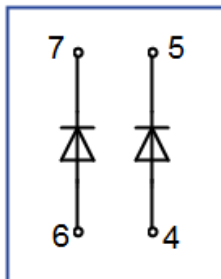


FRD module high-power &amp; increased rated insulation voltage 10.2 kV

**3300 V 1200 A**


### Chip features

- fast and soft reverse recovery
- low voltage drop

### Design features

- AISiC baseplate
- AlN DBC substrate
- ultrasonically welded power terminals
- high rated insulation voltage – 10.2 kV
- RoHS compliant

### Typical application

- transport (auxiliary power systems for rail and public transport)
- industrial equipment

## Maximum rated values

Definition	Symbol	Conditions	Value	Unit
<b>Diode</b>				
Repetitive peak reverse voltage	$V_{RRM}$		3300	V
Maximum allowable forward current (continuous)	$I_{F 25}$	$T_{vj(max)} = 150^{\circ}\text{C}; T_c = 25^{\circ}\text{C}.$	-	A
	$I_{F 80}$	$T_{vj(max)} = 150^{\circ}\text{C}; T_c = 80^{\circ}\text{C}.$	1200	A
Repetitive peak forward current* <sup>1</sup>	$I_{FRM}$	$I_{FRM} = 2 \times I_{F nom}; t_p = 1 \text{ ms}.$	2400	A
Safety factor	$I^2t$	$T_{vj(max)} = 150^{\circ}\text{C}; t_p = 10 \text{ ms}; \text{sin}.$	440	$\text{A}^2\text{s} \cdot 10^3$
Junction operating temperature	$T_{vj(op)}$		-40...+150	$^{\circ}\text{C}$
<b>Module</b>				
Storage temperature	$T_{stg}$		-50...+50	$^{\circ}\text{C}$
Isolation voltage	$V_{isol}$	AC sin 50 Hz; $T_c=25^{\circ}\text{C}; t = 1 \text{ min}.$	10200	V

\*1 Pulse width and repetition rate should be such that device junction temperature does not exceed maximum  $T_{vj}$  rating

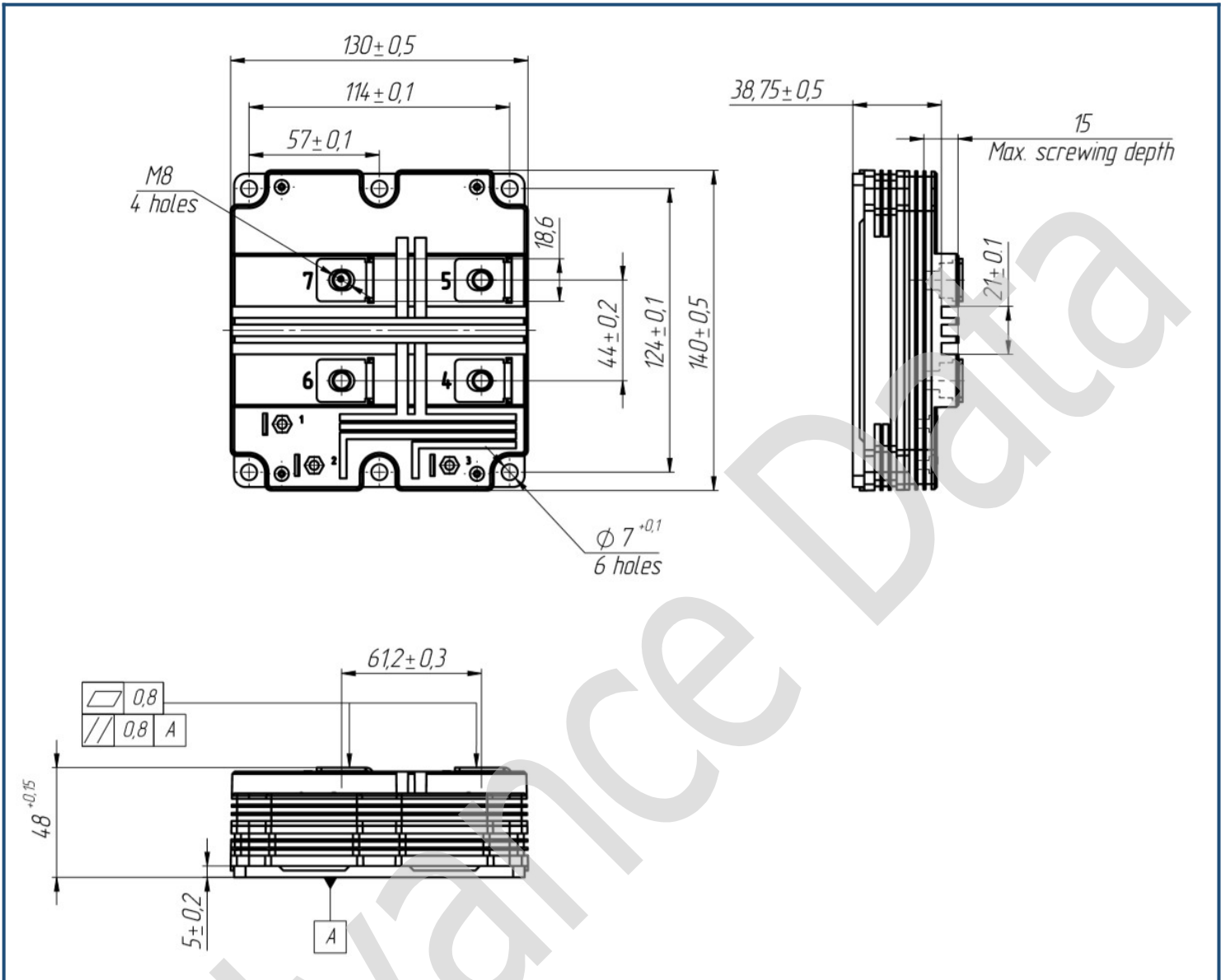
**Characteristics**

Definition	Symbol	Conditions	Value			Unit.	
			min.	typ.	max.		
<b>Diode</b>							
Forward voltage drop	$V_F$	$I_F = 1200 \text{ A}; t_u = 500 \mu\text{s}.$	$T_{vj} = 25^\circ\text{C}$	-	2.40	-	V
			$T_{vj} = 125^\circ\text{C}$	-	2.80	-	V
Repetitive peak reverse current	$I_{RRM}$	$V_R = 3300 \text{ V}.$	$T_{vj} = 25^\circ\text{C}$	-	1.00	-	mA
			$T_{vj} = 125^\circ\text{C}$	-	100	-	mA
Peak reverse current	$I_{RM}$	$V_{CE} = 1800 \text{ V};$ $I_{F \text{ max}} = 1200 \text{ A};$ $-di_F/dt=5400 \text{ A}/\mu\text{s}$	$T_{vj} = 25^\circ\text{C}$	-	1400	-	A
			$T_{vj} = 125^\circ\text{C}$	-	1500	-	A
Recovered charge	$Q_r$	$V_{CE} = 1800 \text{ V};$ $I_{F \text{ max}} = 1200 \text{ A};$ $-di_F/dt=5400 \text{ A}/\mu\text{s}$	$T_{vj} = 25^\circ\text{C}$	-	900	-	$\mu\text{C}$
			$T_{vj} = 125^\circ\text{C}$	-	1500	-	$\mu\text{C}$
Reverse recovery energy	$E_{rec}$	$V_{CE} = 1800 \text{ V};$ $I_{F \text{ max}} = 1200 \text{ A};$ $-di_F/dt=5400 \text{ A}/\mu\text{s}$	$T_{vj} = 25^\circ\text{C}$	-	1.00	-	J
			$T_{vj} = 125^\circ\text{C}$	-	1.50	-	J
Threshold voltage	$V_{(T0)}$	$T_{vj} = 25^\circ\text{C}; I_{F1} = 300 \text{ A};$	-	1.01	-	V	
Forward slope resistance	$r_T$	$I_{F2} = 1200 \text{ A}; t_u = 10 \text{ ms}$	-	4.29	-	m $\Omega$	
Thermal resistance junction to case	$R_{th(JC-D)}$	DC; $I_F = 900 \pm 100 \text{ A}; I_{test} = 3 \text{ A}.$	-	0.017	-	K/W	
<b>Module</b>							
Pin resistance	$R_{Pxy}$		-	0.33	-	m $\Omega$	
Parasitic inductance between terminals	$L_{Pce}$		-	18.00	-	nH	
Thermal resistance case to heatsink	$R_{thCH}$	per module	-	0.008	-	K/W	
Mounting torque for screws to heatsink	$M_s$	to heatsink M6	-	5.00	-	N*m	
Mounting torque for terminal screws	$M_t$	to terminals M8	-	9.00	-	N*m	
Weight	$W$		-	1000	-	g	

" - " Data will be refined as additional tests are conducted and statistics are collected.

**Notes:**

- Insulating material operating temperature 125°C max;
- Case temperature 125°C max;
- The recommended operating junction temperature  $T_{vj \text{ op}} = -40 \dots +150^\circ\text{C}.$

**Overall dimensions: Package type – SV**

**Part numbering guide**

MDSV	-	SD	33	SG	-	1200	N	
MDSV								FRD module package type: SV
		SD						2 diodes in parallel
			33					Voltage rating ( $V_{CES}/100$ )
				SG				FRD chipset modification
						1200		Current Rating
							N	Climatic version: normal climate

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