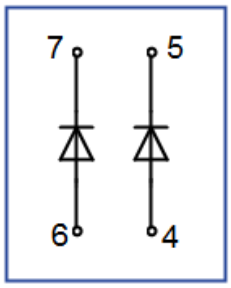
MDSV-SD33SG-2400N

Diode module datasheet

FRD module high-power & increased rated insulation voltage 10.5 kV



Main electrical parameters

- $I_{F\ nom}$ = 2x1200 A
- U_{RRM} = 3300 V

Chip features

- fast and soft reverse recovery
- low voltage drop

Design features

- AlSiC baseplate
- AlN AMB substrate
- ultrasonically welded power terminals
- high rated insulation voltage – 10.5 kV
- RoHS compliant

Typical application

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

Maximum rated values

Definition	Symbol	Conditions	Value	Unit
Diode				
Repetitive peak reverse voltage	V_{RRM}		3300	V
Maximum allowable forward current (continuous)	$I_{F\ 25}$	$T_{vj\ (max)}$ = 150°C; T_c = 25°C.	2x1652	A
	$I_{F\ 100}$	$T_{vj\ (max)}$ = 150°C; T_c = 100°C.	2x947	A
Repetitive peak forward current*1	I_{FRM}	I_{FRM} = 2 x $I_{F\ nom}$; t_p = 1 ms.	2x2400	A
Safety factor	I^2t	$T_{vj\ (max)}$ = 150°C; t_p = 10 ms; sin.	360	$A^2s \cdot 10^3$
Junction operating temperature	$T_{vj\ (op)}$		-40…+150	°C
Module				
Storage temperature	T_{stg}		-50…+50	°C
Isolation voltage	V_{isol}	AC sin 50 Hz; Tc=25°C; t = 1 min.	10500	V

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

Characteristics

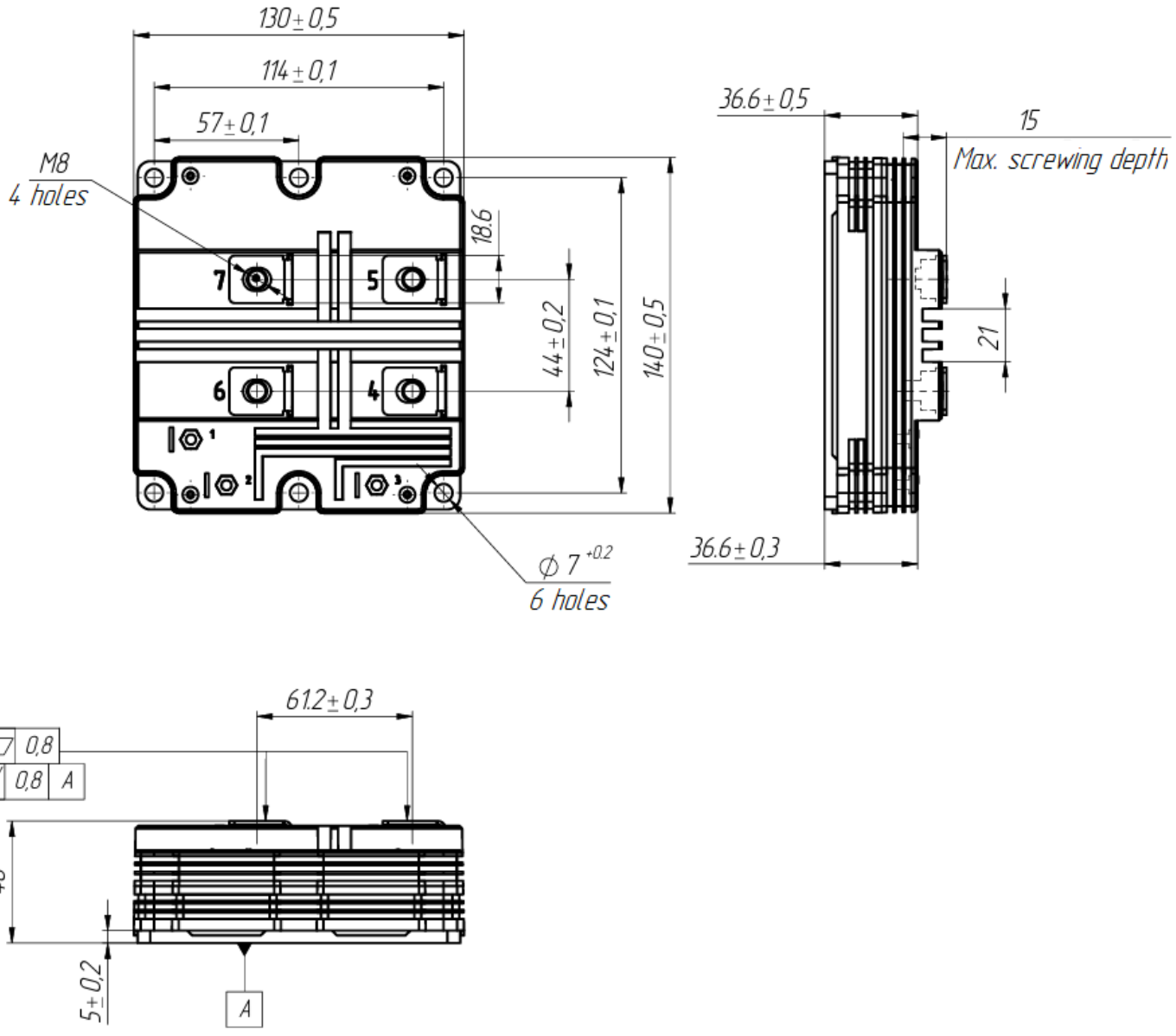
Definition	Symbol	Conditions		Value min.	Value typ.	Value max.	Unit.
Diode							
Forward voltage drop	V_F	I_F = 1200 A; t_u = 1 ms.	T_{vj} = 25°C	-	2.30	2.60	V
			T_{vj} = 125°C	-	2.50	2.80	V
Repetitive peak reverse current	I_{RRM}	V_R = 3300 V.	T_{vj} = 25°C	-	0.22	2.00	mA
			T_{vj} = 125°C	-	14.35	20.00	mA
Peak reverse current	I_{RM}	V_R = 1800 V; $I_{F\,max}$ = 1200 A.	T_{vj} = 25°C	-	850	1150	A
			T_{vj} = 125°C	-	900	1400	A
Recovered charge	Q_r		T_{vj} = 25°C	-	310	430	µC
			T_{vj} = 125°C	-	520	720	µC
Reverse recovery energy	E_{rec}		T_{vj} = 25°C	-	0.15	0.30	J
			T_{vj} = 125°C	-	0.23	0.44	J
Threshold voltage	$V_{(T0)}$	T_{vj} = 150°C; I_{F1} = 300 A; I_{F2} = 1200 A; t_u = 1 ms.		-	0.90	0.92	V
Forward slope resistance	r_T			-	1.31	1.35	mΩ
Thermal resistance junction to case	$R_{th(JC-D)}$	DC; I_F = 1000 A; I_{test} = 1 A.		-	0.018	0.024	K/W
Module							
Pin resistance	R_{Pxy}			-	0.33	-	mΩ
Parasitic inductance between terminals	L_{Pce}			-	18.00	-	nH
Thermal resistance case to heatsink	R_{thCH}	per module		-	0.08	-	K/W
Mounting torque for screws to heatsink	M_s	to heatsink M6		4.25	-	5.75	N*m
Mounting torque for terminal screws	M_t	to terminals M8		8.00	-	10.00	N*m
Weight	W			-	-	1100	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 $T_{vj\ op}$ = -40...+150°C.

Overall dimensions: package type – SV



Part numbering guide

MDSV	-	SD	33	SG	-	2400	N	
MDSV								FRD module package type: SV
		SD						2 diodes in parallel
			33					Voltage rating (V_{CES}/100)
				SG				FRD chipset modification
						2400		Current Rating of two parallel diodes
							N	Climatic version: normal climate

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