DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

GA300(A)-GA301(A)

SILICON CONTROLLED RECTIFIERS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

		GA300 GA300A	GA301 GA301A
Repetitive Peak Off State Voltage	V_{DRM}	60V	100V
Repetitive Peak On-State Current	I_{TRM}	Up to 100A	
Peak Gate Current	I_{GM}	250 mA	
Average Gate Current	$I_{G(AV)}$	25 mA	
Reverse Gate Current	I_{GR}	3 mA	
Reverse Gate Voltage	V_{GR}	5 V	
Storage Temperature Range		-65 to +150°C	
Operating Temperature Range		0 to +125°C	

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Test	Symbol	Min	Typical	Max	Units	Conditions
Delay Time	t_d	- -	20 10	30 -	ns	I_G = 20 mA, I_T = 1 A I_G = 30 mA, I_T = 1A
Rise Time (Note 1) GA300, GA300A	t_r	- -	15 25	25 -	ns	V_D = 60 V, I_T = 1 A V_D = 60 V, I_T = 30 A (Note 1)
Rise Time (Note 1) GA301, GA301A	t_r	- -	10 20	20 -	ns	V_D = 100 V, I_T = 1A V_D = 100 V, I_T = 30 A (Note 1)
Circuit Commutated Turn Off Time GA300, GA301	t_q	-	0.8	2.0	µs	I_T = 1 A, I_R = 1 A, R_{GK} = 1K
GA300A, GA301A			0.3	0.5		
Gate Trigger On Pulse Width	$t_{pg(on)}$	-	0.02	0.05	µs	I_G = 10 mA, I_T = 1 A
Off-State Current	I_{DRM}	- -	0.01 20	0.1 100	µA	V_{DRM} = Rating, R_{GK} = 1K, T = 25°C V_{DRM} = Rating, R_{GK} = 1K, T = 125°C
Reverse Current (Note 2)	I_{RRM}	-	1.0	10	mA	V_{RRM} = 30 V, R_{GK} = 1 K (Note 2)
Gate Trigger Voltage	V_{GT}	0.4 0.10	0.6 0.2	0.75 -	V	V_D = 5V, R_{GS} = 100 Ω, T = 25°C V_D = 5 V, R_{GS} = 100 Ω, T = 125°C
Gate Trigger Current	I_{GT}	-	10	200	µA	V_D = 5 V, R_{GS} = 10 K
On-State Voltage	V_T	-	1.1	1.5	V	I_T = 2 A
Off-State Voltage – Critical Rate of Rise	dV/dt	15	30	-	V/µs	V_D = 30 V, R_{GK} = 1 K
Reverse Gate Current	I_{GR}	-	0.01	0.1	mA	V_{GR} = 5 V
Holding Current	I_H	0.3 0.05	2.0 0.4	5.0 -	mA	V_D = 5V, R_{GK} = 1 K, T = 25°C V_D = 5 V, R_{GK} = 1 K, T = 125°C

Note 1 – I_G = 10 mA, 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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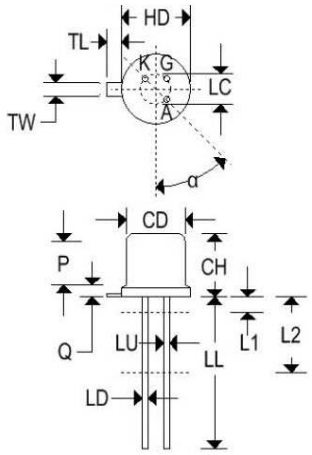
MECHANICAL CHARACTERISTICS

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

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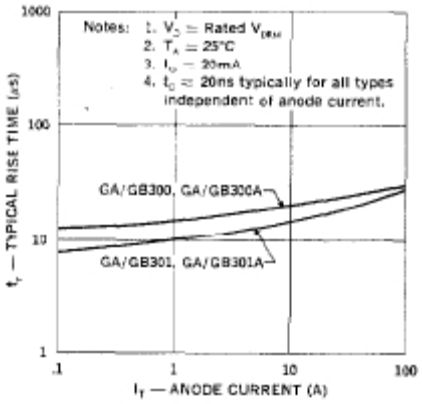
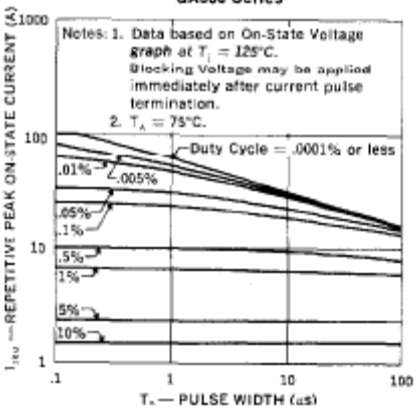
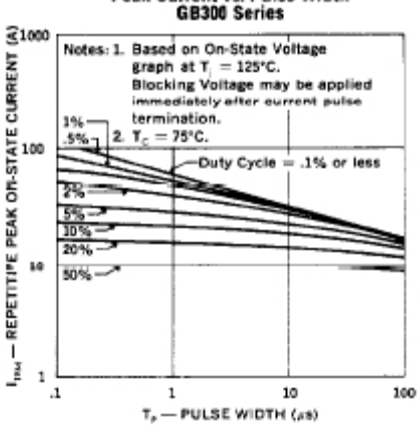
Switching Speed vs. Current
GA/GB300 Series



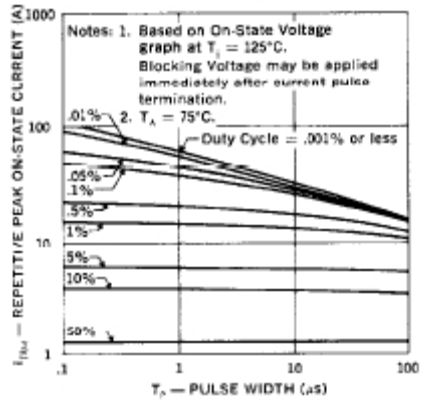
Peak Current vs. Pulse Width
GA300 Series



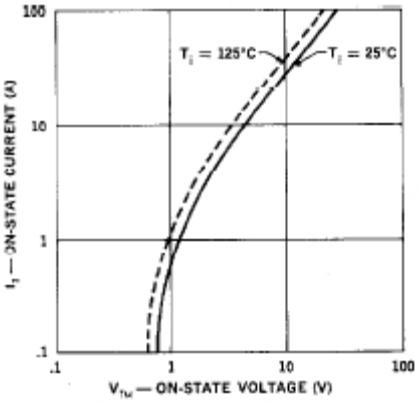
Peak Current vs. Pulse Width
GB300 Series



Peak Current vs. Pulse Width
GB300 Series



On-State Voltage vs. Current
GA/GB300 Series



Surge Rating
GA/GB300 Series