

SCR

2N5204

MAXIMUM ALLOWABLE RATINGS

Type	Repetitive Peak Off-State Voltage, $V_{ORM}^{(1) (2)}$ $T_C = -40^\circ\text{C to } +125^\circ\text{C}$	Repetitive Peak Reverse Voltage, $V_{RRM}^{(1) (2)}$ $T_C = -40^\circ\text{C to } +125^\circ\text{C}$	Non-repetitive Peak Reverse Voltage, $V_{RSM}^{(1) (3)}$ $T_C = -40^\circ\text{C to } +125^\circ\text{C}$
2N5204	600 Volts†	600 Volts†	720 Volts†

- (1) Values apply for gate terminal open-circuited. (Negative gate bias is permissible.)
 (2) Maximum case-to-ambient thermal resistance for which maximum V_{ORM} and V_{RRM} ratings apply equals 5.0°C per watt for full sine wave or full-wave rectified sinusoidal voltage waveform. (3.0°C per watt is maximum case-to-ambient thermal resistance for pure dc voltage waveform.)
 (3) Half sine wave voltage pulse, 10 millisecond maximum duration.
 (4) di/dt rating is established in accordance with EIA Standard RS-397, Section 5.2.2.6. Off-state (blocking) voltage capability may be temporarily lost immediately after each current pulse for duration less than the period of the applied pulse repetition rate. The pulse repetition rate for this test is 400 Hz. The duration of the JEDEC di/dt test condition is 5.0 seconds (minimum).

RMS On-State Current, $I_{T(RMS)}$	35 Amperes (all conduction angles)
Average On-State Current, $I_{T(AV)}$	Depends on conduction angle (See Charts 3 and 5)
Critical Rate-of-Rise of On-State Current, di/dt : ⁽⁴⁾	
Gate triggered operation.....	(See Chart 6)
Switching from 1200 volts.....	75 Amperes per microsecond†
1000 volts.....	80 Amperes per microsecond†
800 volts.....	90 Amperes per microsecond†
600 volts.....	100 Amperes per microsecond†
Breakover voltage triggered operation.....	10 Amperes per microsecond
Peak One Cycle Surge (non-rep) On-State Current, I_{TSM}	300 Amperes†
I^2t (for fusing), for time = 1.0 milliseconds (See Chart 9).....	200 Ampere ² seconds
for time = 8.3 milliseconds (See Chart 9).....	375 Ampere ² seconds
Peak Gate Power Dissipation, P_{GSM}	60 Watts for 500 microseconds†
Average Gate Power Dissipation, $P_{G(AV)}$	10 Watts†
Peak Negative Gate Voltage, V_{GM}	5 Volts†
Storage Temperature, T_{STG}	$-40^\circ\text{C to } +150^\circ\text{C}^\dagger$
Operating Temperature, T_J	$-40^\circ\text{C to } +125^\circ\text{C}^\dagger$
Maximum Stud Torque.....	30 Lb-in (35 Kg-cm)

†Indicates data included on JEDEC Type Number Registration.

CHARACTERISTICS

Test	Symbol	Min.	Max.	Units	Test Conditions
Peak Off-State or Reverse Current ^{(1) (2)} 2N5204	I_{ORM} or I_{RRM}	—	3.3†	mA	$T_C = -40^\circ\text{ to } +125^\circ\text{C}$ $V_{ORM} = V_{RRM} = 600$ Volts Peak
D.C. Gate Trigger Current	I_T	—	40 80†	mA dc	$T_C = +25^\circ\text{C}$, $V_D = 12$ Vdc, $R_L = 12$ ohms $T_C = -40^\circ\text{C}$, $V_D = 12$ Vdc, $R_L = 12$ ohms
D.C. Gate Trigger Voltage	V_{GT}	—	3.0 3.0†	Vdc	$T_C = +25^\circ\text{C}$, $V_D = 12$ Vdc, $R_L = 12$ ohms $T_C = -40^\circ\text{C}$, $V_D = 12$ Vdc, $R_L = 12$ ohms $T_C = +125^\circ\text{C}$, Rated V_{ORM} , $R_L = 1000$ ohms
Peak On-State Voltage	V_{TM}	—	2.3†	Volts	$T_C = +25^\circ\text{C}$, $I_{TM} = 70$ A peak, 1 msec wide pulse. Duty cycle $\leq 2\%$.
Holding Current	I_H	—	100 200†	mA dc	Anode supply = 24 Vdc, Gate supply = 10 V, 20 ohms. Initial Forward Current Pulse = 0.5 A, 0.1 to 10.0 msec. wide. $T_C = +25^\circ\text{C}$ $T_C = -40^\circ\text{C}$
Critical Rate of Rise of Forward Blocking Voltage. (Higher values may cause device switching.)	dv/dt	100†	—	Volts/ μ sec	$T_C = +125^\circ\text{C}$, Rated V_{ORM} , Gate open circuited.
Thermal Resistance	θ_{J-C}	—	1.5†	$^\circ\text{C/watt}$	Junction-to-case, dc

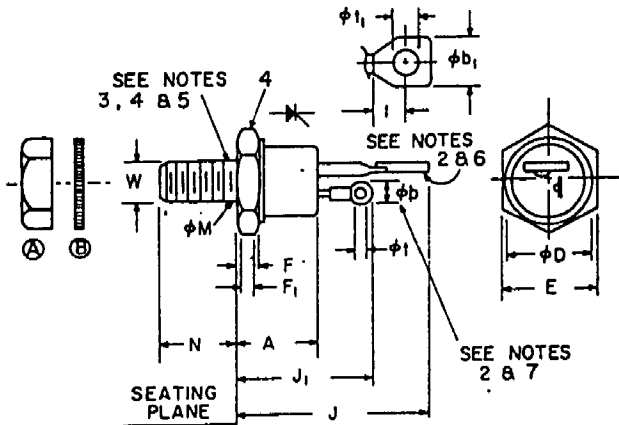


OUTLINE DRAWING

(COMPLIES WITH JEDEC TO-48)

NOTES:

1. Complete threads to extend within 2½ threads of seating plane. Diameter of unthreaded portion .249" (6.32MM) Maximum, .220" (5.59MM) Minimum.
2. Angular orientation of these terminals is undefined.
3. ¼-28 UNF-2A. Maximum pitch diameter of plated threads shall be basic pitch diameter .2268" (5.76MM), minimum pitch diameter .2225" (5.66MM), reference: screw thread standards for Federal Service 1957, Handbook H28, 1957, P1.
4. A chamfer (or undercut) on one or both ends of hexagonal portions is optional.
5. Case is anode connection.
6. Large terminal is cathode connection.
7. Small terminal is gate connection.
8. Insulating kit available upon request.
- A. ¼-28 steel nut, Ni. plated, .178 min. thk.
- B. Ext. tooth lockwasher, steel, Ni. plated, .023 min. thk.



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	.330	.505	8.38	12.83	
phi b	.115	.140	2.92	3.56	2
phi b1	.210	.300	5.33	7.62	2
phi D		.544		13.82	
E	.544	.562	13.82	14.27	
F	.113	.200	2.87	5.08	4
F1	.060		1.52		
J		1.193		30.30	
J1		.875		22.23	
l	.120		3.05		
phi M					1
N	.422	.453	10.72	11.51	
phi t	.060	.075	1.52	1.91	
phi t1	.125	.165	3.18	4.19	
W					3