

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

Part number	Peak forward blocking voltage	Working and repetitive peak reverse voltage	Non-repetitive peak reverse voltage	Units
	V_{FXM}	$V_{ROM}(wkg)$ and $V_{ROM}(rep)$	$V_{ROM}(non-rep) < 5$ milliseconds	
	$T_J = -65^\circ$ to $125^\circ C$ $R_{GK} = 1000$ ohms maximum	$T_J = -65^\circ$ to $150^\circ C$	$T_J = -65^\circ$ to $125^\circ C$	
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	A
Peak one cycle surge (non-repetitive) on-state current	I_{FM}	7.0	A
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	$^\circ C$
Operating temperature	T_J	-65 to 150	$^\circ C$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Units	Test Condition
Forward blocking current	I_{FX}				μA_{dc}	$V_{FX} = \text{rated } V_{FXM}, R_{GK} = 1000\text{ohms}$
2N877, 2N878, 2N879 2N880, 2N881		-	0.03	10		$T_J = 25^\circ C$
		-	10	100		$T_J = 125^\circ C$
2N885, 2N886, 2N887, 2N888, 2N889		-	0.03	1		$T_J = 25^\circ C$
		-	10	20	$T_J = 125^\circ C$	
Reverse blocking current						$V_{RX} = \text{rated } V_{ROM}(rep)$
2N877, 2N878, 2N879 2N880, 2N881	I_{RX}	-	0.1	10	μA_{dc}	$T_J = 25^\circ C$
		-	10	100		$T_J = 125^\circ C$
2N885, 2N886, 2N887, 2N888, 2N889		-	0.1	1		$T_J = 25^\circ C$
		-	10	20		$T_J = 125^\circ C$
Reverse gate current	I_{GRM}	-	1	10	μA_{dc}	$V_{GRM} = 2V, T_J = 25^\circ C$
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.

2N877-2N881, 2N885-2N889

SILICON CONTROLLED RECTIFIERS

Gate trigger current	Symbol	Min	Typ	Max	Units	$V_{FX} = 6V_{dc}$, $R_{GK} = 1000\text{ohms}$, $R_L = 100\text{ohms max.}$
2N877, 2N878, 2N879 2N880, 2N881	I_{GT}	-	40	200	μAdc	$T_J = 25^\circ\text{C}$
2N885, 2N886, 2N887, 2N888, 2N889		-	10	20		$T_J = 25^\circ\text{C}$
Gate trigger voltage						$V_{FX} = 6V_{dc}$, $R_{GK} = 1000\text{ohms}$, $R_L = 100\text{ohms max.}$
2N877, 2N878, 2N879 2N880, 2N881	V_{GT}	0.4	0.5	0.8	V_{dc}	$T_J = 25^\circ\text{C}$
2N885, 2N886, 2N887, 2N888, 2N889		0.44	0.5	0.6		$T_J = 25^\circ\text{C}$
All types		0.05	-	-		$V_{FX} = \text{rated } V_{FXM}$, $R_{GK} = 1000\text{ohms}$, $T_J = 125^\circ\text{C}$

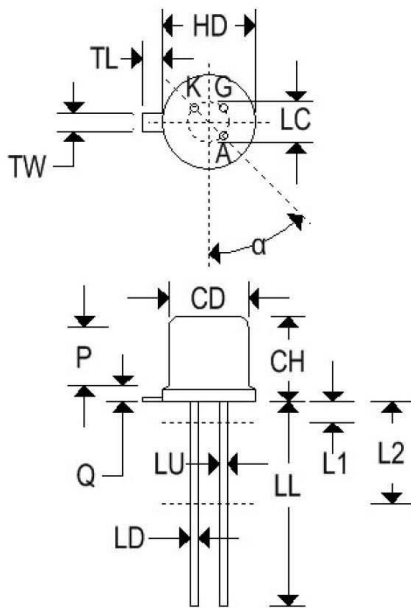
Characteristic	Symbol	Min	Typ	Max	Units	Test Condition
Holding current						$T_J = 25^\circ\text{C}$, $R_{GK} = 1000\text{ohms}$, $V_{FX} = 24V\text{ dc}$
2N877, 2N878, 2N879 2N880, 2N881	I_H	0.4	1.7	5.0	mAdc	
2N885, 2N886, 2N887, 2N888, 2N889		0.4	1.1	3.0		
Critical rate of rise of applied forward voltage	dv/dt	-	40	-	$V/\mu\text{s}$	$T_J = 125^\circ\text{C}$, $R_{GK} = 1000\text{ohms}$, $V_{FXM} = \text{rated } V_{FXM}$
Turn-on time (Delay time + rise time)	$t_d + t_r$	-	1.0	-	μs	$T_J = 25^\circ\text{C}$, $V_{FX} = \text{rated } V_{FXM}$, $I_{FM} = 1A$, gate supply: 6V, 300ohms
Circuit commutated turn-off time (all types)	t_{off}	-	15	-	μs	$T_J = 125^\circ\text{C}$, $R_{GK} = 1000\text{ohms}$, $I_{FM} = 1A$, $I_R(\text{recovery}) = 1A$, reapplied $V_{FXM} = \text{rated}$, rate of rise of reapplied forward blocking voltage = 20V/ μs

2N877-2N881, 2N885-2N889

SILICON CONTROLLED RECTIFIERS

MECHANICAL CHARACTERISTICS

Case:	TO-18
Marking:	Alpha-numeric
Pin out:	See below

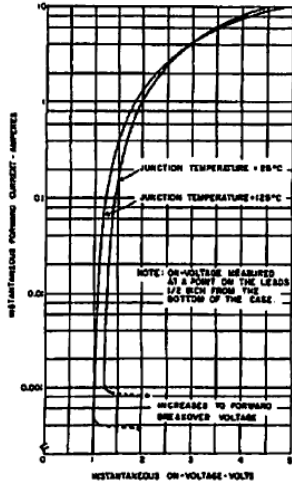


Dim	TO-18			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	0.178	0.195	4.520	4.950
CH	0.140	0.210	3.556	5.330
HD	0.209	0.230	5.310	5.840
LC	0.100 TP		2.540 TP	
LD	0.016	0.021	0.410	0.530
LL	0.500	0.750	12.700	19.050
LU	0.016	0.019	0.410	0.480
L ₁	-	0.050	-	1.270
L ₂	0.250	-	6.350	-
P	0.100	-	2.540	-
Q	-	0.040	-	1.020
TL	0.028	0.048	0.710	1.220
TW	0.036	0.046	0.910	1.170
α	45°TP		45°TP	

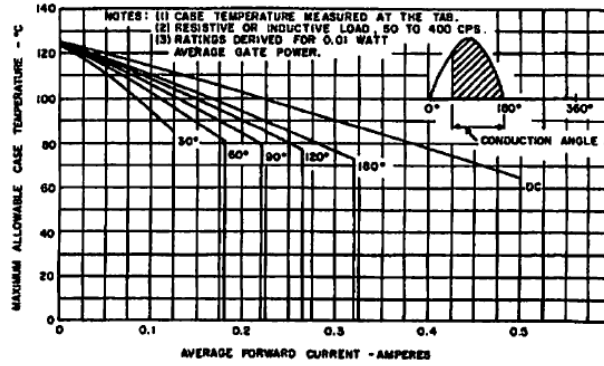
High-reliability discrete products
and engineering services since 1977

2N877-2N881, 2N885-2N889

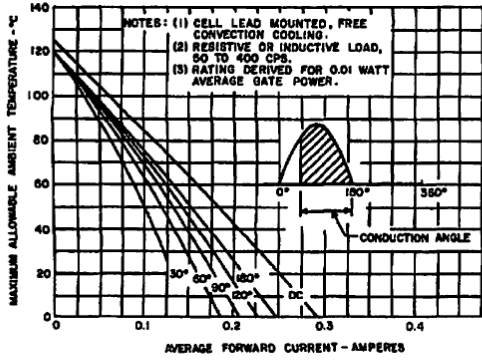
SILICON CONTROLLED RECTIFIERS



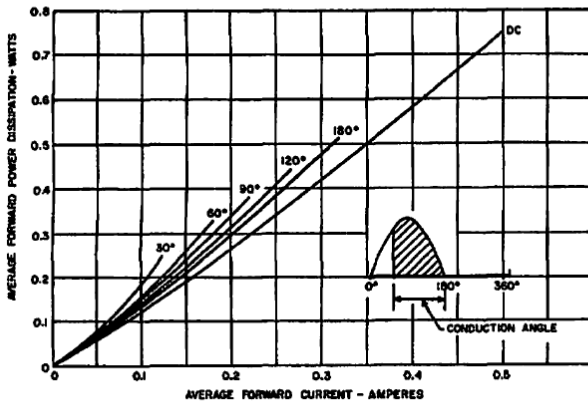
1. MAXIMUM FORWARD CHARACTERISTICS, ON-STATE



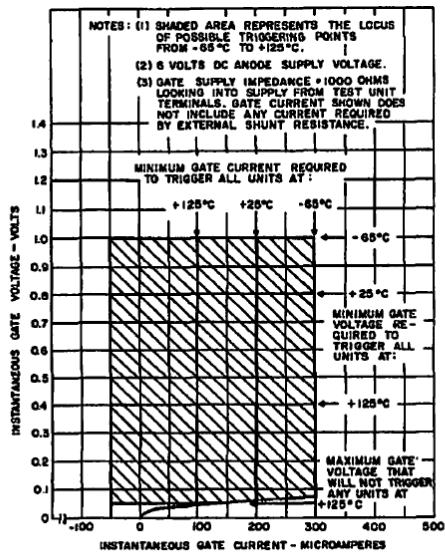
2. MAXIMUM ALLOWABLE CASE TEMPERATURE (125°C JUNCTION TEMP.)



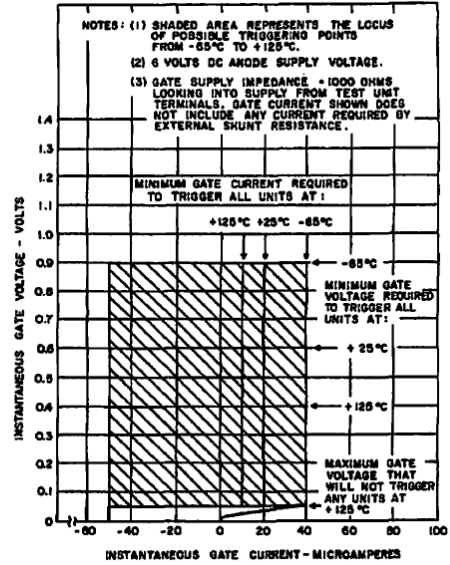
3. MAXIMUM ALLOWABLE AMBIENT TEMPERATURE
(125°C JUNCTION TEMP.)



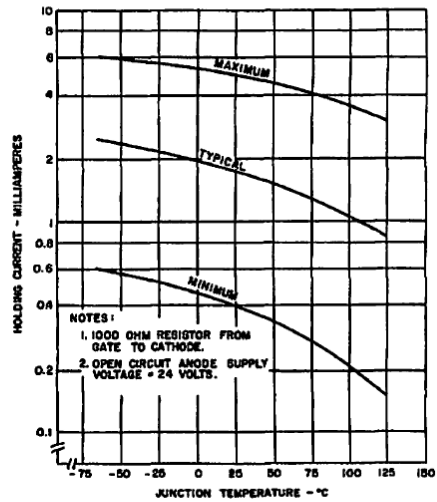
4. FORWARD POWER DISSIPATION



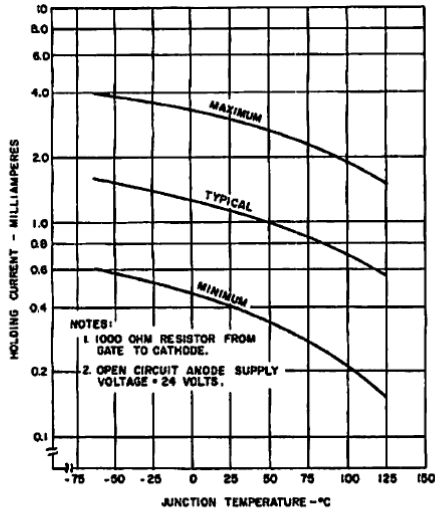
5. GATE TRIGGERING CHARACTERISTICS (2N877-2N881)



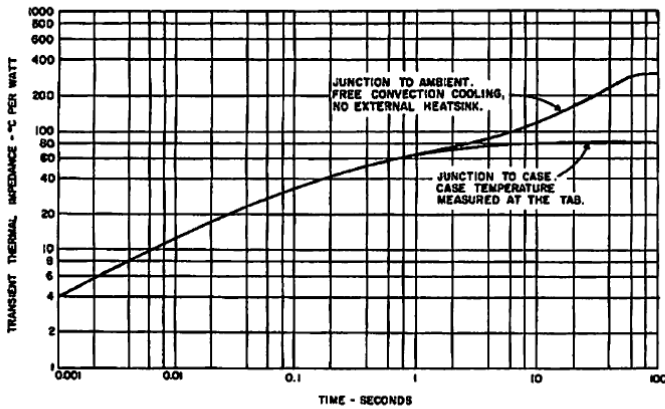
6. GATE TRIGGERING CHARACTERISTICS (2N885-2N889)



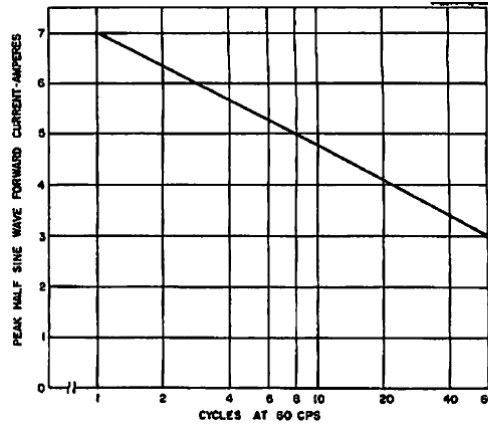
7. HOLDING CURRENT AS A FUNCTION OF JUNCTION TEMPERATURE (2N877-2N881)



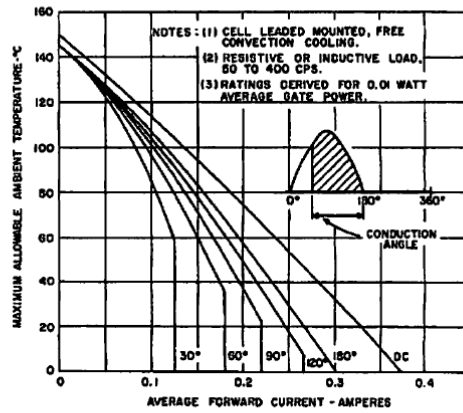
8. HOLDING CURRENT AS A FUNCTION OF JUNCTION TEMPERATURE (2N885-2N889)



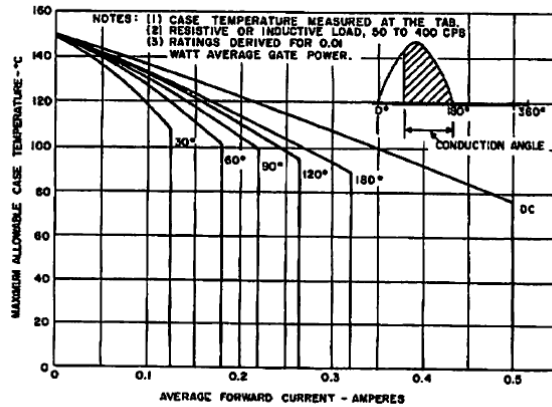
10. MAXIMUM TRANSIENT THERMAL IMPEDANCE



9. MAXIMUM ALLOWABLE NON-RECURRENT SURGE CURRENT AT RATED LOAD CONDITIONS



11. MAXIMUM ALLOWABLE AMBIENT TEMPERATURE (150°C JUNCTION TEMP.)



12. MAXIMUM ALLOWABLE CASE TEMPERATURE (150°C JUNCTION TEMP.)

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