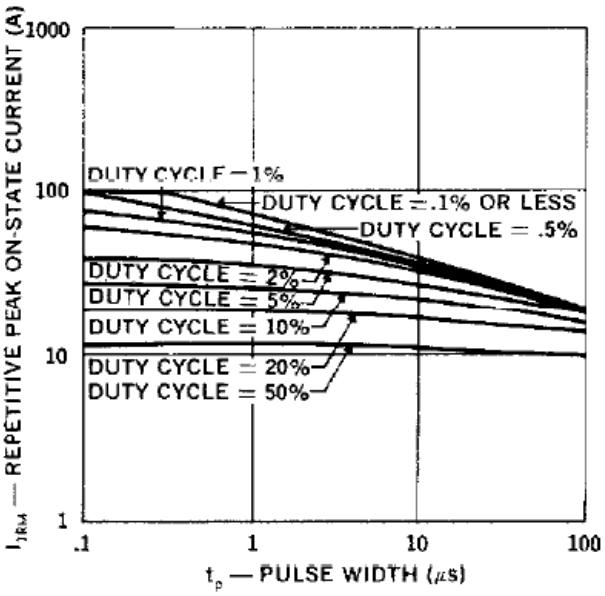


PEAK CURRENT VS. PULSE WIDTH (GA200 SERIES)

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

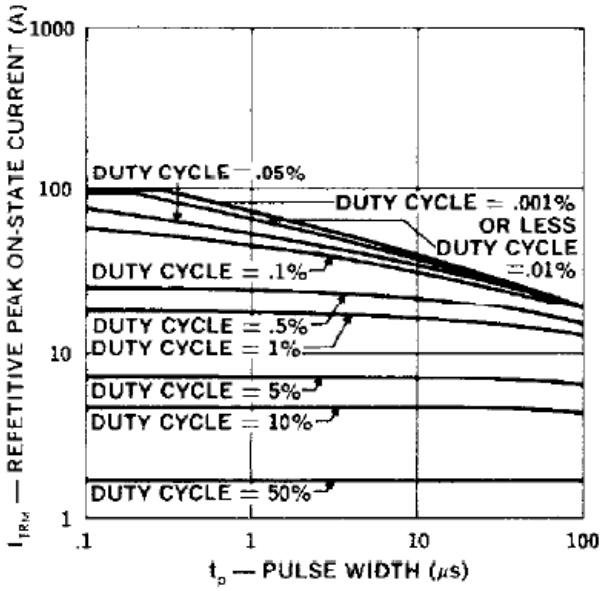
ON-STATE CURRENT VS. VOLTAGE (GA/GB200 SERIES)

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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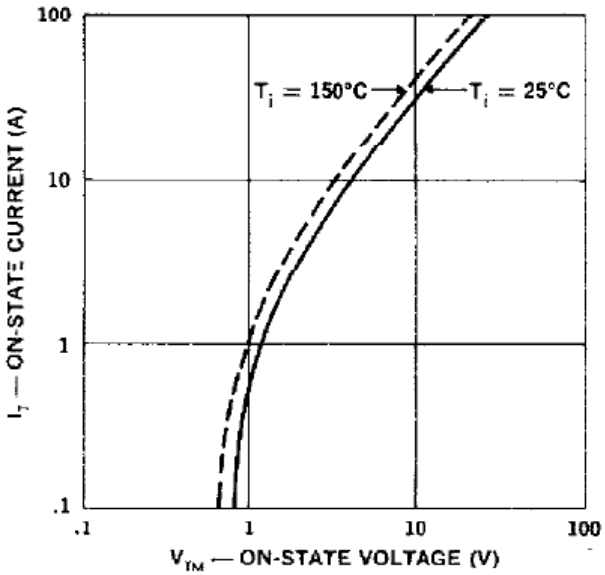
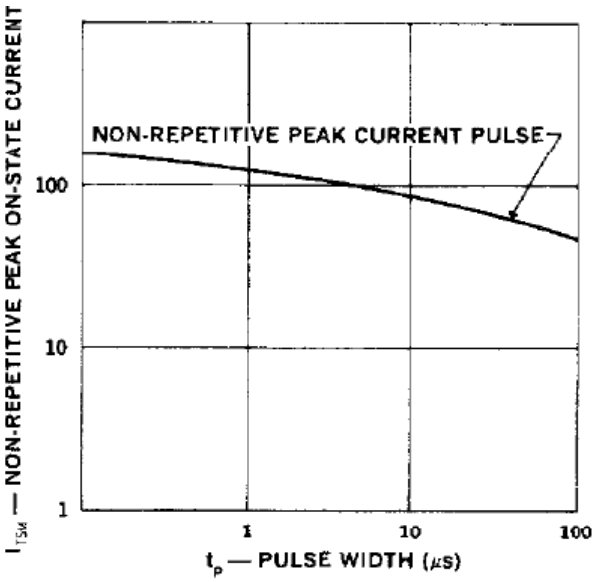


ON-STATE CURRENT VS. VOLTAGE
(GA/GB200 SERIES)



SURGE RATING MAXIMUM
(GA/GB200 SERIES)

NOTES:

1.Blocking voltage may not be applied for 0.001 seconds after termination of surge pulse as junction temperature will exceed 150°.
2. T_C = 75°C

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