

**POWERFUL LOW FREQUENCY AND FAST RECOVERY DIODES
«ECONOPACK»****MPD-160, MPD-160X**

- ◆ $V_{RRM} = \underline{100 - 1600 \text{ V}}$
- ◆ $I_{F(AV)} = \underline{160 \text{ A}}$ ($T_C = 90 \text{ }^\circ\text{C}$)
- ◆ $I_{FSM} = \underline{2,2 \text{ kA}}$ ($T_{Vj} = 150 \text{ }^\circ\text{C}$)

- ◆ Very small dimensions and weight at high loading current
- ◆ Tight plastic package with screw fittings to the cooling device and upper bus
- ◆ Very low internal inductiveness of diode construction

**MAXIMUM RATED VALUES**

Parameter and conditions	Symbol	Values			Units
		min.	typ.	max.	
Repetitive peak reverse voltage, $T_{Vj} = -60 \text{ }^\circ\text{C} \dots +150 \text{ }^\circ\text{C}$	V_{RRM}	100	-	1600	V
Non- repetitive peak reverse voltage, $T_{Vj} = -60 \text{ }^\circ\text{C} \dots +150 \text{ }^\circ\text{C}$	V_{RSM}	200	-	1700	
Repetitive peak reverse current, $T_{Vj} = 150 \text{ }^\circ\text{C}$, $V_R = V_{RRM}$	I_{RRM}	-	-	10	mA
Max. average forward current, $f = 50 \text{ Hz}$, $T_C = 90 \text{ }^\circ\text{C}$	$I_{F(AV)}$	-	-	160	A
RMS forward current, $f = 50 \text{ Hz}$, $T_C = 90 \text{ }^\circ\text{C}$	I_{FRMS}	-	-	250	
Surge forward current, $V_R = 0$, $T_{Vj} = 150 \text{ }^\circ\text{C}$, $t_p = 10 \text{ ms}$	I_{FSM}	-	-	2,2	kA
Safety factor	I^2t	-	-	24	kA^2s
Operation junction temperature range	T_{Vj}	- 60	-	+ 150	$^\circ\text{C}$
Storage temperature range	T_{stg}	- 40	-	+ 50	

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ELECTRICAL CHARACTERISTICS					
Maximum peak forward voltage, $I_F = 500 \text{ A}$, $T_{Vj} = 25 \text{ }^\circ\text{C}$	V_{FM}	-	-	1,75	V
Threshold voltage, $T_{Vj} = 150 \text{ }^\circ\text{C}$, $I_F = 250 - 800 \text{ A}$	$V_{(TO)}$	-	-	0,95	
Slope resistance, $T_{Vj} = 150 \text{ }^\circ\text{C}$, $I_F = 250 - 800 \text{ A}$	r_T	-	-	1,60	mΩ
Recovery charge, $di_F/dt = -5 \text{ A}/\mu\text{s}$, $T_{Vj} = 150 \text{ }^\circ\text{C}$, $I_F = 160 \text{ A}$, $V_R \geq 100 \text{ V}$	Q_{rr}	-	-	250	μAs
THERMAL PARAMETERS					
Thermal resistance junction to case (DC)	R_{thjc}	-	-	0,228	°C/W
Thermal resistance case to heatsink	R_{thch}	-	-	0,20	
MECHANICAL PARAMETERS					
Weight	w	-	0,035	-	kg
Terminal connection torque	M_t	3	-	5	Nm
Heatsink mounting torque	M_s	2	-	3	

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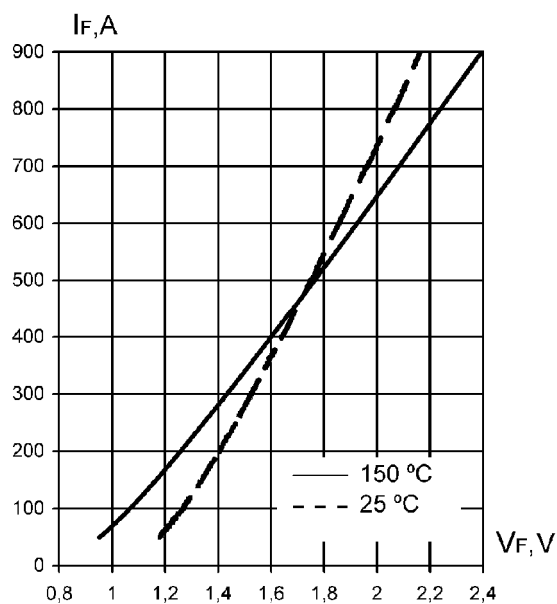


Fig. 1. Maximum forward characteristics
(Limit device, 10 ms, half sine)

Forward characteristics model

$$V_F = A + B \cdot I_F + C \cdot \ln(I_F + 1) + D \cdot \sqrt{I_F}$$

Valid for $I_F = 50 - 900 A$

	$T_{Vj} = 150 \text{ } ^\circ\text{C}$	$T_{Vj} = 25 \text{ } ^\circ\text{C}$
A	0.688	0.925
B	0.00142	0.0008883
C	0.04	0.044
D	0.005213	0.004801

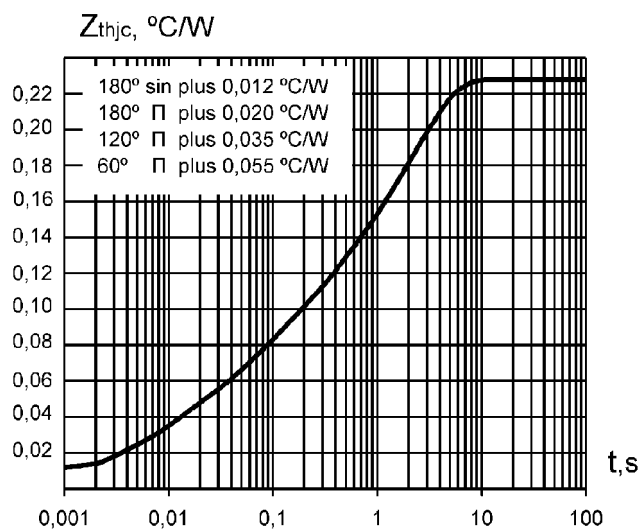


Fig. 2. Transient thermal impedance junction to case (DC)

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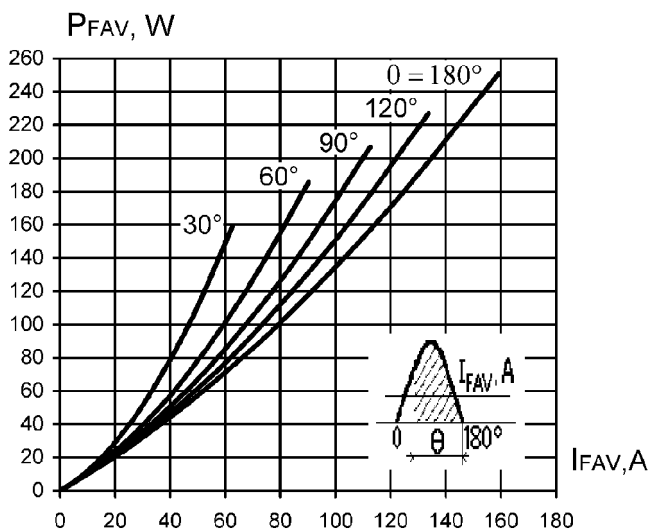


Fig. 3. Power loss vs. forward current (sine)

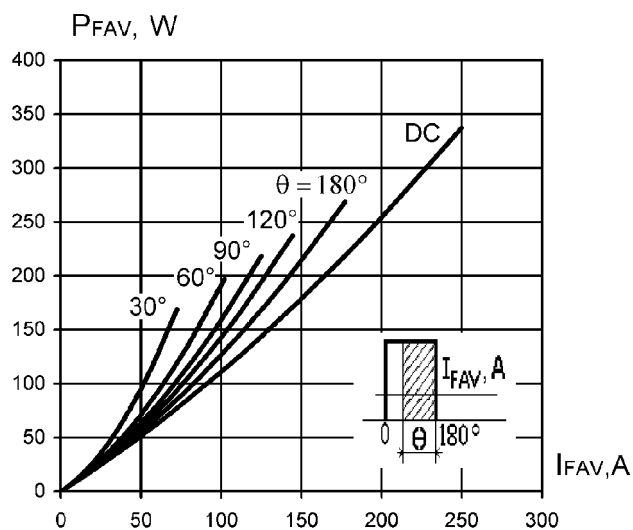


Fig. 4. Power loss vs. forward current (rectangular)

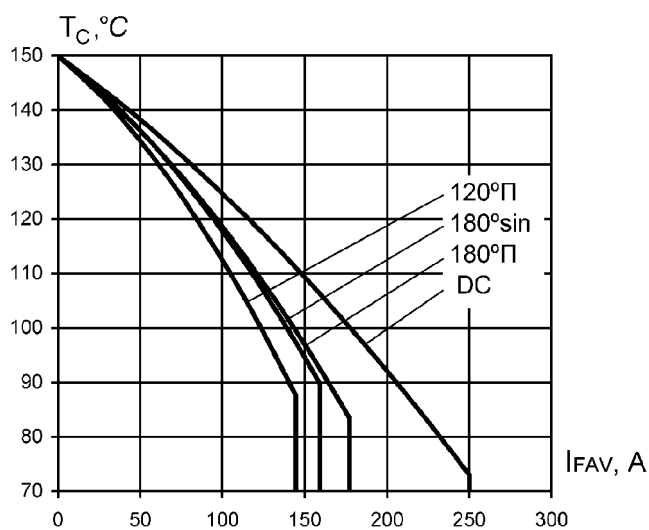


Fig. 5. Max. permissible case temperature vs. mean on-state current

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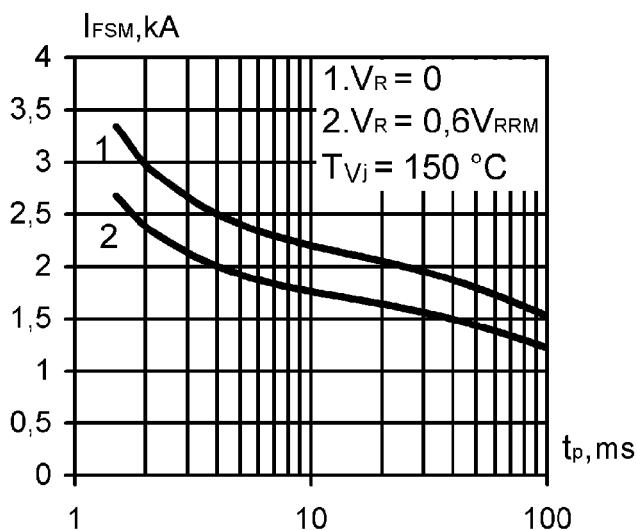


Fig. 6. Surge current vs. pulse length
(half-sine)

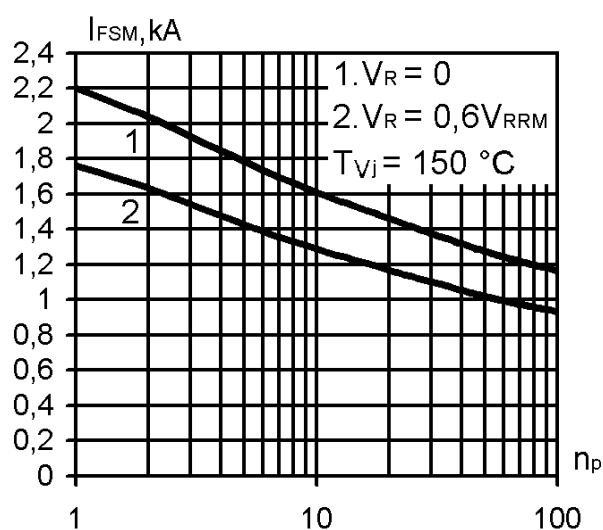


Fig. 7. Surge current vs. number of pulses
(half-sine, 10 ms, 50 Hz)

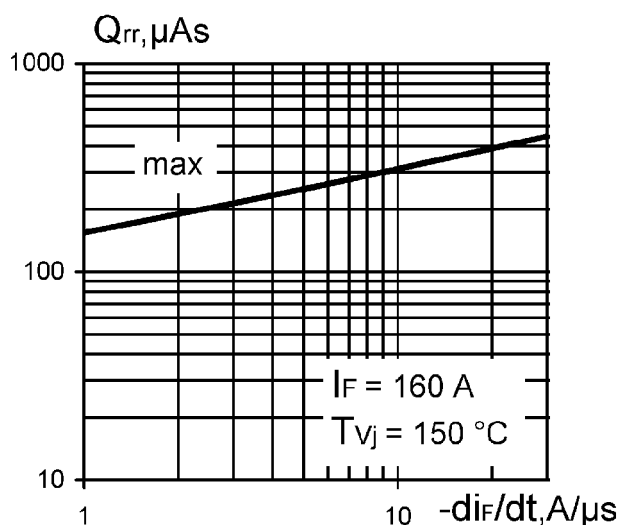


Fig. 8. Recovery charge vs. decay rate current

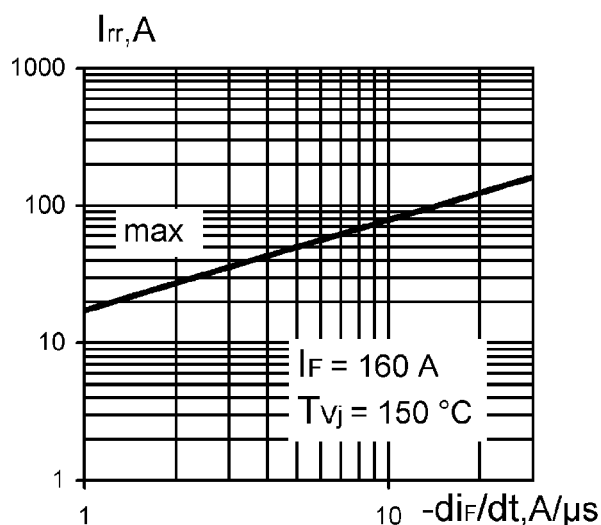
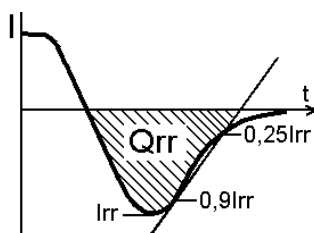


Fig. 9. Peak reverse recovery current vs.
decay rate current



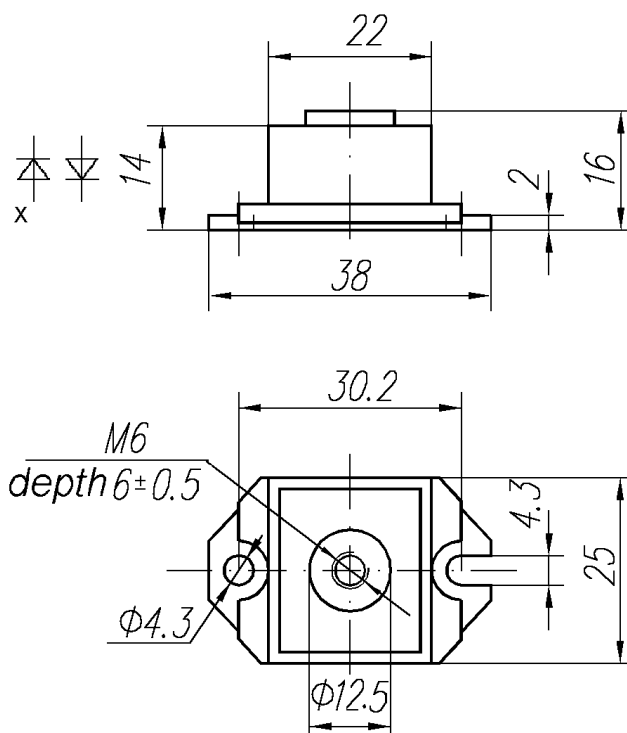
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Fig. 10. Device Outline Drawing
(dimensions in mm)

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