

# DIGITRON SEMICONDUCTORS

2N6167-2N6170

SILICON CONTROLLED RECTIFIERS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
<b>Peak forward and reverse blocking voltage</b> <sup>(1)</sup> (T <sub>J</sub> = -40 to 100°C) 2N6167 2N6168 2N6169 2N6170	V <sub>DRM</sub> V <sub>RRM</sub>	100 200 400 600	Volts
<b>Peak non-repetitive reverse blocking voltage</b> (t ≤ 5ms) 2N6167 2N6168 2N6169 2N6170	V <sub>RSM</sub>	150 250 450 650	Volts
<b>Average forward current</b> (T <sub>C</sub> = -40 to +65°C) (85°C)	I <sub>T(AV)</sub>	13 6.5	Amps
<b>Peak surge current</b> (1 cycle, 60Hz, T <sub>C</sub> = 65°C) (1.5ms pulse @ T <sub>J</sub> = 100°C) Preceded and followed by no current or voltage	I <sub>TSM</sub>	240 560	Amps
<b>Circuit fusing</b> (T <sub>J</sub> = -40 to +100°C, t = 8.3ms)	I <sup>2</sup> t	235	A <sup>2</sup> s
<b>Peak gate power</b>	P <sub>GM</sub>	5	Watts
<b>Average gate power</b>	P <sub>G(AV)</sub>	0.5	Watts
<b>Forward peak gate current</b>	I <sub>GM</sub>	2	Amps
<b>Operating junction temperature range</b>	T <sub>J</sub>	-40 to 100	°C
<b>Storage temperature range</b>	T <sub>stg</sub>	-40 to 150	°C
<b>Stud torque</b>		30	In. lb.

Note 1: Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode. Devices should not be tested with a constant source for forward or reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
<b>Thermal resistance, junction to case</b>	R <sub>θJC</sub>	1.5	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
<b>Peak repetitive forward or reverse blocking current</b> (Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open, T <sub>C</sub> = 100°C) 2N6167 2N6168 2N6169 2N6170 (Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open, T <sub>C</sub> = 25°C) All devices	I <sub>DRM</sub> , I <sub>RRM</sub>	- - - -	1 1 1 1	2.0 2.5 3.0 4.0	mA mA mA mA
		-	-	10	μA
<b>Peak forward on-state voltage</b> (I <sub>TM</sub> = 41A peak)	V <sub>TM</sub>	-	1.5	1.7	Volts

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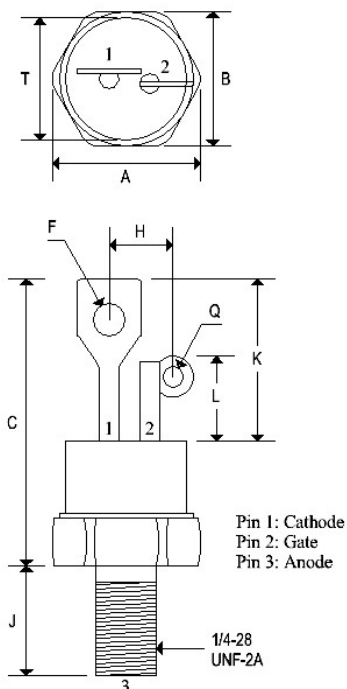
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Characteristic	Symbol	Min	Typ	Max	Unit
<b>Gate trigger current (continuous dc)</b> ( $V_D = 12\text{Vdc}$ , $R_L = 24\Omega$ ) $T_C = -40^\circ\text{C}$ $T_C = 25^\circ\text{C}$	$I_{GT}$	- -	- 2.1	75 40	mA
<b>Gate trigger voltage (continuous dc)</b> ( $V_D = 12\text{Vdc}$ , $R_L = 24\Omega$ ) $T_C = -40^\circ\text{C}$ $T_C = 25^\circ\text{C}$	$V_{GT}$	- -	0.8 0.63	2.5 1.6	Volts
<b>Holding current</b> ( $V_D = 12\text{Vdc}$ , gate open, $I_T = 200\text{mA}$ ) $T_C = -40^\circ\text{C}$ $T_C = 25^\circ\text{C}$	$I_H$	- -	- 3.5	90 50	mA
<b>Turn-on time</b> ( $I_{TM} = 41\text{A}$ , $V_D = \text{rated } V_{DRM}$ , $I_{GT} = 200\text{mA}$ , rise time $\leq 0.05\mu\text{s}$ , pulse width = $10\mu\text{s}$ )	$t_{on}$	-	-	1	$\mu\text{s}$
<b>Turn-off time</b> ( $I_{TM} = 10\text{A}$ , $I_R = 10\text{A}$ ) ( $I_{TM} = 10\text{A}$ , $I_R = 10\text{A}$ , $T_J = 100^\circ\text{C}$ )	$t_{off}$	- -	25 40	- -	$\mu\text{s}$
<b>Forward voltage application rate</b> ( $T_J = 100^\circ\text{C}$ , $V_D = \text{Rated } V_{DRM}$ )	dv/dt	-	50	-	V/ $\mu\text{s}$

## MECHANICAL CHARACTERISTICS

Case	TO-48
Marking	Alpha-numeric
Pin out	See below



	TO-48			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.604	0.614	15.340	15.600
B	0.551	0.559	14.000	14.200
C	1.050	1.190	2.670	30.230
F	0.135	0.160	3.430	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.620	0.670	15.750	17.020
L	0.300	0.350	7.620	8.890
Q	0.055	0.085	1.400	2.160
T	0.501	0.505	12.730	12.830