

# Fast Recovery Diode

## Types M2505MC200 & M2505MC250

Development part number MX499MC250

### Absolute Maximum Ratings

	VOLTAGE RATINGS	MAXIMUM LIMITS	UNITS
V <sub>RRM</sub>	Repetitive peak reverse voltage, (note 1)	2000-2500	V
V <sub>RSM</sub>	Non-repetitive peak reverse voltage, (note 1)	2100-2600	V

	OTHER RATINGS	MAXIMUM LIMITS	UNITS
I <sub>F(AV)M</sub>	Maximum average forward current, T <sub>sink</sub> =55°C, (note 2)	2505	A
I <sub>F(AV)M</sub>	Maximum average forward current. T <sub>sink</sub> =100°C, (note 2)	1210	A
I <sub>F(AV)M</sub>	Maximum average forward current. T <sub>sink</sub> =100°C, (note 3)	670	A
I <sub>F(RMS)M</sub>	Nominal RMS forward current, T <sub>sink</sub> =25°C, (note 2)	4970	A
I <sub>F(d.c.)</sub>	D.C. forward current, T <sub>sink</sub> =25°C, (note 4)	4250	A
I <sub>FSM</sub>	Peak non-repetitive surge t <sub>p</sub> =10ms, V <sub>rm</sub> =60%V <sub>RRM</sub> , (note 5)	27	kA
I <sub>FSM2</sub>	Peak non-repetitive surge t <sub>p</sub> =10ms, V <sub>rm</sub> ≤10V, (note 5)	30	kA
I <sup>2</sup> t	I <sup>2</sup> t capacity for fusing t <sub>p</sub> =10ms, V <sub>rm</sub> =60%V <sub>RRM</sub> , (note 5)	3.65×10 <sup>6</sup>	A <sup>2</sup> s
I <sup>2</sup> t	I <sup>2</sup> t capacity for fusing t <sub>p</sub> =10ms, V <sub>rm</sub> ≤10V, (note 5)	4.50×10 <sup>6</sup>	A <sup>2</sup> s
T <sub>j op</sub>	Operating temperature range	-40 to +125	°C
T <sub>stg</sub>	Storage temperature range	-55 to +150	°C

Notes:-

- 1) De-rating factor of 0.13% per °C is applicable for T<sub>j</sub> below 25°C.
- 2) Double side cooled, single phase; 50Hz, 180° half-sinewave.
- 3) Cathode side cooled, single phase; 50Hz, 180° half-sinewave.
- 4) Double side cooled.
- 5) Half-sinewave, 125°C T<sub>j</sub> initial.

**Characteristics**

	PARAMETER	MIN.	TYP.	MAX.	TEST CONDITIONS (Note 1)	UNITS
V <sub>FM</sub>	Maximum peak forward voltage	-	-	1.50	I <sub>FM</sub> =3000A	V
V <sub>FM</sub>	Maximum peak forward voltage	-	-	2.18	I <sub>FM</sub> =7515A	V
V <sub>T0</sub>	Threshold voltage	-	-	0.991		V
r <sub>T</sub>	Slope resistance	-	-	0.162		mΩ
I <sub>RRM</sub>	Peak reverse current	-	-	100	Rated V <sub>RRM</sub>	mA
Q <sub>rr</sub>	Recovered charge	-	600	800	I <sub>TM</sub> =1000A, t <sub>p</sub> =1000μs, di/dt=10A/μs, V <sub>r</sub> =100V	μC
Q <sub>ra</sub>	Recovered charge, 50% Chord	-	375	-		μC
I <sub>rm</sub>	Reverse recovery current	-	75	80		A
t <sub>rr</sub>	Reverse recovery time, 50% chord	-	10	-		μs
Q <sub>rr</sub>	Recovered charge	-	1950	-	I <sub>TM</sub> =2000A, t <sub>p</sub> =1000μs, di/dt=60A/μs, V <sub>r</sub> =300V	μC
Q <sub>ra</sub>	Recovered charge, 50% Chord	-	1350	-		μC
I <sub>rm</sub>	Reverse recovery current	-	355	-		A
t <sub>rr</sub>	Reverse recovery time, 50% chord	-	7.6	-		μs
E <sub>r</sub>	Reverse recovery energy	-	600	-		mJ
R <sub>thJK</sub>	Thermal resistance, junction to heatsink	-	-	0.0140	Double side cooled	K/W
		-	-	0.0265	Anode side cooled	K/W
		-	-	0.0297	Cathode side cooled	K/W
F	Mounting force	25	-	31	Note 2	kN
W <sub>t</sub>	Weight		530			g

Notes:-

- 1) Unless otherwise indicated T<sub>j</sub>=125°C.
- 2) For other clamp forces, please consult factory.

**Curves**

Figure 1 – Forward characteristics of Limit device

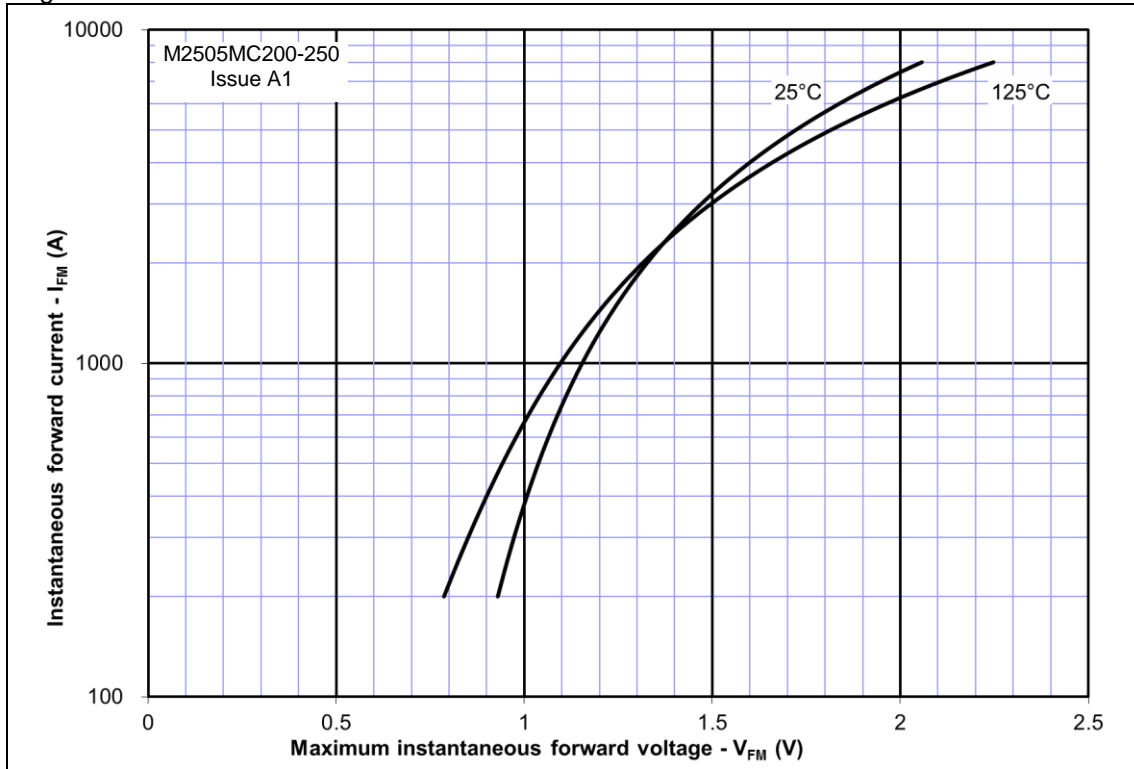


Figure 2 – Transient thermal impedance

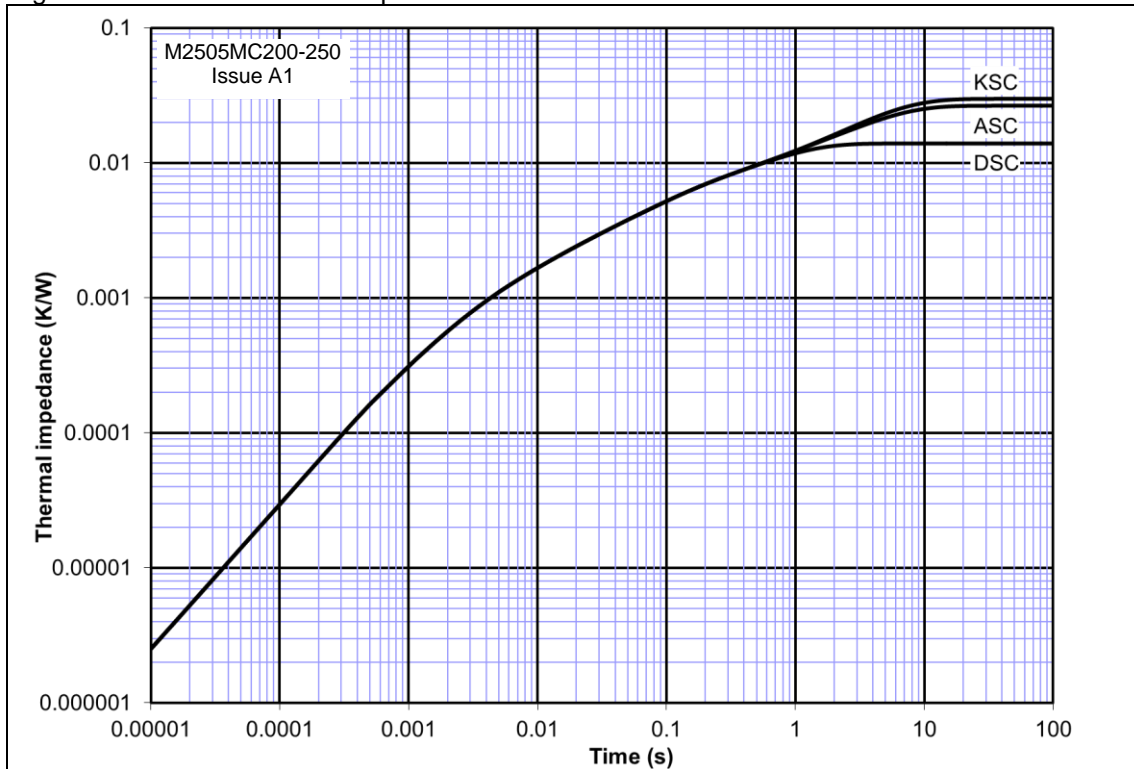
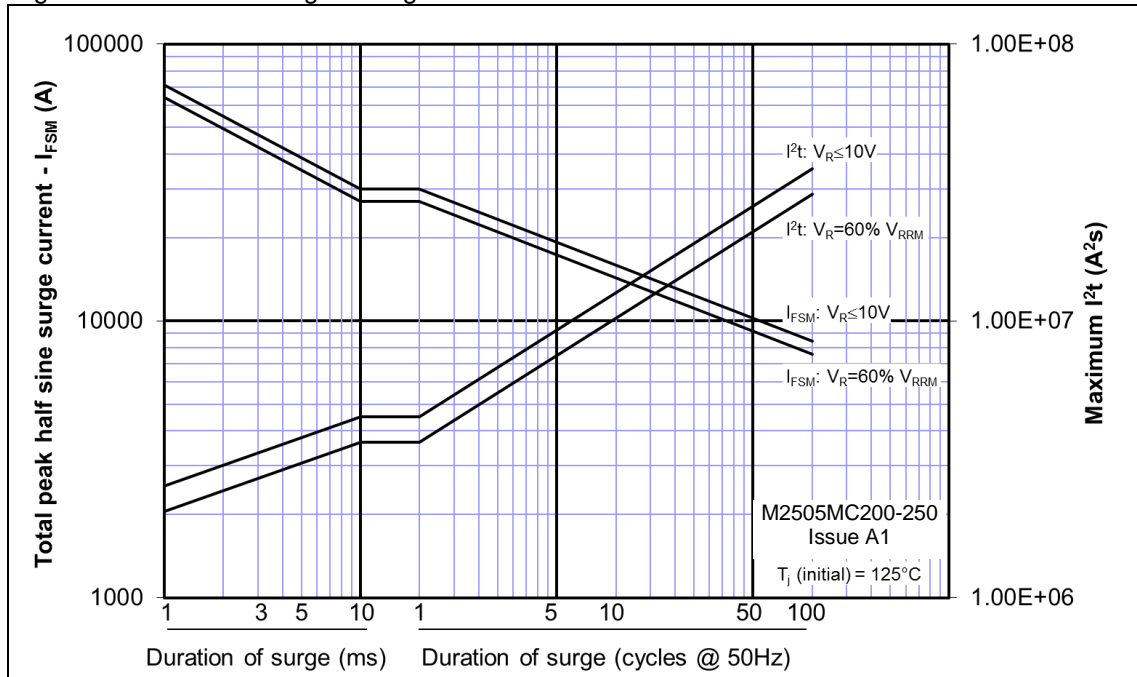
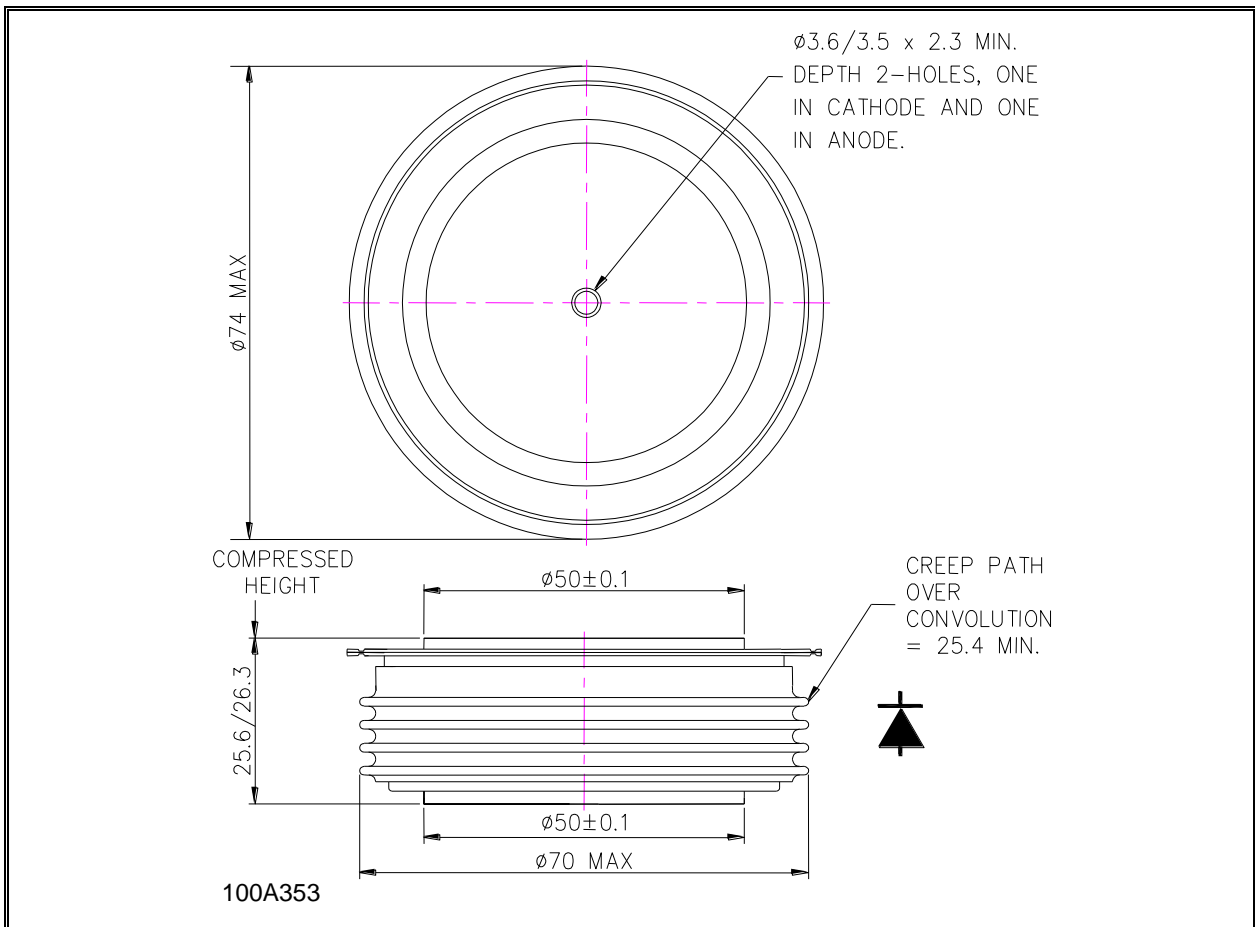


Figure 3 – Maximum Surge Rating



**Outline Drawing & Ordering Information**



<b>ORDERING INFORMATION</b>			
(Please quote 10 digit code as below)			
<b>M2505</b>	<b>MC</b>	<b>25</b>	<b>0</b>
Fixed Type Code	Fixed Outline Code	Voltage code $V_{RRM}/100$ 25	Fixed code

Order code: W2505MC250 – 2500V  $V_{RRM}$ , 26.3mm clamp height capsule.

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