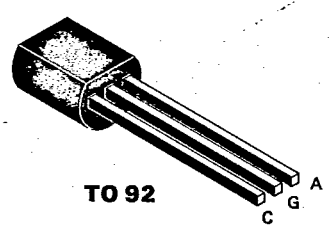
TAG SEMICONDUCTORS LTD

X0110BA – X0110NA SCR'S

0.8 A 200–800 V 5–20 µA

The X0110 series silicon controlled rectifiers are high performance PNPN 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 $T_A = 25\,°C$ unless otherwise noted

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

X01

Electrical Characteristics $T_A = 25\,°C$ unless otherwise noted

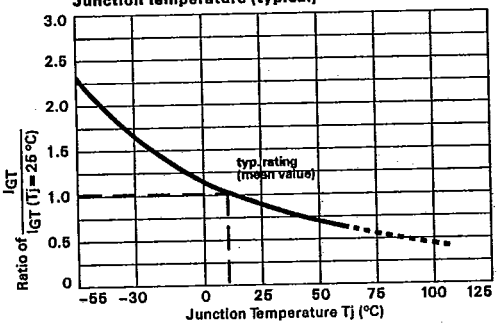
Parameter	Symbol	Min.	Max.	Unit	Test Conditions
Off-State Leakage Current	I_{DRM}/I_{RRM}		0.1	mA	@$V_{DRM} + V_{RRM}$, $R_{GK} = 1\,K\Omega$, $Tj = 125\,°C$
Off-State Leakage Current	I_{DRM}/I_{RRM}		5	µA	@$V_{DRM} + V_{RRM}$, $R_{GK} = 1\,K\Omega$, $Tj = 25\,°C$
On-State Voltage	V_T		1.50	V	at $I_T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

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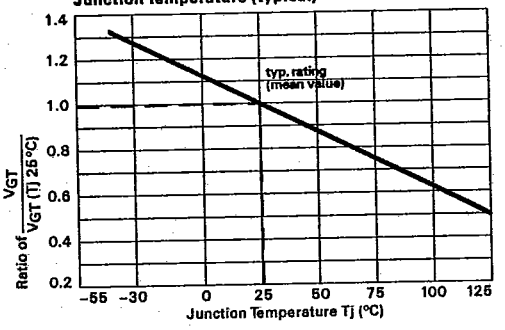
Typical Characteristics X01 – Chips <20 µA

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

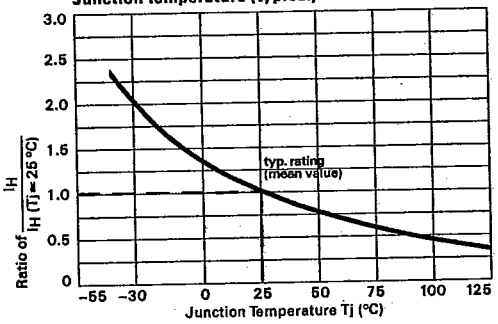
Normalized DC Gate Trigger Current vs Junction Temperature (typical)



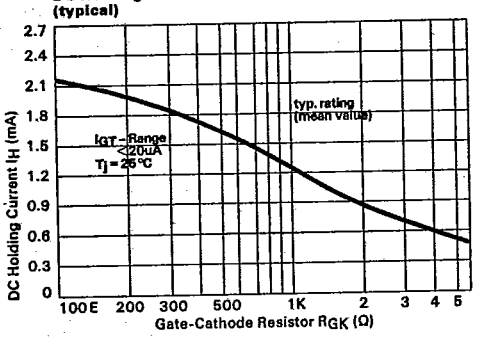
Normalized DC Gate Trigger Voltage vs Junction Temperature (typical)



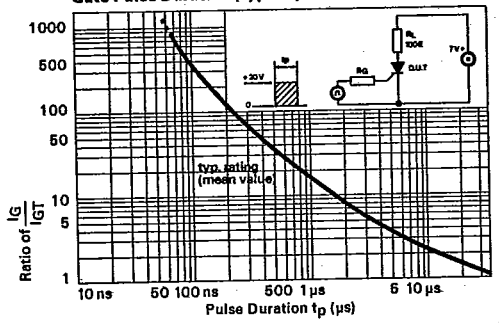
Normalized DC Holding Current vs Junction Temperature (typical)



DC Holding Current vs Gate-Cathode Resistor (typical)



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



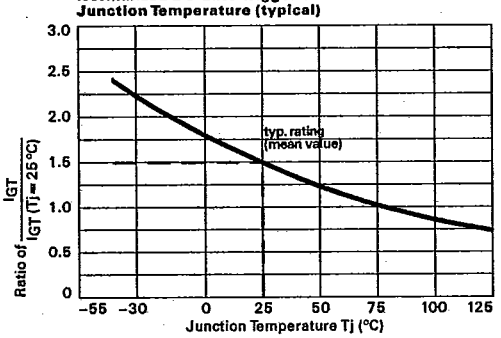
X01

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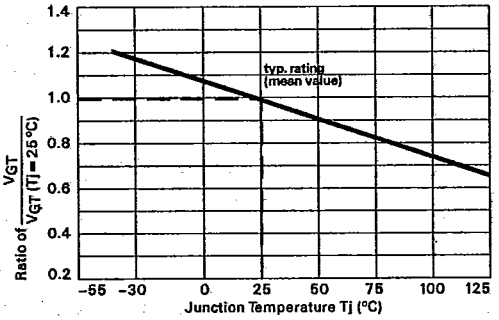
Typical Characteristics X01 – Chips >20 µA

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

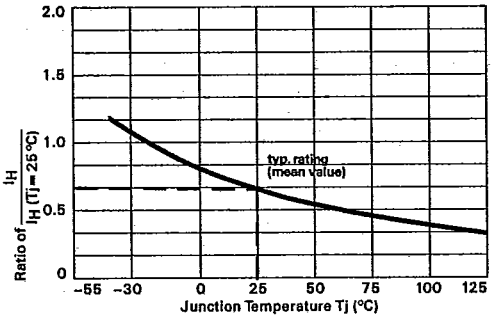
Normalized DC Gate Trigger Current vs Junction Temperature (typical)



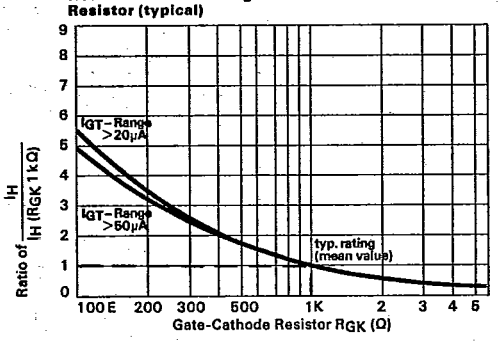
Normalized DC Gate Trigger Voltage vs Junction Temperature (typical)



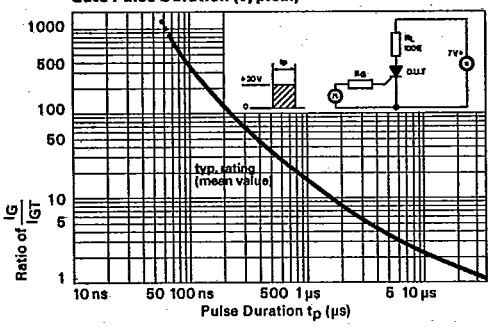
Normalized DC Holding Current vs Junction Temperature (typical)



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



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

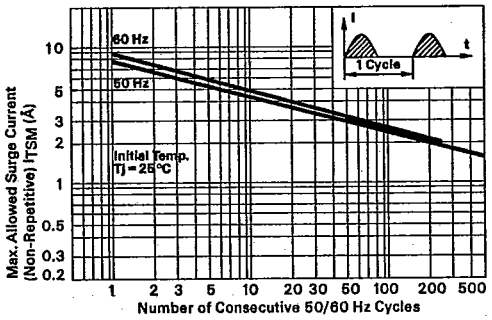


X01

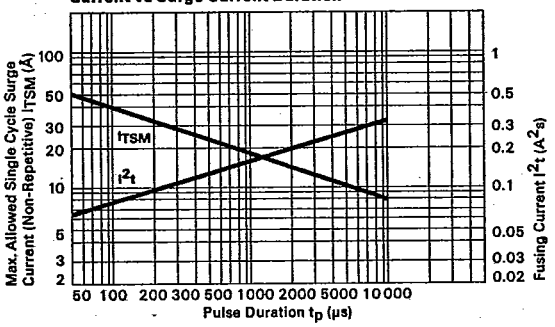
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Typical Characteristics
X01 – Packaged Parts

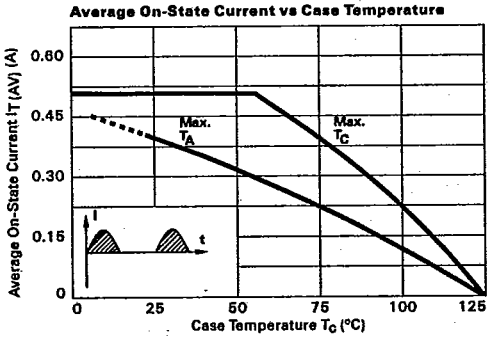
Max. Allowed Multi Cycle Surge (On-State) Current vs Number of Consecutive Cycles



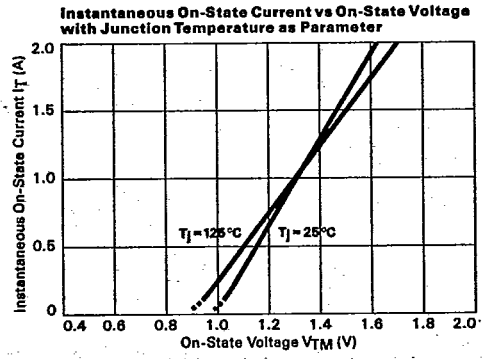
Max. Allowed Single Cycle Surge (On-State) Current vs Surge Current Duration



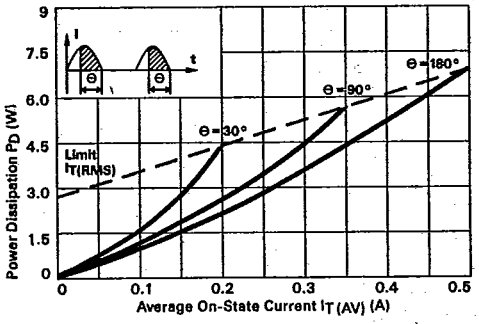
Average On-State Current vs Case Temperature



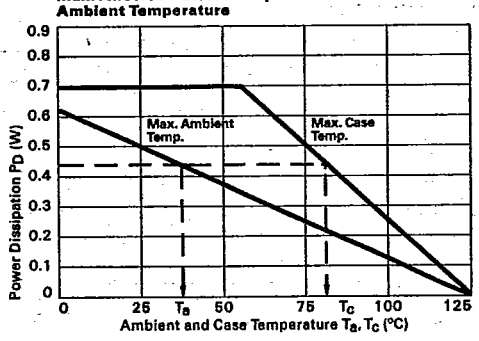
Instantaneous On-State Current vs On-State Voltage with Junction Temperature as Parameter



Power Dissipation vs Average On-State Current with Phase Conducting Angles as Parameter



Max. Allowed Power Dissipation vs Ambient Temperature



X01