

2N1777A
Silicon Controlled Rectifier

MAXIMUM ALLOWABLE RATINGS

TYPE	PEAK FORWARD BLOCKING VOLTAGE, V_{FOM} $T_c = -65^\circ\text{C to } +150^\circ\text{C}$	REPETITIVE PEAK REVERSE VOLTAGE, V_{RSM} (rep) ⁽¹⁾ $T_c = -65^\circ\text{C to } +150^\circ\text{C}$	NON-REPETITIVE PEAK REVERSE VOLTAGE (<3.0 MILLISEC.), V_{RSM} (non-rep) ⁽¹⁾ $T_c = -65^\circ\text{C to } +150^\circ\text{C}$
(2N1777A)	400 volts*	400 Volts*	500 Volts*

⁽¹⁾ Values apply for zero or negative gate voltage only. Maximum case to ambient thermal resistance for which maximum V_{FOM} and V_{RSM} ratings apply = 18°C per watt.

Peak Forward Voltage, PFV	480 volts
RMS Forward Current, On-State	7.4 amperes (all conduction angles)
Average Forward Current, On-State, Half Sine Wave, I_O	4.7 amperes at $T_c = 105^\circ\text{C}^*$
Average Forward Current, On-State	Depends on conduction angle (see Chart 3, 5 and 7)
Peak One-cycle Surge Forward Current, I_{FSM} (surge)	60 amperes*
I^2t (for fusing)	Calculate from Chart 9
Turn-On Current Limit	See Chart 10
Peak Gate Power Dissipation, P_{GSM}	5 watts*
Average Gate Power Dissipation, $P_{G(AV)}$	0.5 watts*
Peak Gate Current, I_{GSM}	2 amperes*
Peak Gate Voltage, Forward and Reverse, V_{GFM} and V_{GRM}	10 volts*
Storage Temperature, T_{stg}	-65°C to +150°C*
Operating Temperature, T_j	-65°C to +150°C*
Stud Torque	15 lb-in (17 kg-cm)

*Indicates data included on JEDEC type number registration.

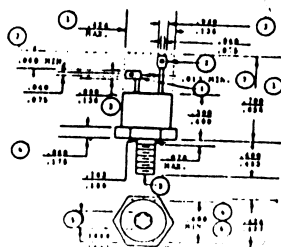
**NOT TO EXCEED GATE POWER RATINGS

CHARACTERISTICS

TEST	SYMBOL	MIN.	MAX.	UNITS	TEST CONDITIONS
PEAK REVERSE OR FORWARD BLOCKING CURRENT† C10D(2N1777A)	I_{RSM} OR I_{FSM}	—	2.0	mA	$T_c = -65^\circ\text{C to } +150^\circ\text{C}$ $V_{RSM} = V_{FOM} = 400\text{V Peak}$
FULL CYCLE AVG. REVERSE OR FORWARD BLOCKING CURRENT† C10D(2N1777A)	$I_{BR(AV)}$ OR $I_{FR(AV)}$	—	1.0*	mA	$T_c = +105^\circ\text{C}$, $I_O = 4.7\text{A}$ 180° Conduction Angle $V_{RSM} = V_{FOM} = 400\text{V Peak}$
GATE TRIGGER CURRENT	I_{GT}	—	15	mAdc	$T_c = +25^\circ\text{C}$, $V_{EX} = 12\text{Vdc}$, $R_{th} = 250\text{ ohms}$
		—	30*	mAdc	$T_c = -65^\circ\text{C}$, $V_{EX} = 12\text{Vdc}$, $R_{th} = 250\text{ ohms}$
GATE TRIGGER VOLTAGE	V_{GT}	—	2.0*	Vdc	$T_c = -65^\circ\text{C to } +150^\circ\text{C}$, $V_{EX} = 12\text{Vdc}$, $R_{th} = 250\text{ ohms}$
		0.2*	—	Vdc	$T_c = +150^\circ\text{C}$, $V_{FSM} = \text{Rated } V_{FOM}$, $R_{th} = 250\text{ ohms}$
PEAK ON-VOLTAGE	V_{FM}	—	1.85	V	$T_c = +25^\circ\text{C}$, $I_{FM} = 15\text{A Peak}$, 1 millisecond wide pulse. Duty cycle $\leq 1\%$.
HOLDING CURRENT	I_{HO}	—	25	mAdc	$T_c = +25^\circ\text{C}$, Anode supply = 24 Vdc, Gate Supply = 7V, 20 ohms. Initial forward current pulse = 0.5A, 0.1 millisecond to 10 milliseconds wide.
EFFECTIVE THERMAL RESISTANCE (DC)	θ_{jc}	—	3.1	°C/watt	Junction to case.

†Values apply for zero or negative gate voltage only. Maximum case to ambient thermal resistance for which maximum V_{FOM} and V_{RSM} ratings apply equals 18°C/watt.

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NOTES

- The outline contour with exception of hexagon is optional within zone or dimension specified.
- Minimum difference in terminal lengths to establish datum line for numbering terminals.
- Contour and orientation of fixed terminal lugs are optional.
- A chamfer (or undercut) on one or both ends of hexagonal portion is optional.
- Pitch diameter - thread 10-32 UNF-7A (coated). Reference (screw thread standards for federal services - hand-book H-78).
- Minimum diameter of seating plane.
- Minimum spacing between terminals.

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