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# TECHNICAL DATA SHEET

## HIGH RELIABILITY ULTRA FAST RECOVERY RECTIFIER

Qualified per MIL-PRF-19500/550

- 800 Amps Surge Rating
- VRRM 50 to 150 Volts
- 70 Amps Current Rating

### DEVICES

**1N6304**      **1N6304R**  
**1N6305**      **1N6305R**  
**1N6306**      **1N6306R**

**LEVELS**  
**JAN**  
**JANTX**  
**JANTXV**

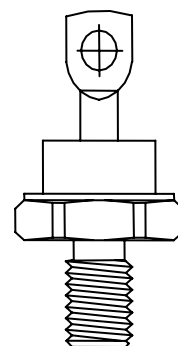
### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Unit
Peak Repetitive Reverse Voltage 1N6304 / R 1N6305 / R 1N6306 / R	$V_{RWM}$	50 100 150	V
Peak Working Reverse Voltage 1N6304 / R 1N6305 / R 1N6306 / R	$V_{RRM}$	50 100 150	V
Average Forward Current, $T_C = 100^\circ$	$I_F$	70	A
Peak Surge Forward Current @ $t_p = 8.3\text{ms}$ , half sinewave, $T_C = 55^\circ\text{C}$	$I_{FSM}$	800	A
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.8	$^\circ\text{C/W}$
Operating Junction Temperature Range	$T_J$	$-65^\circ\text{C}$ to $175^\circ\text{C}$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-65^\circ\text{C}$ to $175^\circ\text{C}$	$^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS ( $T_A = +25^\circ\text{C}$ , unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Forward Voltage $I_{FM} = 70\text{A}$ , $T_C = 25^\circ\text{C}^*$	$V_{FM}$		0.975	V
Forward Voltage $I_{FM} = 150\text{A}$ , $T_C = 25^\circ\text{C}^*$	$V_{FM}$		1.18	V
Forward Voltage $I_{FM} = 70\text{A}$ , $T_C = 150^\circ\text{C}^*$	$V_{FM}$		0.84	V
Reverse Current $V_{RM} = 50\text{V}$ , $T_C = 25^\circ\text{C}$ $V_{RM} = 100\text{V}$ , $T_C = 25^\circ\text{C}$ $V_{RM} = 150\text{V}$ , $T_C = 25^\circ\text{C}$ 1N6304 / R 1N6305 / R 1N6306 / R	$I_{RM}$		25	$\mu\text{A}$
Reverse Current $V_{RM} = 50\text{V}$ , $T_C = 150^\circ\text{C}$ $V_{RM} = 100\text{V}$ , $T_C = 150^\circ\text{C}$ $V_{RM} = 150\text{V}$ , $T_C = 150^\circ\text{C}$ 1N6304 / R 1N6305 / R 1N6306 / R	$I_{RM}$		30	mA
Reverse Recovery Time $I_F = 0.5\text{A}$ , $I_R = 1\text{A}$	$T_{rr}$		50	ns
Reverse Recovery Time $I_F = 70\text{A}$	$T_{rr}$		60	ns
Capacitance Junction $V_R = 10\text{V}$ , $f = 1\text{MHz}$ , $T_J = 25^\circ\text{C}$	$C_J$		600	pF

\* Pulse test: Pulse width 300  $\mu\text{sec}$ , Duty cycle 2%



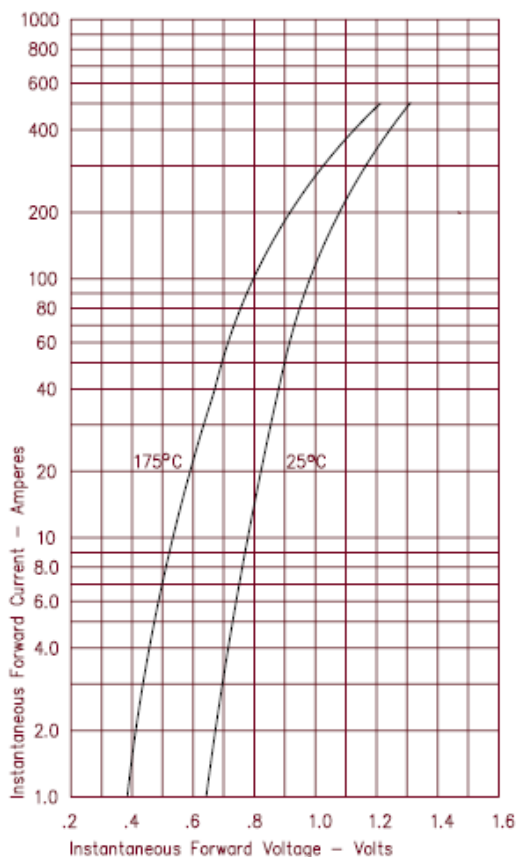
DO-203AB (DO-5)

## HIGH RELIABILITY ULTRA FAST RECOVERY RECTIFIER

### GRAPHS

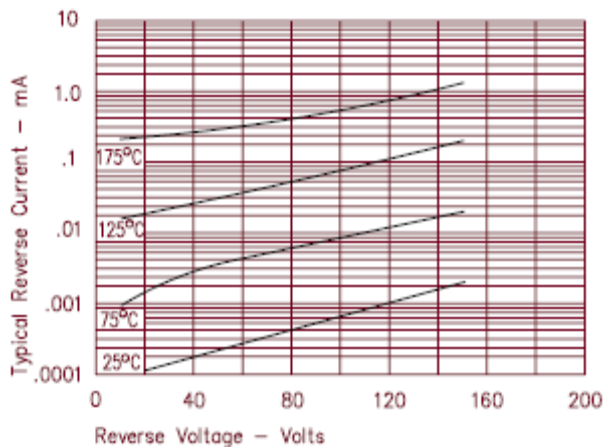
**FIGURE 1**

**TYPICAL FORWARD CHARACTERISTICS**



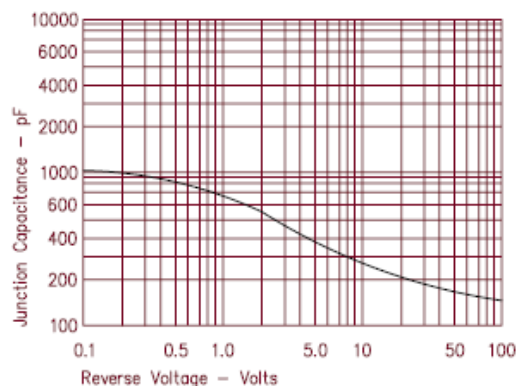
**FIGURE 2**

**TYPICAL REVERSE CHARACTERISTICS**



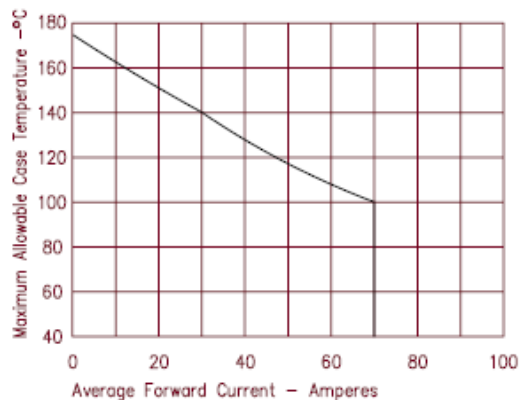
**FIGURE 3**

**TYPICAL JUNCTION CAPACITANCE**



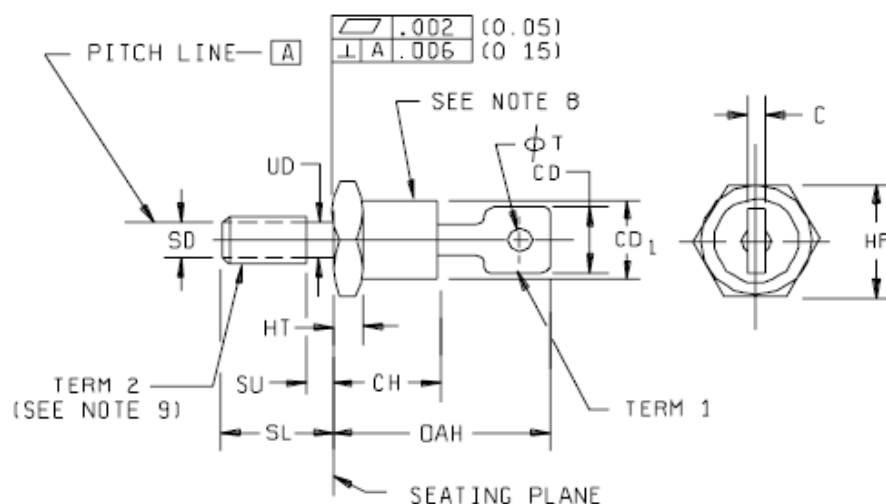
**FIGURE 4**

**FORWARD CURRENT DERATING**



## HIGH RELIABILITY ULTRA FAST RECOVERY RECTIFIER

### PACKAGE DIMENSIONS



### NOTES:

- Dimensions are in inches.
- Millimeter equivalents are given for information only.
- Units must not be damaged by torque of 30 inch-pound applied to .25-28 UNF-2B nut assembled on thread.
- Length of incomplete or undercut threads of UD.
- Maximum pitch diameter of plated threads shall be basic pitch diameter .2268 inch (5.761 mm).
- A chamfer or undercut on one or both ends of the hex portion is optional; minimum base diameter at seating plane .60 inch (15.2 mm).
- The angular orientation and peripheral configuration of terminal 1 is undefined.
- Standard types shall have cathode connected to stud. Reverse types shall have anode connected to stud.
- Term 2 threads in accordance with FED-STD-H28.
- In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.375		9.53	7
C		.080		2.03	
HF	.669	.688	16.99	17.48	
HT	.115	.200	2.92	5.08	
CH		.450		11.43	
OAH	.750	1.00 0	19.05	25.40	
SL	.422	.453	10.72	11.51	
SU		.090		2.29	4
CD <sub>1</sub>		.667		16.94	
SD					5
UD	.220	.249	5.59	6.32	
θT	.140	.175	3.56	4.45	

### Physical dimensions (DO-203AB)