

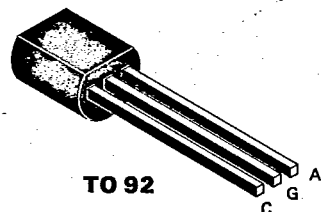
8834750 TAG SEMICONDUCTORS LTD

63C 00678 DT-25-11

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**X0110BA -  
X0110NA SCR'S****0.8 A 200-800 V 5-20  $\mu$ A**

The X0110 series silicon controlled rectifiers are high performance PNP devices diffused with TAG's proprietary Top Glass™ Process. These parts are intended for general purpose, high speed, high voltage applications.



TO 92

**Absolute Maximum Ratings**  $T_A = 25^\circ\text{C}$  unless otherwise noted

Parameter	Part Nr.	Symbol	Min.	Max.	Unit	Test Conditions
Repetitive Peak Off State Voltage	<b>X0110BA</b>		200		V	
	<b>X0110DA</b>	$V_{DRM}$	400		V	[ $T_j = -40^\circ\text{C}$ to $125^\circ\text{C}$ $R_{GK} = 1\text{K}\Omega$ ]
	<b>X0110MA</b>	$V_{RRM}$	600		V	
	<b>X0110NA</b>		800		V	
On-State Current		$I_{T(RMS)}$	0.8		A	All Conduction Angles $T_C = 55^\circ\text{C}$
Average On-State Current		$I_{T(AV)}$	0.5		A	Half Cycle, $\Theta = 180^\circ$ , $T_C = 55^\circ\text{C}$
Nonrept. On-State Current		$I_{TSM}$	9		A	Half Cycle, 60 Hz
Nonrept. On-State Current		$I_{TSM}$	8		A	Half Cycle, 50 Hz
Fusing Current		$I^2t$	0.32		$\text{A}^2\text{s}$	$t = 10\text{ ms}$ , Half Cycle
Peak Reverse Gate Voltage		$V_{GRM}$	8		V	$I_{GR} = 10\ \mu\text{A}$
Peak Gate Current		$I_{GM}$	1		A	$10\ \mu\text{s}$ max.
Peak Gate Dissipation		$P_{GM}$	2		W	$10\ \mu\text{s}$ max.
Gate Dissipation		$P_{G(AV)}$	0.1		W	20 ms max.
Operating Temperature		$T_j$	-55	125	$^\circ\text{C}$	
Storage Temperature		$T_{stg}$	-65	150	$^\circ\text{C}$	
Soldering Temperature		$T_{sld}$		250	$^\circ\text{C}$	1.6 mm from case, 10 s max.

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

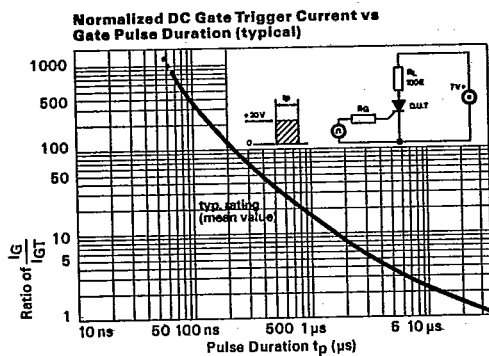
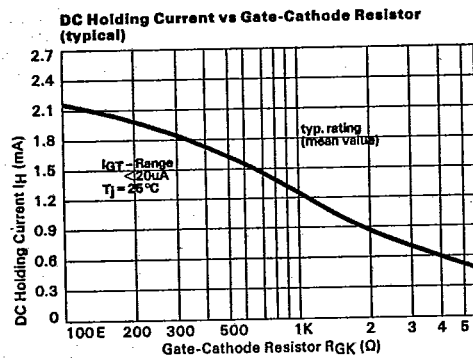
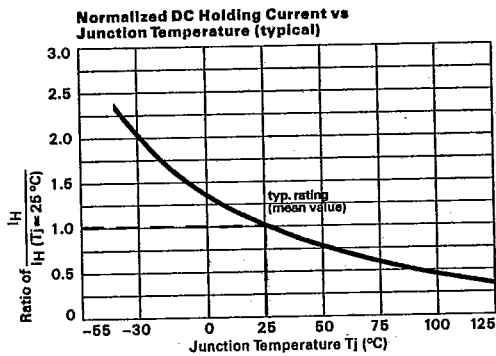
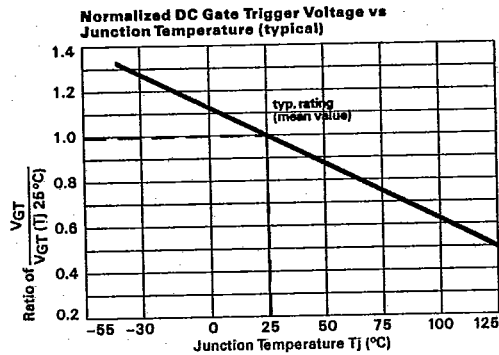
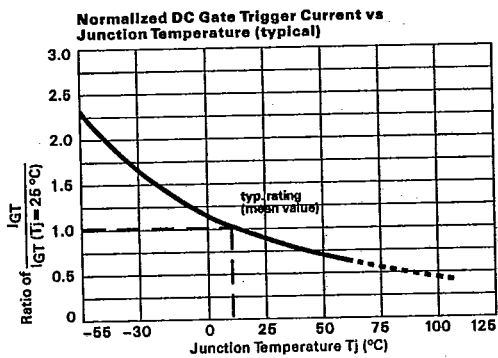
Parameter	Symbol	Min.	Max.	Unit	Test Conditions
Off-State Leakage Current	$I_{DRM}/I_{RRM}$		0.1	mA	@ $V_{DRM} + V_{RRM}$ , $R_{GK} = 1\text{K}\Omega$ , $T_j = 125^\circ\text{C}$
Off-State Leakage Current	$I_{DRM}/I_{RRM}$		5	$\mu\text{A}$	@ $V_{DRM} + V_{RRM}$ , $R_{GK} = 1\text{K}\Omega$ , $T_j = 25^\circ\text{C}$
On-State Voltage	$V_T$		1.50	V	at $I_T = 1.6\text{ A}$ , $T_j = 25^\circ\text{C}$
On-State Threshold Voltage	$V_{T(TO)}$		0.9	V	$T_j = 125^\circ\text{C}$
On-State Slope Resistance	$r_T$		400	m $\Omega$	$T_j = 125^\circ\text{C}$
Gate Trigger Current	$I_{GT}$	5	20	$\mu\text{A}$	$V_D = 7\text{ V}$
Gate Trigger Voltage	$V_{GT}$		0.8	V	$V_D = 7\text{ V}$
Holding Current	$I_H$		5	mA	$R_{GK} = 1\text{K}\Omega$
Latching Current	$I_L$		6	mA	$R_{GK} = 1\text{K}\Omega$
Critical Rate of Voltage Rise	$dv/dt$	50		V/ $\mu\text{s}$	$V_D = .67 \times V_{DRM}$ , $R_{GK} = 1\text{K}\Omega$ , $T_j = 125^\circ\text{C}$
Critical Rate of Current Rise	$di/dt$	30		A/ $\mu\text{s}$	$I_G = 10\text{ mA}$ , $di_G/dt = 0.1\text{ A}/\mu\text{s}$ , $T_j = 125^\circ\text{C}$
Gate Controlled Delay Time	$t_{gd}$		1.0	$\mu\text{s}$	$I_G = 10\text{ mA}$ , $di_G/dt = 0.1\text{ A}/\mu\text{s}$
Commutated Turn-Off Time	$t_q$		100	$\mu\text{s}$	$T_C = 85^\circ\text{C}$ , $V_D = .67 \times V_{DRM}$ , $V_R = 35\text{ V}$ , $I_T = I_{T(AV)}$
Thermal Resistance junc. to case	$R_{\theta jc}$		100	K/W	
Thermal Resistance junc. to amb.	$R_{\theta ja}$		200	K/W	

X01

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**Typical Characteristics  
X01 - Chips < 20 μA**

Exact Chip Curves for X0102 and X0104 Series cannot be designated due to  $I_{GT}$ -Specifications. Curves of pages 21 or 22 might apply.

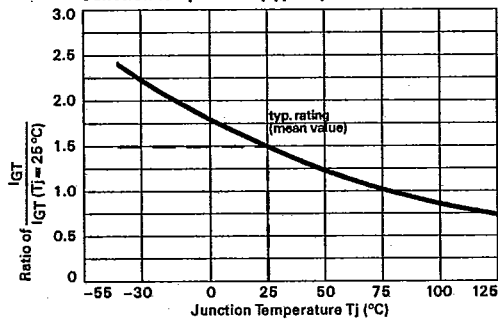


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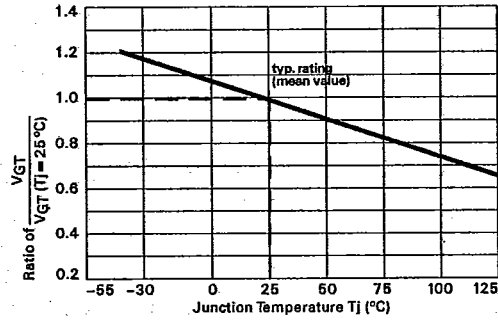
**Typical Characteristics  
X01 - Chips > 20 μA**

Exact Chip Curves for X0102 and X0104 Series cannot be designated due to I<sub>GT</sub>-Specifications. Curves of pages 21 or 22 might apply.

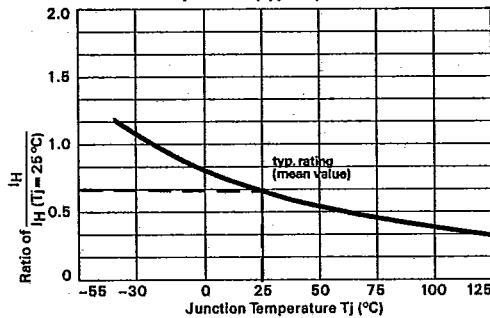
**Normalized DC Gate Trigger Current vs Junction Temperature (typical)**



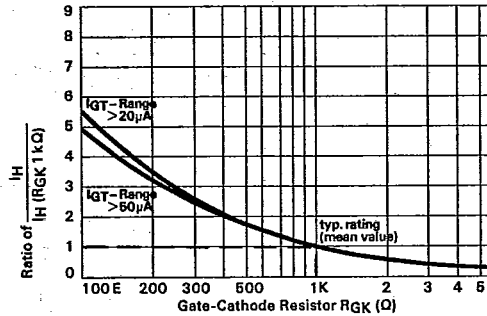
**Normalized DC Gate Trigger Voltage vs Junction Temperature (typical)**



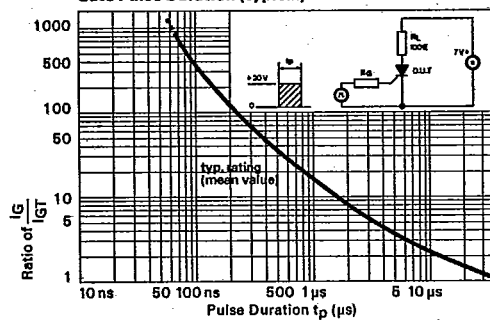
**Normalized DC Holding Current vs Junction Temperature (typical)**



**Normalized DC Holding Current vs Gate-Cathode Resistor (typical)**



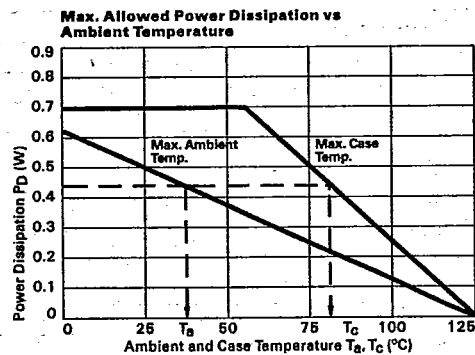
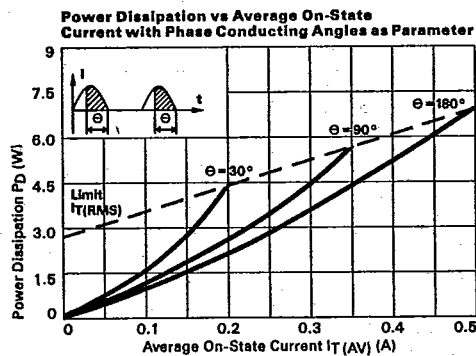
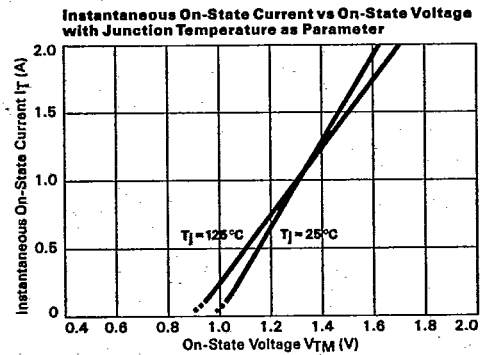
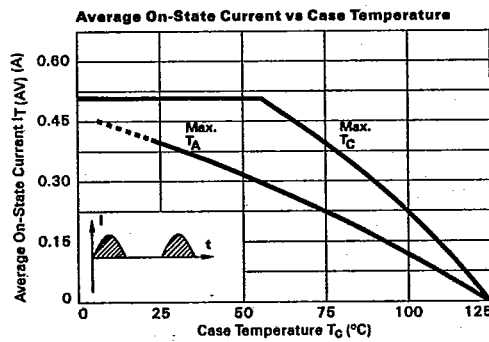
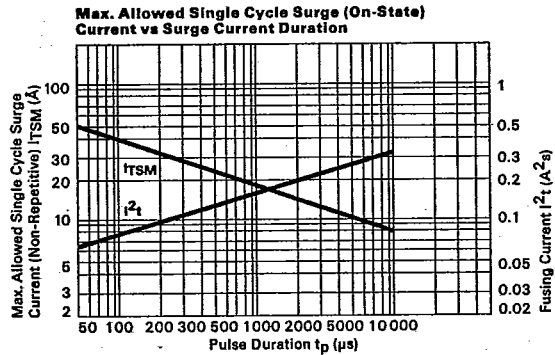
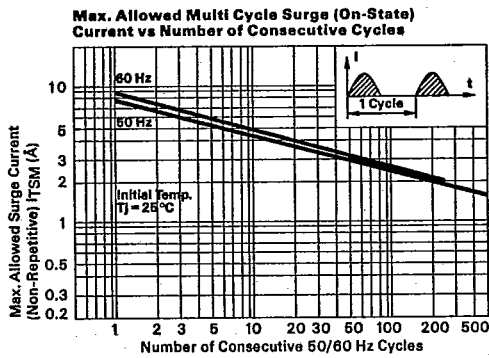
**Normalized DC Gate Trigger Current vs Gate Pulse Duration (typical)**



X01

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**Typical Characteristics  
X01 - Packaged Parts**



X01