Semitronics

Discrete Semiconductors
C10 Series: 2N1770A-2N2619A

Description

Phase Control SCR
4.7 Amps / 25-600 Volts

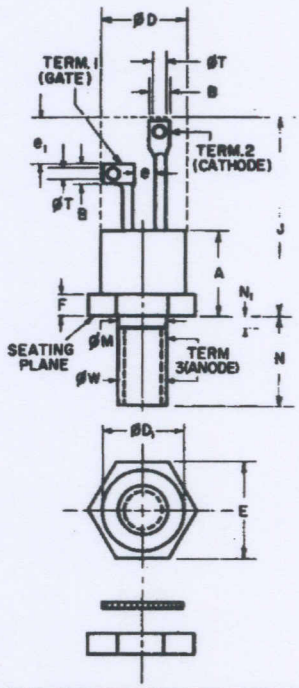
Silicon Controlled Rectifiers (SCR) are reverse blocking triode thyristor semiconductor devices designed for power switching and phase control applications. They are all-diffused devices backed by years of design and field experience.

Features

- Low Gate Current
- Low On-State Voltage
- High Junction Temperatures
- Hermetic Packaging
- Low Thermal Impedance
- Thermal Fatigue Resistant
- Excellent Surge Rating
- Available JAN/JANTX/JANTXV
- Slash Sheet MIL-PRF-19500/168

Outline Drawing

Similar to TO-64



Applications

- Phase Control
- Power Switching

Ordering Information

Type	Voltage V_{DRM}/V_{RRM} @ $I_{T(AV)}$ = 16 Amps	Available JAN/JAN TX
2N1770A	25	
2N1771A	50	√
2N1772A	100	√
2N1773A	150	
2N1774A	200	√
2N1775A	250	
2N1776A	300	√
2N1777A	400	√
2N1778A	500	√
2N2619A	600	√

Dim.	Inches		Metric(mm)	
	Min	Max	Min	Max
A	.300	.400	7.62	10.16
B	.080	.136	2.03	3.45
ØD	.400	.424	10.61	10.77
E	.424	.437	10.77	11.10
F	.060	.175	1.52	4.45
J	.700	.855	17.78	21.72
ØM	.163	.189	4.14	4.80
N	.400	.453	10.16	11.51
ØT	.040	.075	1.02	1.91
e1	.120	.160	3.04	4.07
N1		.078		1.98
ØW	10 – 32 NF-2A			

Absolute Maximum Ratings, (Tj = +150°C unless otherwise specified)							
	Symbol	**2N1770A**	**2N1771A**	**2N1772A**	**2N1773A**	**2N1774A**	**Units**
Repetitive peak off-state voltage	V_{DRM}	25	50	100	150	200	Volts
Repetitive peak reverse voltage	V_{RRM}	25	50	100	150	200	Volts
Non-repetitive peak reverse voltage	V_{RSM}	35	75	150	225	300	Volts
		2N1775A	**2N1776A**	**2N1777A**	**2N1178A**	**2N2169A**	
Repetitive peak off-state voltage	V_{DRM}	250	300	400	500	600	Volts
Repetitive peak reverse voltage	V_{RRM}	250	300	400	500	600	Volts
Non-repetitive peak reverse voltage	V_{RSM}	350	400	500	600	700	Volts

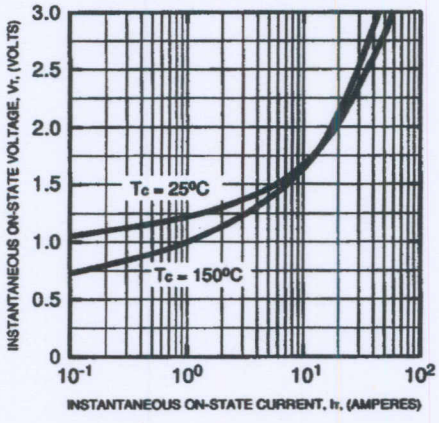
		ALL DEVICE TYPES 2N1770A through 2N2619A	
RMS On-State Current	$I_{T(RMS)}$	7.4	Amps
Average On-state Current, Tc = 105°C	$I_{T(AV)}$	4.7	Amps
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60 Hz)	I_{TSM}	60	Amps
I^2t (for Fusing), 8.3 ms	I^2t	15	A^2sec
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	60	A/µs
Peak Gate Power Dissipation	P_{GM}	5	Watts
Average Gate Power Dissipation	$P_{G(AV)}$	0.5	Watts
Peak Forward Gate Current	I_{FGM}	2	Amps
Peak Reverse Gate Voltage	V_{RGM}	10	Volts
Storage Temperature	$T_{STORAGE}$	-65 to +150	°C
Operating Temperature	Tj	-65 to +150	°C
Mounting Torque	-	15	in-lb
Mounting Torque (metric)	-	17.5	kg-cm

Electrical Characteristics

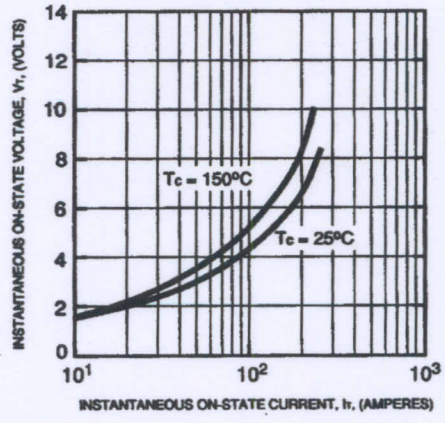
Parameter	**Conditions**	**Symbol**	**Device Types**					**Units**
Voltage, Blocking State Maximums			**2N1770A**	**2N1771A**	**2N1772A**	**2N1773A**	**2N1774A**	
Forward Leakage, Peak	Tj = 150°C, $V_D = V_{DRM}$	I_{DRM}	2.0	2.0	2.0	2.0	2.0	mA
Reverse Leakage, Peak	Tj = 150°C, $V_R = V_{RRM}$	I_{RRM}	2.0	2.0	2.0	2.0	2.0	mA
			2N1775A	**2N1776A**	**2N1777A**	**2N1178A**	**2N2169A**	
Forward Leakage, Peak	Tj = 150°C, $V_D = V_{DRM}$	I_{DRM}	2.0	2.0	2.0	2.0	2.0	mA
Reverse Leakage, Peak	Tj = 150°C, $V_R = V_{RRM}$	I_{RRM}	2.0	2.0	2.0	2.0	2.0	mA

			ALL DEVICE TYPES 2N1770A through 2N2619A	
Current, Conducting State Maximums	**Test Conditions**	**Symbol**		**Units**
Peak On-State Voltage	Tc = 25°C, I_{FM} = 15 A	V_{TM}	1.85	Volts
Holding Current	Tj = 25°C, V_D = 24V, R_L = 20Ω	I_H	25	mA
Switching				
Typical Critical dv/dt exponential to V_{DRM}	-	dv/dt	20	V/µs
Maximum Thermal Resistance				
Junction to Case	-	θjc	3.1	°C/Watt
Gate Maximum Parameters				
Gate Current to Trigger	Tj = -25°C, V_D = 12V, R_L = 250Ω	I_{GT}	15	mA
Gate Current to Trigger	Tj = -65°C, V_D = 12V, R_L = 250Ω	I_{GT}	30	mA
Gate Voltage to Trigger	Tj = 150°C, V_D = 12V, R_L = 250Ω	V_{GT}	2	Volts
Minimum Non-Triggering Gate Voltage	Tj = 150°C, $V_D = V_{DRM}$, R_L = 250Ω	V_{GD}	0.2	Volts

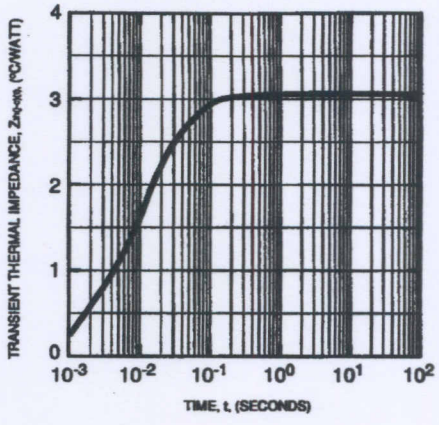
MAXIMUM ON-STATE CHARACTERISTICS



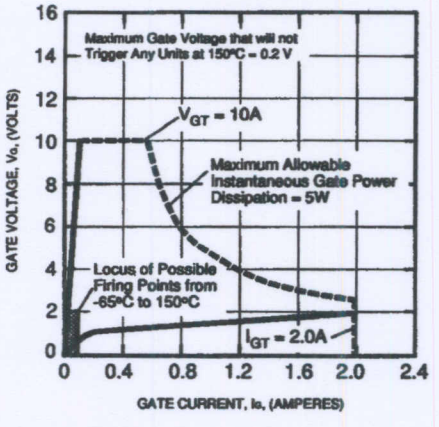
MAXIMUM ON-STATE CHARACTERISTICS (HIGH LEVEL)



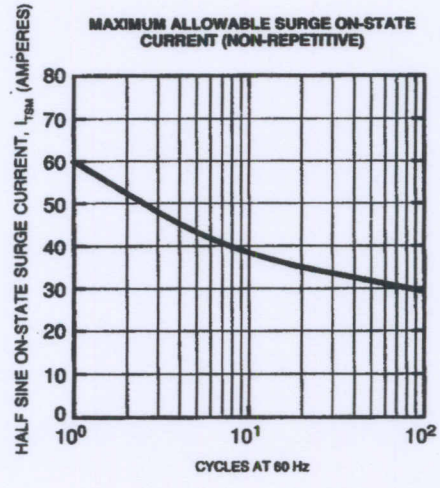
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



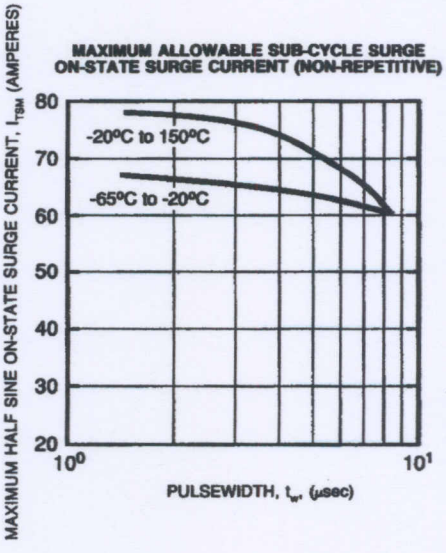
GATE CHARACTERISTICS



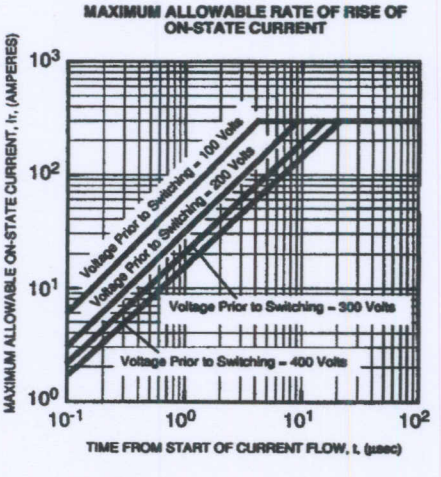
MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



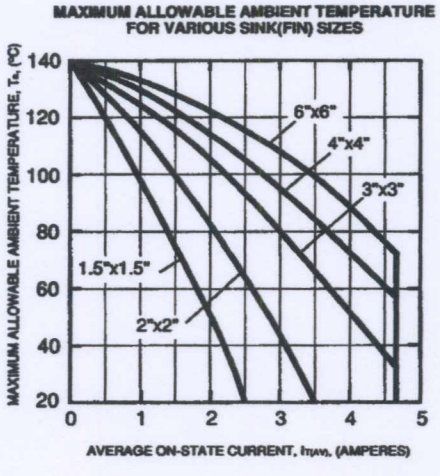
MAXIMUM ALLOWABLE SUB-CYCLE SURGE ON-STATE SURGE CURRENT (NON-REPETITIVE)



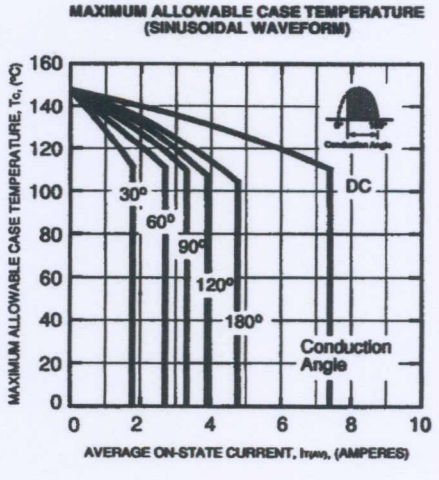
MAXIMUM ALLOWABLE RATE OF RISE OF ON-STATE CURRENT



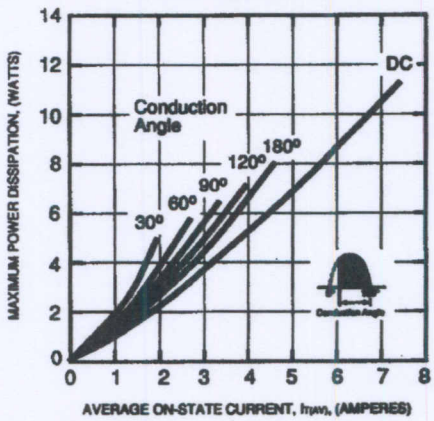
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE FOR VARIOUS SINK(FIN) SIZES



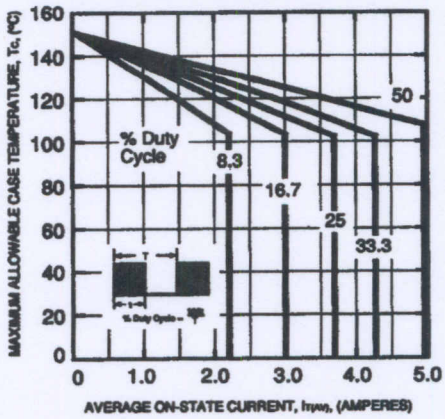
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



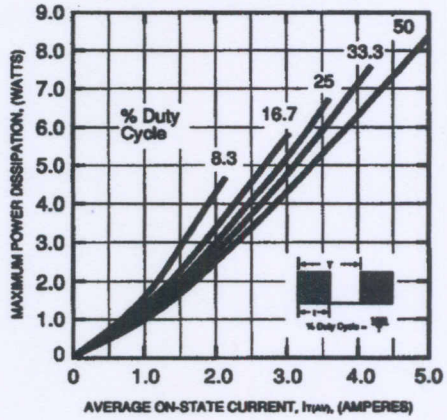
MAXIMUM ON-STATE POWER DISSIPATION
(SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE
(RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION
(RECTANGULAR WAVEFORM)



MINIMUM GATE CURRENT REQUIRED TO
TRIGGER ALL DEVICES