

Description

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
- Slash Sheet MIL-PRF-19500/108

Applications

- Phase Control
- Power Switching

Ordering Information

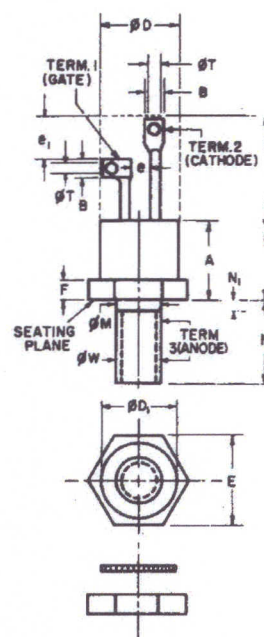
Type	Voltage V_{DRM}/V_{RRM} @ $I_{T(AV)} = 16$ Amps	Available JAN/JAN TX
2N1770A	25	
2N1771A	50	√
2N1772A	100	√
2N1773A	150	
2N1774A	200	√
2N1775A	250	
2N1776A	300	√
2N1777A	400	√
2N1778A	500	√
2N2619A	600	√

Phase Control SCR 4.7 Amps / 25 - 600 Volts



Outline Drawing

Complies with TO-64



Dim.	Inches		Metric(mm)	
	Min	Max	Min	Max
A	.330	.505	8.38	12.83
A ₁		.880		22.35
∅D		.544		13.82
E	.544	.562	13.82	14.27
F	.113	.152	2.87	3.86
J		1.193		30.30
M	.210	.300	5.33	7.62
N	.422	.453	10.72	11.51
∅T	.125	.165	3.18	4.19
∅T ₁	.060	.075	1.52	1.91
Z	.120		3.05	
∅W	¼-28 UNF-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	2N1778A	2N2619A	
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	500	600	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 ² t (for Fusing), 8.3 ms	I ² t	15	A ² sec
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

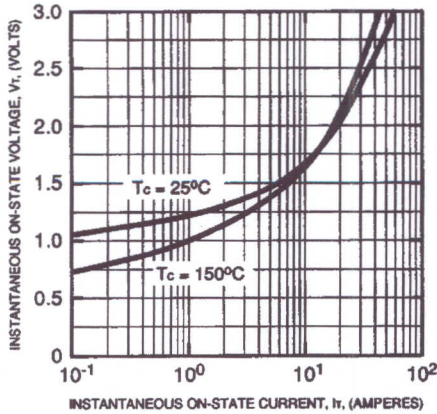
Electrical Characteristics

Parameter	Symbol	Device Types					Units
Voltage, Blocking Tj = 150°C, V _D = V _{DRM} , V _R = V _{RRM}		2N1770A	2N1771A	2N1772A	2N1773A	2N1774A	
Forward Leakage, Peak	I _{DRM}	9.0	9.0	9.0	8.0	6.0	mA
Reverse Leakage, Peak	I _{RRM}	9.0	9.0	9.0	8.0	6.0	mA
		2N1775A	2N1776A	2N1777A	2N1778A	2N2619A	
Forward Leakage, Peak	I _{DRM}	5.0	4.0	2.0	2.0	2.0	mA
Reverse Leakage, Peak	I _{RRM}	5.0	4.0	2.0	2.0	2.0	mA

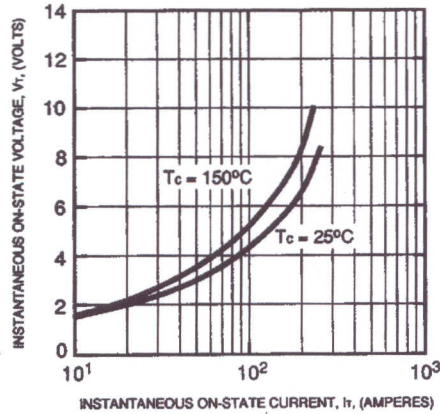
ALL DEVICE TYPES 2N1770A through 2N1777A

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	-	θ _{jc}	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-Trigging Gate Voltage	Tj = 150°C, V _D = V _{DRM} , R _L = 250Ω	V _{GD}	0.2 Volts

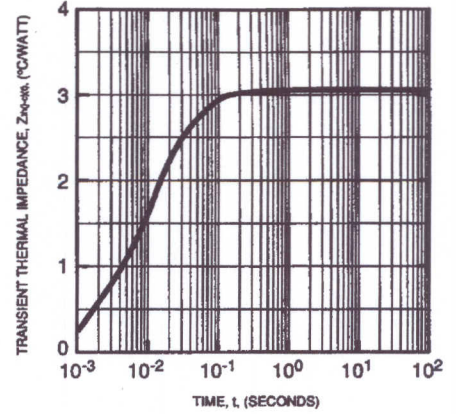
MAXIMUM ON-STATE CHARACTERISTICS



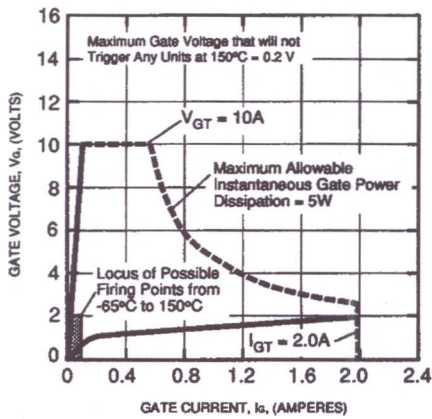
MAXIMUM ON-STATE CHARACTERISTICS (HIGH LEVEL)



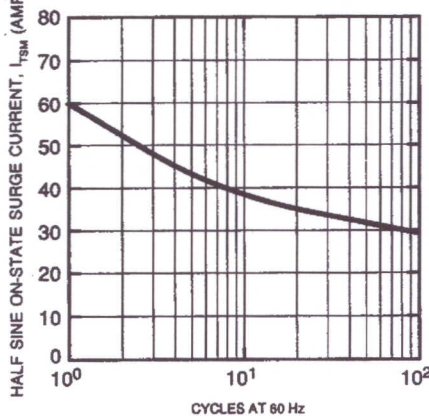
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



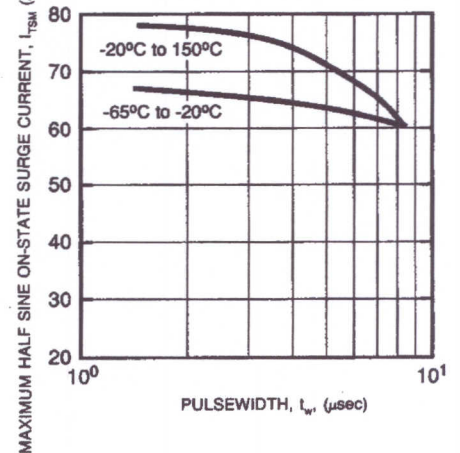
GATE CHARACTERISTICS



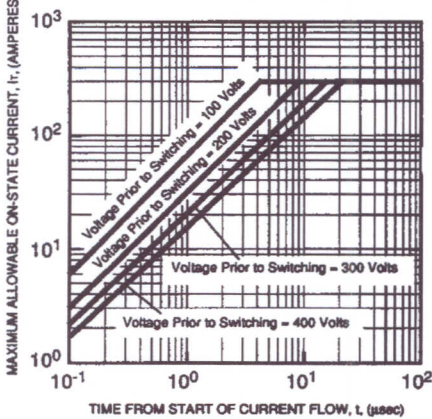
MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



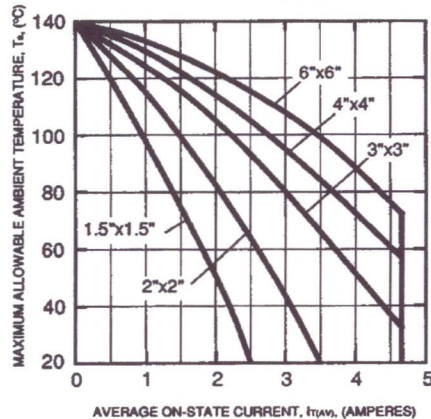
MAXIMUM ALLOWABLE SUB-CYCLE SURGE ON-STATE SURGE CURRENT (NON-REPETITIVE)



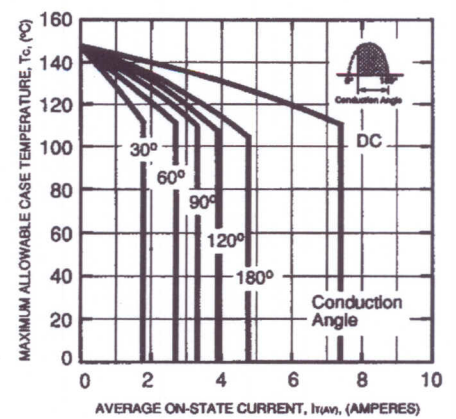
MAXIMUM ALLOWABLE RATE OF RISE OF ON-STATE CURRENT



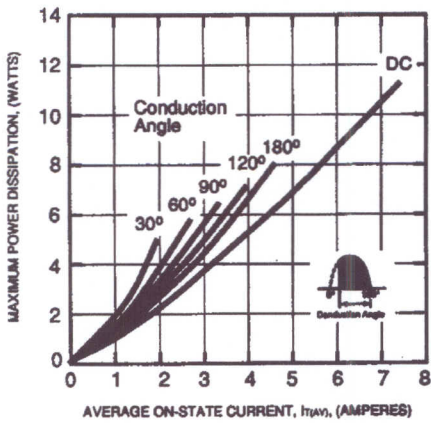
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE FOR VARIOUS SINK (FIN) SIZES



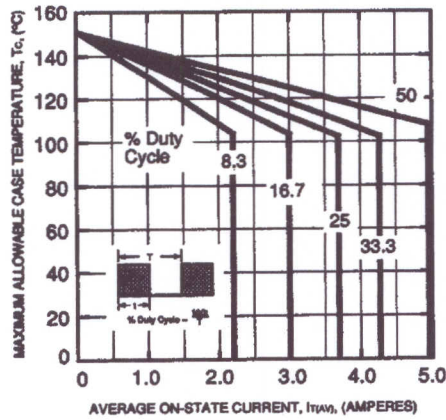
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



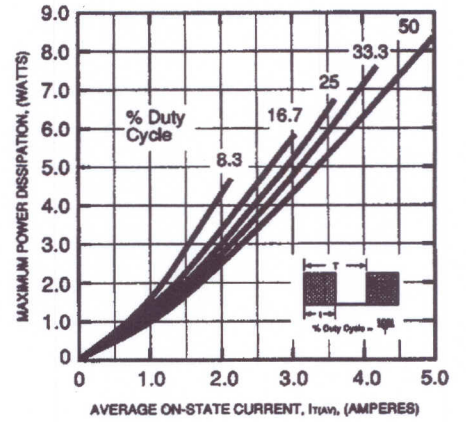
**MAXIMUM ON-STATE POWER DISSIPATION
(SINUSOIDAL WAVEFORM)**



**MAXIMUM ALLOWABLE CASE TEMPERATURE
(RECTANGULAR WAVEFORM)**



**MAXIMUM ON-STATE POWER DISSIPATION
(RECTANGULAR WAVEFORM)**



**MINIMUM GATE CURRENT REQUIRED TO
TRIGGER ALL DEVICES**

