

## 9. Characteristics

## 9.1 Electrical Characteristics (Ta=25°C)

Unless otherwise stated,

Ta=25°C, Vin=3.3V, Vo=2V, Cin=330μF, Co=0μF, Io=Iomax

Item	Symbol	Condition	Value			Unit	
			Min.	Typ.	Max.		
Output Current	Io	0.8V ≤ Vo ≤ 2.5V 60°C, 200 LFM Airflow 25°C, Natural Convection	0	-	10(*1)	A	
Input Voltage Range	Vin	Over Io Range	2.95 (*2)	-	3.65	V	
Set-point Voltage	Vo tol		-	-	±2(*3)	%Vo	
Temperature Variation	Δ Regtemp	-40°C ≤ Ta ≤ 85°C	-	±0.5	-	%Vo	
Line Regulation	Δ Regline	Over Vin Range	-	±10	-	mV	
Load Regulation	Δ Regload	Over Io Range	-	±12	-	mV	
Total Output Variation	Δ Regtot	Includes set-point, line, load, -40°C ≤ Ta ≤ 85°C	-	-	±3(*3)	%Vo	
Efficiency	η	Io=7A	Rset=2.21kΩ Vo=2.5V	-	93	-	%
			Rset=4.12kΩ Vo=2.0V	-	92	-	
			Rset=5.49kΩ Vo=1.8V	-	91	-	
			Rset=8.87kΩ Vo=1.5V	-	89	-	
			Rset=17.4kΩ Vo=1.2V	-	87	-	
			Rset=36.5kΩ Vo=1.0V	-	85	-	
Ripple Voltage	Vr	BW=20MHz, Co=10μF Ceramic	-	25(*4)	-	mVpp	
Short Circuit Protection	Io trip	Reset, Followed by Auto-Recovery	-	20	-	A	
Transient Response	ttr	1A/μs load step, 50 to 100% Iomax, Co=330μF	Recovery Time	-	70	-	μsec
	Δ Vtr		Vo Deviation	-	100	-	mV
Margin Up/Down Adjust	Δ Vo		-	±5	-	%	
Margin Input Current	IIL margin	Pin to GND	-	-8	-	μA	
Track Input Current	IIL track	Pin to GND	-	-	-130 (*5)	μA	
Track Slew Rate	dVtrack/dt	Cout ≤ Cout(max)	-	-	1	V/ms	
Rising UVLO Threshold	UVLOr	Vin=Increasing	-	2.45	2.8	V	
Falling UVLO Threshold	UVLOf	Vin=Decreasing	2.2	2.4	-	V	

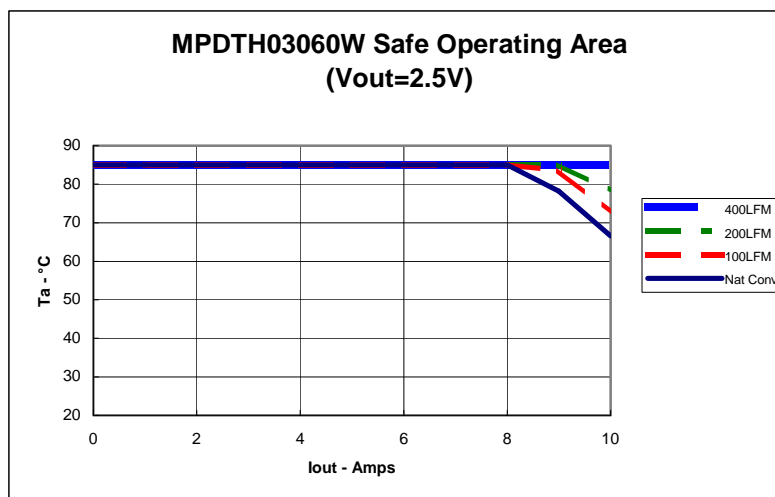
## ⚠ Note:

1. This datasheet is downloaded from the website of Murata Manufacturing co., ltd. Therefore, it's specifications are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering.
2. This datasheet has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

Item	Symbol	Condition	Value			Unit
			Min.	Typ.	Max.	
Inhibit Control	VIH	Referenced to GND	This pin should left open to operate (*5)			
Inhibit Control	VIL	Referenced to GND	-0.2	-	0.6	V
Inhibit Control	IIL inhibit	Pin to GND	-	-130	-	$\mu$ A
Inhibit Control	Iin inh	Inhibit to GND, Track open	-	10	-	mA
Switching Frequency	Frq	Over Vin and Io Ranges	-	300	-	kHz
External Input Capacitor	Cin		330 (*6)	-	-	$\mu$ F
External Output Capacitor	Cout	Non-Ceramic (ESR $\geq$ 4m $\Omega$ )	0	330 (*7)	5500	$\mu$ F
		Ceramic	0	-	300	
MTBF	MTBF	Per Bellcore TR-332, 50% Stress, Ta=40°C, Ground Benign	5.7	-	-	10 <sup>6</sup> Hrs

- (\*1) See SOA curves or consult factory for appropriate derating.  
(\*2) The minimum input voltage is equal to 2.95V or Vout+0.65V, whichever is greater.  
(\*3) The set-point voltage tolerance is affected by the tolerance and stability of Rset. The stated limit is unconditionally met if Rset has a tolerance of +/-1% with 100ppm/°C or better temperature stability.  
(\*4) The peak-to-peak output ripple voltage is measured with an external 10 $\mu$ F ceramic capacitor.  
(\*5) This control pin has an internal pull-up. If it is left open-circuit the module will operate when input power is applied.  
(\*6) The external input capacitor must have a ripple current rating at or above 500mA rms.  
(\*7) An external output capacitor is not required for basic operation. Adding 330 $\mu$ F of distributed capacitance at the load however will improve transient response.

## 9.2 Safe Operating Area (SOA)



The above SOA represents the condition at which internal components are at or below the manufacturer's maximum operating temperatures. Derating limits apply to modules soldered directly to a 4 in.  $\times$  4in. 4-layer PCB with 1 oz. copper. For more reliable operation, appropriate derating is desirable.

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