

Data Sheet No. PD-2.087

INTERNATIONAL RECTIFIER 

1N1183, 1N3765, 1N1183A, 1N2128A SERIES

35, 40 and 60 Amp Power Silicon Rectifier Diodes

Major Ratings and Characteristics

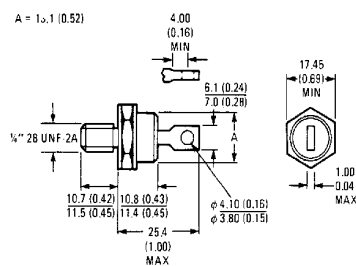
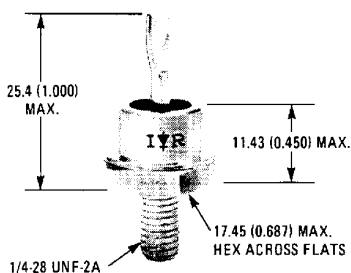
	1N1183	1N3765	1N1183A	1N2128A	Units
$I_{F(AV)}$	35*	35*	40*	60*	A
@ Max. T_C	140*	140*	150*	140*	°C
I_{FSM} @ 50 Hz	480	380	785	880	A
@ 60 Hz	500*	400*	800*	900*	
I^2_t @ 50 Hz	1140	730	2900	3700	A ² s
@ 60 Hz	1040	670	2850	3400	
I_{V_T}	16 100	10 300	41 000	52 500	A \sqrt{s}
V_{RRM} Range	50* to 600*	700* to 1000*	50* to 600*	50* to 600*	V

*JEDEC registered values.

Description and Features

- Low leakage current series
- Good surge current capability up to 1000 amps
- Can be supplied to meet stringent military, aerospace and other high-reliability requirements.

CASE STYLE AND DIMENSIONS



Conforms to JEDEC Outline DO-203AB (DO-5)
Dimensions in Millimeters and (Inches)

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VOLTAGE RATINGS

Part Number ①			V _{RRM} - Max. Repetitive Peak Reverse Voltage (V)	V _R - Max. Direct Reverse Voltage (V)
			T _C = -65°C to 200°C ②	T _C = -65°C to 200°C ②
1N1183	1N1183A	1N2128A	50*	50*
1N1184	1N1184A	1N2129A	100*	100*
1N1185	1N1185A	1N2130A	150*	150*
1N1186	1N1186A	1N2131A	200*	200*
1N1187	1N1187A	1N2133A	300*	300*
1N1188	1N1188A	1N2135A	400*	400*
1N1189	1N1189A	1N2137A	500*	500*
1N1190	1N1190A	1N2138A	600*	600*
1N3765			700*	700*
1N3766			800*	800*
1N3767			900*	900*
1N3768			1000*	1000*

ELECTRICAL SPECIFICATIONS

	1N1183	1N3765	1N1183A	1N2128A	Units	Conditions
I _{F(AV)} Max. average forward current @ Max. T _C	35*	35*	40*	60*	A	1-phase operation, 180° conduction
I _{FSM} Max. peak one-cycle non-repetitive surge current	480	380	785	860	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse
	500*	400*	800*	900*		Half cycle 60 Hz sine wave or 5 ms rectangular pulse
	570	455	910	1000	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse
	595	475	960	1050		Half cycle 60 Hz sine wave or 5 ms rectangular pulse
i ² t Max. i ² t for fusing	1140	730	2900	3700	A ² s	t = 10ms With rated V _{RRM} applied following surge, initial T _J = T _J max.
	1040	670	2650	3400		t = 8.3ms
	1610	1030	4150	5250	A ² s	t = 10ms With V _{RRM} = 0 following surge, initial T _J = T _J max.
	1470	940	3750	4750		t = 8.3ms
i ² √t Max. i ² √t for individual device fusing ③	16 100	10 300	41 500	52 500	A ² √s	t = 0.1 to 10 ms, V _{RRM} = 0 following surge.
V _{FM} Max. peak forward voltage @ I _{FM}	1.7*	1.8*	1.3*	1.3*	V	T _J = 25°C
	110	110	126	188	A	
I _{R(AV)} Max. average reverse current	—	5.0*	—	—	mA	Max. rated I _{F(AV)} and T _C , V _{RRM} = 700V
	—	4.0*	—	—		800V
	—	3.0*	—	—		900V
	—	2.0*	—	—		1000V
	10*	—	2.5*	10*	mA	Max. rated I _{F(AV)} , V _{RRM} and T _C .

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, i.e., 1N1188R, 1N3786R, 1N1186RA, 1N2135RA

② For 1N1183 series and 1N3765 series T_C = -65 to 190°C.

③ I²t for t_x = i²√t_x · √t_x.

* JEDEC registered values.



THERMAL-MECHANICAL SPECIFICATIONS

		1N1183	1N3765	1N1183A	1N2128A	Units	Conditions
T_C	Max. operating case temperature range	-65 to 190*	-65 to 190*	-65 to 200	-65 to 200	°C	
T_{stg}	Max. storage temperature range	-65 to 175*	-65 to 175*	-65 to 200	-65 to 200	°C	
R_{thJC}	Max. internal thermal resistance, junction-to-case	1.00*	1.1*	0.65*	0.65*	deg. C/W	DC operation
R_{thCS}	Thermal resistance, case-to-sink	0.25				deg. C/W	Mounting surface flat, smooth, and greased.
T	Mounting torque	Min.	2.3 (20)			Nm	Non-lubricated threads
		Max.	3.4 (30)			(lbf.in)	
wt	Approximate weight	17 (0.6)				g (oz)	
	Case style	DU-ZU3AB (DU-5)					JEDEC

*JEDEC registered values.

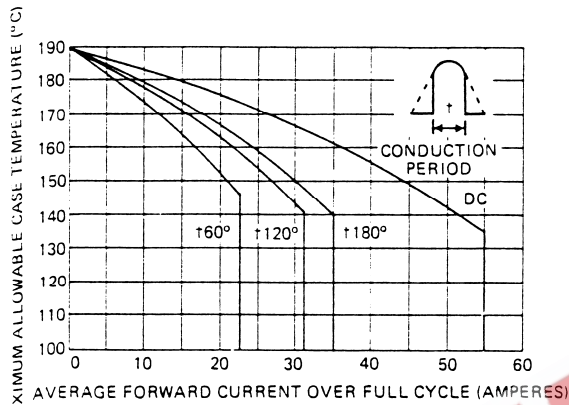


Fig. 1 - Maximum Allowable Case Temperature Vs. Average Forward Current, 1N1183 and 1N3765 Series

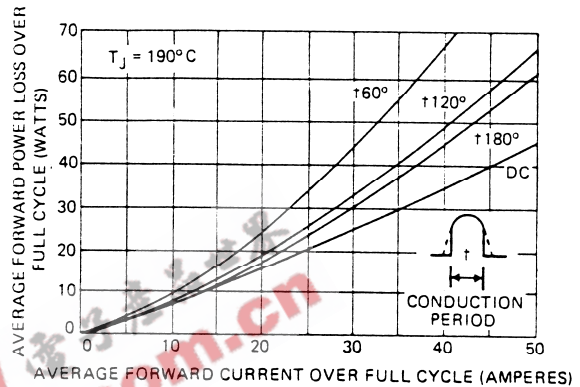


Fig. 2 - Typical Low Level Forward Power Loss Vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

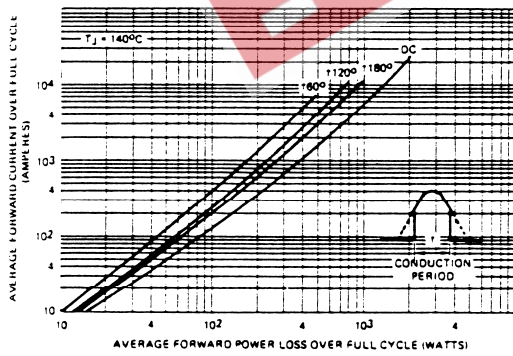


Fig. 3 - Typical High Level Forward Power Loss Vs. Average Forward Current (Sinusoidal Current Waveform), 1N1183 and 1N3765 Series

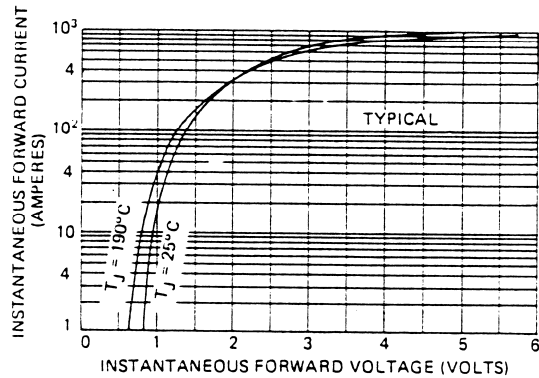


Fig. 4 - Typical Forward Voltage Vs. Forward Current, 1N1183 and 1N3765 Series

1N1183, 1N3765, 1N1183A, 1N2128A Series

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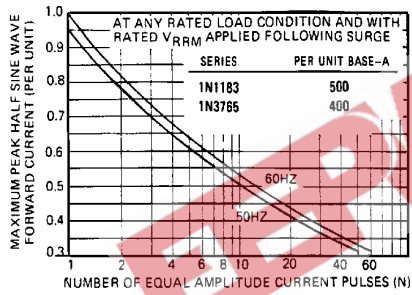


Fig. 5 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 1N1183 and 1N3765 Series

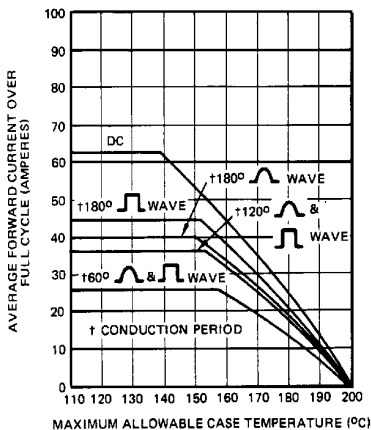


Fig. 6 - Average Forward Current Vs. Maximum Allowable Case Temperature, 1N1183A Series

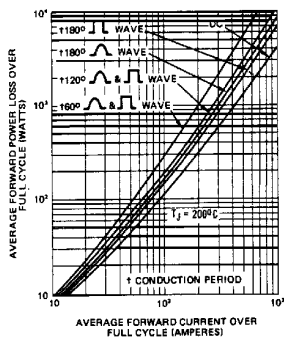


Fig. 8 - Maximum High Level Forward Power Loss Vs. Average Forward Current, 1N1183A Series.

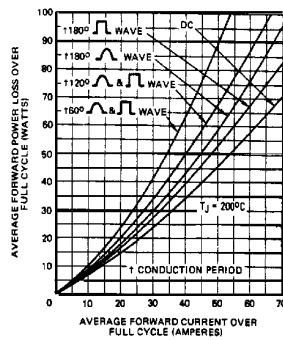


Fig. 7 - Maximum Low Level Forward Power Loss Vs. Average Forward Current, 1N1183A Series

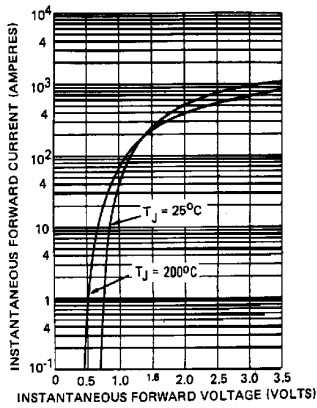


Fig. 9 - Maximum Forward Voltage Vs. Forward Current, 1N1183A Series

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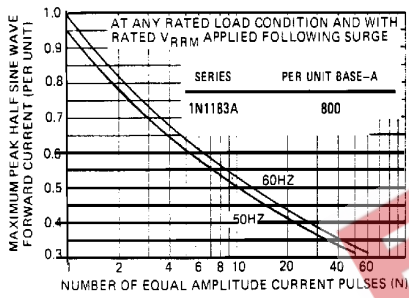


Fig. 10 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 1N1183A Series

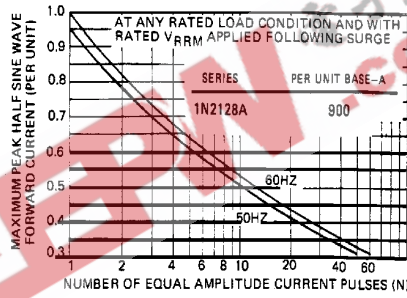


Fig. 11 - Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 1N2128A Series

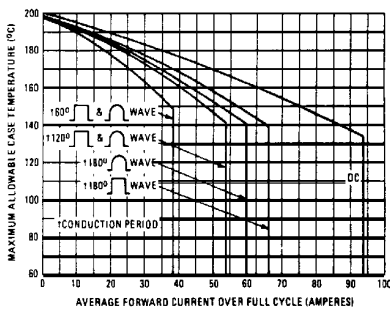


Fig. 12 - Maximum Allowable Case Temperature Vs. Average Forward Current, 1N2128A Series

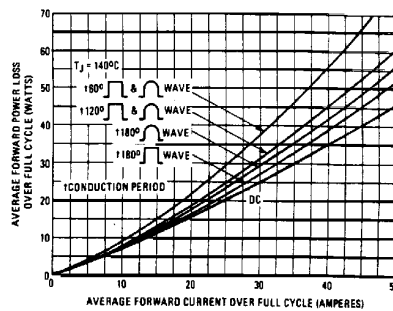


Fig. 13 - Maximum Low Level Forward Power Loss Vs. Average Forward Current, 1N2128A Series

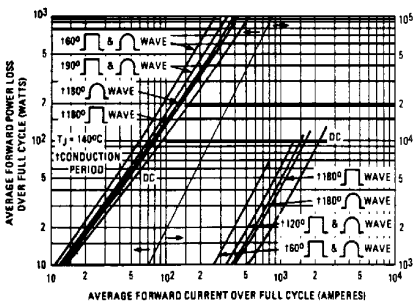


Fig. 14 - Maximum High Level Forward Power Loss Vs. Average Forward Current, 1N2128A Series

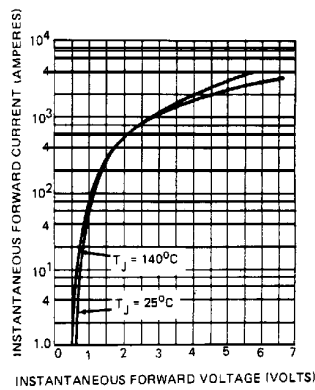


Fig. 15 - Maximum Forward Voltage Vs. Forward Current, 1N2128A Series