

### Standard Recovery Diodes

#### FEATURES

- High surge capability
- Qualified for industrial level
- International standard case TO-200AC
- Ceramic insulator

#### TYPICAL APPLICATIONS

- Power supplies
- Machine tools control
- High power drives
- Welders
- Traction power supplies

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		1300	A
	$T_{Case}$	125	°C
$I_{F(RMS)}$		2620	A
	$T_{Case}$	125	°C
$I_{FSM}$	50 Hz	21500	A
	60 Hz	22500	A
$I^2t$	50 Hz	1950	kA <sup>2</sup> s
	60 Hz	2110	kA <sup>2</sup> s
$V_{DRM}/V_{RRM}$		200 to 1600	V
$T_J$		-40 to 180	°C

#### ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
SERIES	VOLTAGE CODE	$V_{DRM}/V_{RRM}$ , MAX. RE- PETITIVE PEAK AND OFF-STATE VOLTAGE (V)	$V_{RSM}$ , MAX. NON- REPETITIVE PEAK VOLTAGE (V)	$I_{DRM}/I_{RRM}$ , MAX. at $T_J$ = $T_{J(Max.)}$ (mA)
D1300/...	02	200	300	60
D1300/...	04	400	500	
D1300/...	06	600	700	
D1300/...	08	800	900	
D1300/...	10	1000	1100	
D1300/...	12	1200	1300	
D1300/...	14	1400	1500	
D1300/...	16	1600	1700	

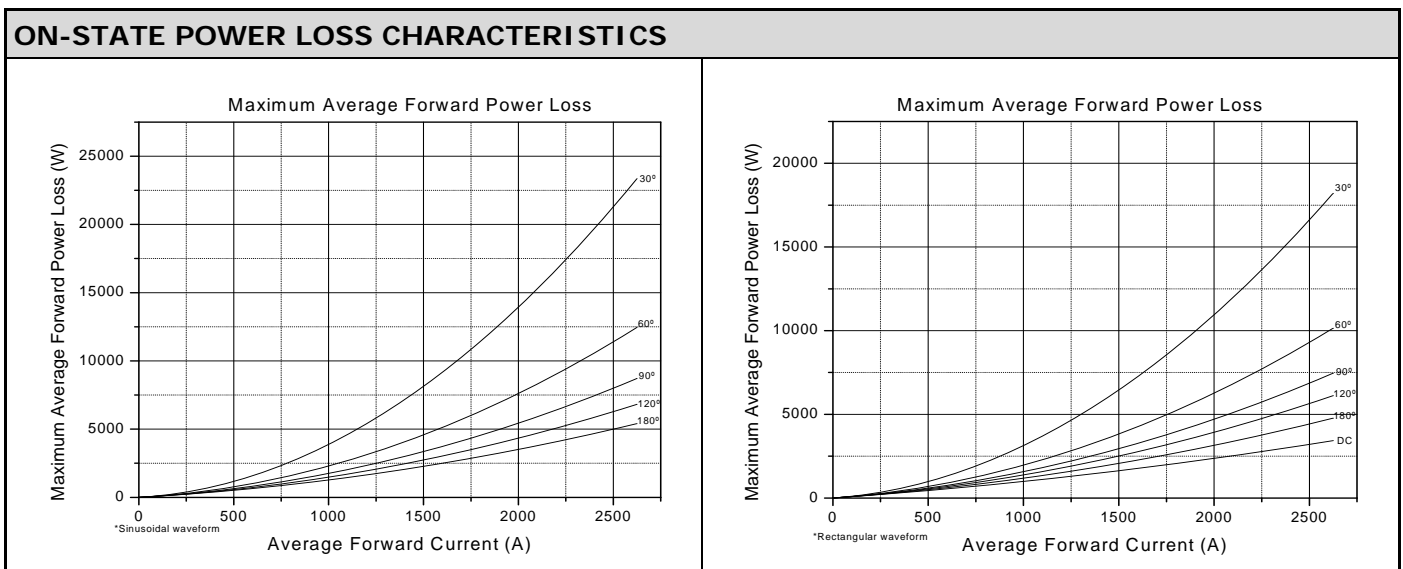
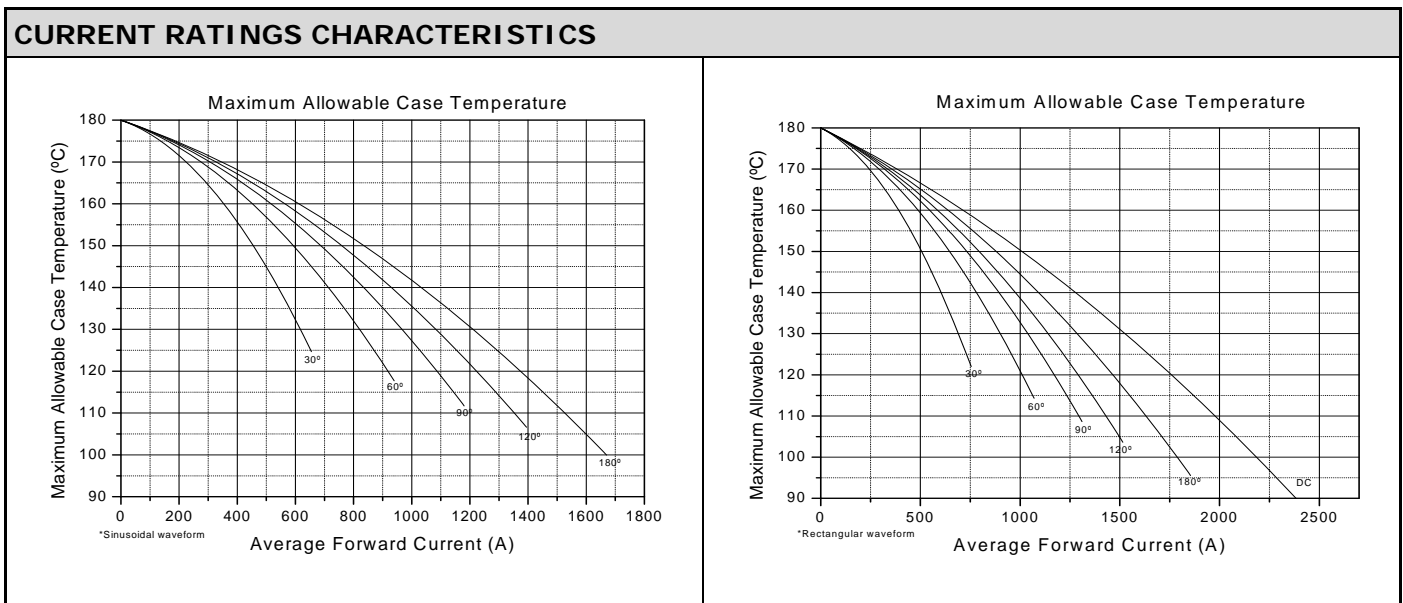
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MAXIMUM ALLOWABLE RATINGS						
SYMBOL	DESCRIPTION	TEST CONDITIONS		VALUE	UNITS	
$I_{F(AV)}$	Maximum average on-state current at heatsink temperature	180° conduction, half sine wave, double side cooled		1300	A	
				125	°C	
$I_{F(RMS)}$	Maximum RMS on-state current	DC at 25°C heatsink temperature, double side cooled		2620	A	
$I_{FSM}$	Maximum peak, one-cycle non-repetitive surge current	t = 10 ms	100% $V_{RRM}$ reapplied	Sinusoidal half wave, initial $T_J = T_J \text{ max.}$	kA	
		t = 8.3 ms	100% $V_{RRM}$ reapplied			18.90
		t = 10 ms	No voltage reapplied			21.50
		t = 8.3 ms	No voltage reapplied			22.50
$I^2t$	Maximum $I^2t$	t = 10 ms	100% $V_{RRM}$ reapplied		kA <sup>2</sup> s	
		t = 8.3 ms	100% $V_{RRM}$ reapplied			1392
		t = 10 ms	No voltage reapplied			1504
		t = 8.3 ms	No voltage reapplied			1950
$I^2t^{1/2}$	Maximum $I^2t^{1/2}$	t = 0.1 to 10 ms, no voltage reapplied		13000	kA <sup>2</sup> s <sup>1/2</sup>	
				2110		
$V_{F(TO)}$	Low level threshold voltage	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$ ), $T_J = T_J \text{ max.}$		0.794	V	
$r_F$	Low level on-state slope resistance			0.195	mΩ	
$V_{FM}$	Maximum on-state voltage	$I_{pk} = 4084A$ , 50Hz half sine pulse, $T_J = T_J \text{ max.}$		1.63	V	

THERMAL AND MECHANICAL SPECIFICATIONS				
SYMBOL	DESCRIPTION	TEST CONDITIONS	VALUE	UNITS
$T_J$	Maximum operating junction temperature	-	-40 to 180	°C
$T_{Stg}$	Maximum storage temperature	-	-40 to 180	
$R_{thJ-hs}$	Maximum thermal resistance, junction to heatsink	DC, double side cooled	0.035	°C/W
		180° sine wave, double side cooled	0.039	
		120° rectangular wave, double side cooled	0.040	
$R_{thC-hs}$	Maximum thermal resistance, case to heat-sink	Mtg. Surface smooth, flat, greased, double side cooled	0.015	
-	Mounting force, ± 10%	-	1250	kgf
-	Approximate weight	-	255	g
-	Case style	-	TO-200AC	JEDEC

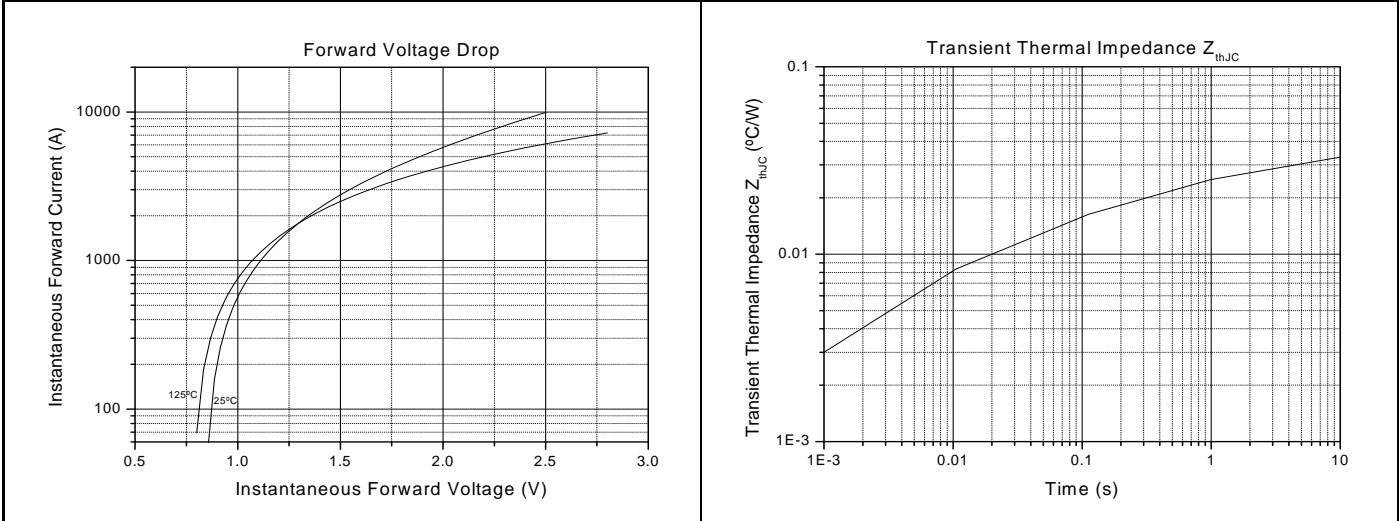
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CURRENT FORM FACTOR								
FORM FACTOR	CONDUCTION ANGLE	15°	30°	45°	60°	90°	120°	180°
Sine wave		31.956	15.832	10.452	7.721	4.933	3.527	2.468
Rectangular wave		24.000	12.000	8.000	6.000	4.000	3.000	2.000

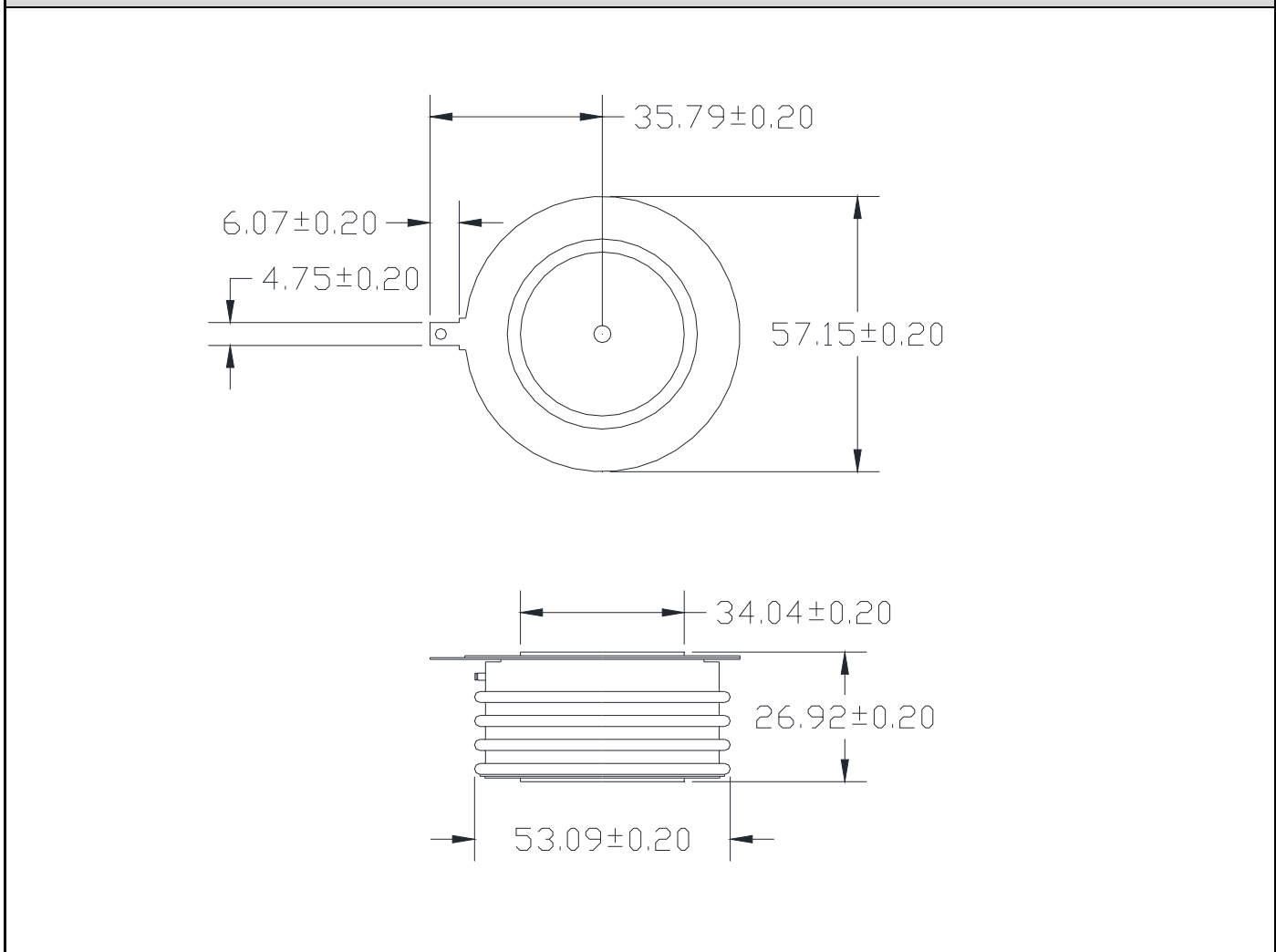


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#### FORWARD VOLTAGE DROP / THERMAL IMPEDANCE CHARACTERISTICS



#### OUTLINE CHARACTERISTICS



### Standard Recovery Diodes

#### ORDERING INFORMATION

Device code

D	1300	/	16	-	-	-
①	②	③	④	⑤	⑥	⑦

- |   |  |
|---|--|
| 1 | <ul style="list-style-type: none"> <li>- N = Phase Control Thyristors</li> <li>- F = Fast Thyristors (inverter grade)</li> <li>- D = Normal Recovery Diodes</li> <li>- DF = Fast Recovery Diodes</li> <li>- DD = Module (diode-diode)</li> <li>- DT = Module (diode-thyristor)</li> <li>- TD = Module (thyristor-diode)</li> <li>- TT = Module (thyristor-thyristor)</li> <li>- P = Press-fit diode</li> </ul> |
| 2 | <ul style="list-style-type: none"> <li>- Average Current Code</li> </ul>   |
| 3 | <ul style="list-style-type: none"> <li>- Essential Part Number</li> </ul>  |
| 4 | <ul style="list-style-type: none"> <li>- Voltage Code x 100 = <math>V_{RRM}</math></li> </ul>  |
| 5 | <ul style="list-style-type: none"> <li>- Turn-off time (fast thyristors only)</li> <li>- Reverse Recovery Time (fast diodes only)</li> </ul>   |
| 6 | <ul style="list-style-type: none"> <li>- M = Metric Thread</li> <li>- I = Inch Thread</li> </ul>   |
| 7 | <ul style="list-style-type: none"> <li>- None = Anode to stud (stud diodes only)</li> <li>- R = Cathode to stud (stud diodes only)</li> </ul>  |

#### Disclaimer

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