

2N877-2N881, 2N885-2N889

SILICON CONTROLLED RECTFIERS

High-reliability discrete products and engineering services since 1977

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

	Peak forward blocking voltage	Working and repetitive peak reverse voltage	Non-repetitive peak reverse voltage	Units
Part number	V _{FXM}	V _{ROM} (wkg) and V _{ROM} (rep)	V _{ROM} (non-rep) < 5 milliseconds	
	T _J = -65° to 125°C R _{GK} = 1000 ohms maximum	T ₃ = -65° to 150°C	T ₃ = -65° to 125°C	
2N877, 2N885	30	30	45	V
2N878, 2N886	60	60	90	V
2N879, 2N887	100	100	130	V
2N880, 2N888	150	150	200	V
2N881, 2N889	200	200	275	V

Rating	Symbol	Value	Unit	
Peak forward voltage	V _{F(pk)}	300	V	
RMS on-state current	I _{T(RMS)}	0.5	А	
Peak one cycle surge (non-repetitive) on-state current	I _{FM}	7.0	А	
Peak forward gate power dissipation	P _{GM}	0.1	W	
Average forward gate power dissipation	P _{G(AV)}	0.01	W	
Peak gate voltage, forward and reverse	V_{GFM} , V_{GRM}	6.0	V	
Storage temperature	T _{stg}	-65 to 150	°C	
Operating temperature	T ₃	-65 to 150	°C	

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic	Symbol	Min	Тур	Max	Units	Test Condition
Forward blocking current						V_{FX} = rated V_{FXM} , R_{GK} = 1000ohms
2N077_2N001		-	0.03	10	μAdc	T _J = 25°C
2N077-2N001	\mathbf{I}_{FX}	-	10	100		T _J = 125°C
28885-28880		-	0.03	1		$T_J = 25^{\circ}C$
210003-210009		-	10	20		T _J = 125°C
Reverse blocking current						V_{RX} = rated V_{ROM} (rep)
2N977-2N991	Ţ	-	0.1	10	μAdc	T _J = 25°C
21077-211001		-	10	100		T _J = 125°C
28885-28880	IRX	-	0.1	1		$T_J = 25^{\circ}C$
21003-21003		-	10	20		T _J = 125°C
Reverse gate current	\mathbf{I}_{GRM}	-	1	10	µAdc	$V_{\text{GRM}} = 2V, T_{\text{J}} = 25^{\circ}\text{C}$
Peak on-state voltage	V _{FM}	-	1.3	1.9	v	$T_J = 25^{\circ}C$, $I_{FX} = 1A$, single, half sinewave pulse, 2.0ms wide max.



High-reliability discrete products

All types

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Characteristic	Symbol	Min	Тур	Max	Units	Test Condition
Holding current				<u>.</u>	$T_{\rm J}$ = 25°C, R_{GK} = 1000ohms, V_{FX} = 24V dc	
2N877-2N881	I _H	0.4	1.7	5.0	mAdc	
2N885-2N889		0.4	1.1	3.0		
Critical rate of rise of applied forward voltage	dv/dt	-	40	-	V/µs	$T_{\rm J}$ = 125°C, R_{GK} = 1000ohms, V_{FXM} = rated V_{FXM}
Turn-on time (Delay time + rise time)	t _d + t _r	-	1.0	-	μs	$T_{\rm J}$ = 25°C, V_{FX} = rated $V_{FXM},$ I_{FM} = 1A, gate supply: 6V, 3000hms
Circuit commutated turn-off time (all types)	t _{off}	-	15	-	μs	$\label{eq:stars} \begin{array}{l} T_{\rm J} = 125^{\rm o} C, \ R_{\rm GK} = 1000 ohms, \ I_{\rm FM} = 1A, \\ I_{\rm R}({\rm recovery}) = 1A, \ {\rm reapplied} \ V_{\rm FXM} = {\rm rated}, \\ {\rm rate} \ of \ {\rm rise} \ of \ {\rm reapplied} \ forward \ blocking \\ {\rm voltage} = 20V/\mu s \end{array}$
Gate trigger current						$V_{FX} = 6Vdc, R_{GK} = 1000ohms,$ $R_L = 100 ohms max.$
2N877-2N881		-	40	200	μAdc	T _J = 25°C
2N885-2N889	IGT	-	10	20		T _J = 25°C
Gate trigger voltage						V_{FX} = 6Vdc, R_{GK} = 1000ohms, R_L = 100ohms max.
2N877-2N881		0.4	0.5	0.8		T _J = 25°C
2N885-2N889	Ver	0.44	0.5	0.6	Vdc	T _J = 25°C
	VGT	0.05	-		vuc	V_{FX} = rated V_{FXM} , R_{GK} = 1000 ohms,

0.05

T_J = 125°C



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MECHANICAL CHARACTERISTICS

Case:	TO-18
Marking:	Body painted, alpha-numeric
Pin out:	See below



		TO	-18		
	Inches		Millimeters		
	Min	Max	Min	Max	
Α	0.209	0.230	5.310	5.840	
В	0.178	0.195	4.520	4.950	
С	0.170	0.210	4.320	5.330	
D	0.016	0.021	0.406	0.533	
Е	1	0.030	-	0.762	
F	0.016	0.019	0.406	0.483	
G	0.100 BSC		2.540 BSC		
Н	0.036	0.046	0.914	1.170	
J	0.028	0.048	0.711	1.220	
К	0.500	1	12.700	12	
L	0.250		6.350		
М	45°C BSC		45° BSC		
N	0.050 BSC		1.270 BSC		
Р	1372	0.050	1372	1.270	





2. MAXIMUM ALLOWABLE CASE TEMPERATURE (125°C JUNCTION TEMP.)

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Charts 11 and 12 apply to latching applications where SCR need not block forward voltage after being turned on, since the V_{FXM} rating does not apply above 125°C junction temperature. SCR will again block rated forward voltage after junction temperature drops below 125°C.

