

MF303#, MF304#, MF306#, MF308# Series



DESCRIPTION

The MF303#, MF304#, MF306# and MF308# series of devices consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon detector performing the function of a zero voltage crossing bilateral triac driver. They are designed for use with a discrete power triac in the interface of logic systems to equipment powered from 110 to 240 VAC lines.

FEATURES

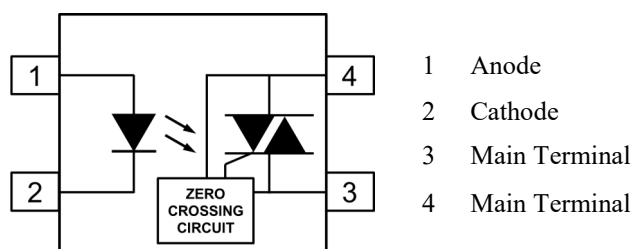
- Zero Voltage Crossing
- V_{DRM}
 - MF303# Series 250V
 - MF304# Series 400V
 - MF306# Series 600V
 - MF308# Series 800V
- Mini Flat Package
- Isolation Voltage 3750V_{RMS}
- Wide Operating Temperature Range -40°C to 110°C
- RoHS Compliant
- UL File E91231 designated as MF304# and MF306# where # is any number 0-9
- Safety Approval Pending for MF303# and MF308# Series

APPLICATIONS

- Solenoid / Valve Controls
- Light Controls
- AC Motor Drivers
- Temperature Controls
- AC Motor Starters
- Solid State Relays

ORDER INFORMATION

- Available in Tape & Reel



ABSOLUTE MAXIMUM RATINGS

Input

Forward Current	60mA
Peak Forward Current (1μs pulse 300pps)	1A
Reverse Voltage	6V
Power Dissipation	100mW

Output

Off-State Output Terminal Voltage	
MF303# Series	250V
MF304# Series	400V
MF306# Series	600V
MF308# Series	800V
On-state RMS Current	70mA _{RMS}
Power Dissipation	300mW

Total Package

Isolation Voltage	3750V _{RMS}
Operating Temperature	-40 to 110°C
Storage Temperature	-55 to 150°C
Lead Soldering Temperature (10s)	260°C

ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate
 Hartlepool, Cleveland, TS25 1PE, United Kingdom
 Tel : +44 (0)1429 863 609 Fax : +44 (0)1429 863 581
 e-mail : sales@isocom.co.uk
<http://www.isocom.com>

ISOCOM COMPONENTS ASIA LTD

Hong Kong Office
 Block A, 8/F, Wah Hing Industrial Mansions
 36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong
 Tel : +852 2995 9217 Fax : +852 8161 6292
 e-mail : sales@isocom.com.hk

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = 30\text{mA}$			1.5	V
Reverse Current	I_R	$V_R = 6\text{V}$			10	μA

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Peak Off-State Current	I_{DRM}	$V_{\text{DRM}} = \text{Rated } V_{\text{DRM}}$ $I_F = 0\text{mA}$ Note 1			100	nA
On-State Voltage	V_{TM}	$I_{\text{TM}} = 100\text{mA (peak)}$			3	V
Critical Rate of Rise of Off-State Voltage	dv/dt		1000			$\text{V}/\mu\text{s}$

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input Trigger Current	I_{FT}	$V_{\text{TM}} = 3\text{V}$ MF3030 / MF3040 MF3060 / MF3080 MF3031 / MF3041 MF3061 / MF3081 MF3032 / MF3042 MF3062 / MF3082 MF3033 / MF3043 MF3063 / MF3083 MF306# Note 2			30 15 10 5 3	mA
Holding Current (either direction)	I_H			280		μA

Note 1 : Test Voltage must be applied within dv/dt rating.

Note 2 : Guaranteed to trigger at an I_F value less than or equal to max I_{FT} , recommended I_F lies between Rated I_{FT} to Absolute Max I_F .

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

ZERO CROSSING CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Inhibit Voltage	V_{INH}	$I_F = \text{Rated } I_{FT}$ MT1-MT2 Voltage above which device will not trigger			20	V
Leakage Current in Inhibit State	I_{DRM2}	$I_F = \text{Rated } I_{FT}$ $V_{DRM} = \text{Rated } V_{DRM}$ Off-state			1000	μA

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60% $t = 1 \text{ min}$	3750			V_{RMS}

Measured with input leads shorted together and output leads shorted together.



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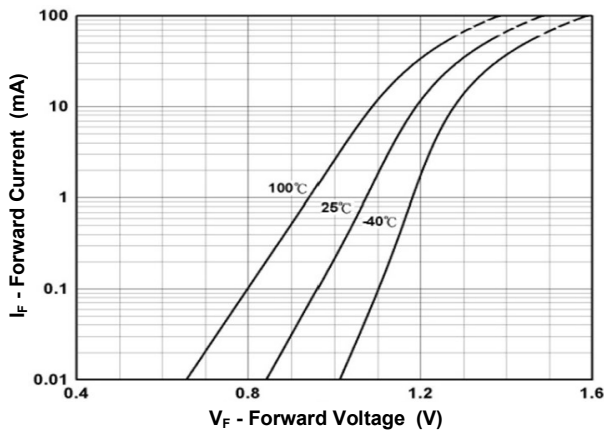


Fig 1 Forward Current vs Forward Voltage

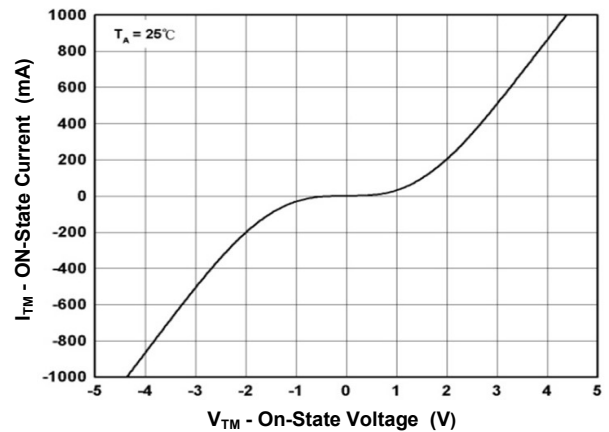


Fig 2 On-State Characteristics

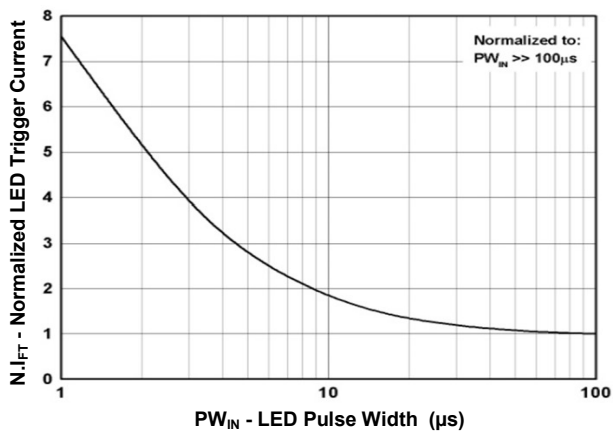


Fig 3 Normalized LED Trigger Current vs LED Pulse Width

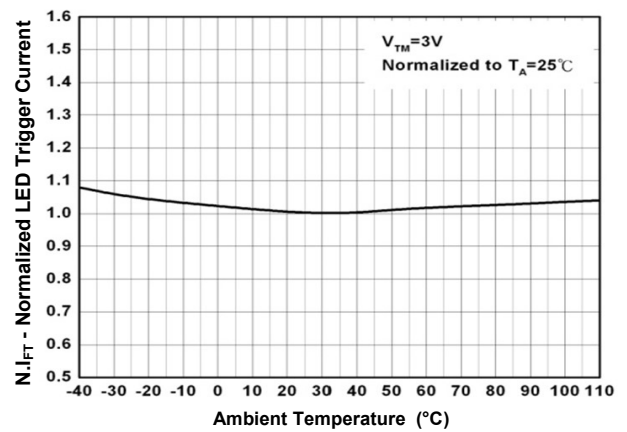


Fig 4 Normalized LED Trigger Current vs Ambient Temperature

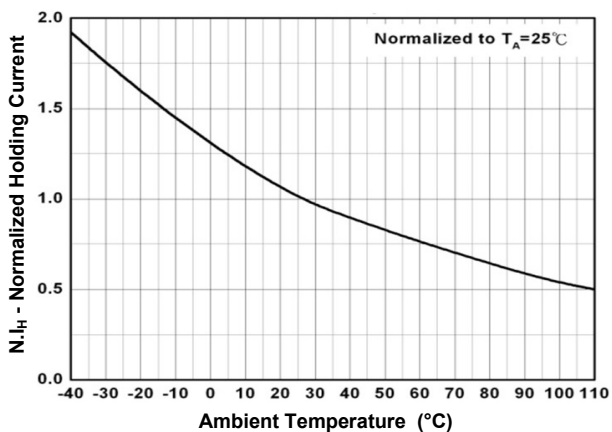


Fig 5 Holding Current vs Ambient Temperature

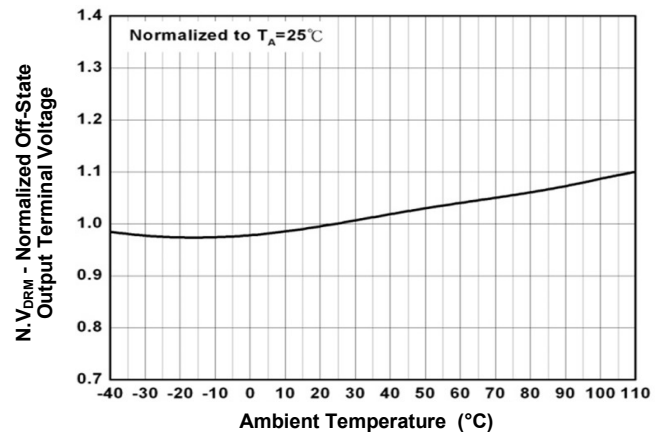


Fig 6 Off-State Output Terminal Voltage vs Ambient Temperature



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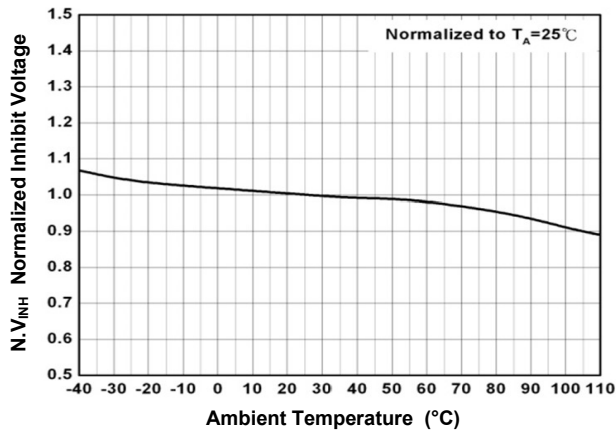


Fig 7 Normalized Inhibit Voltage vs Ambient Temperature

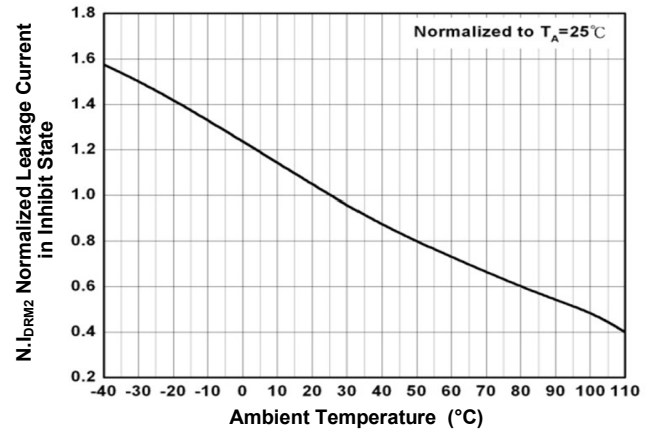


Fig 8 Normalized Leakage Current in Inhibit State vs Ambient Temperature

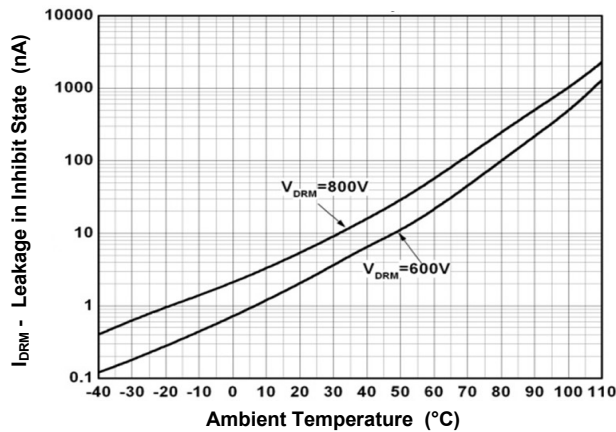


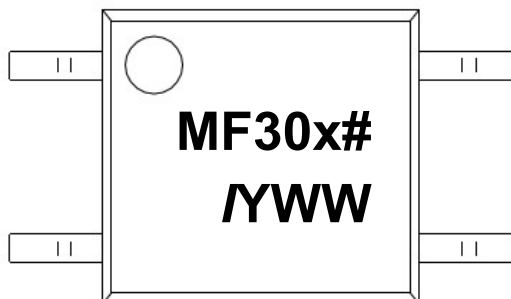
Fig 9 Leakage Current vs Ambient Temperature

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ORDER INFORMATION

MF303#, MF304#, MF306#, MF308# Series			
After PN	PN	Description	Packing quantity
None	MF3030, MF3031, MF3032 MF3033 MF3040, MF3041, MF3042 MF3043 MF3060, MF3061, MF3062 MF3063, MF306# MF3080, MF3081, MF3082 MF3083	Surface Mount Tape & Reel	3000 pcs per reel
NOTE : MF3033 may be supported when ordering MF3030, MF3031, MF3032 MF3043 may be supported when ordering MF3040, MF3041, MF3042 MF3063, MF306# may be supported when ordering MF3060, MF3061, MF3062 MF3083 may be supported when ordering MF3080, MF3081, MF3082			

DEVICE MARKING



x	x = 3, 4, 6, 8
#	# = 0, 1, 2, 3, #
I	Isocom
Y	Year Code (A = 2010, B = 2011, etc.)
WW	2 digit Week Code

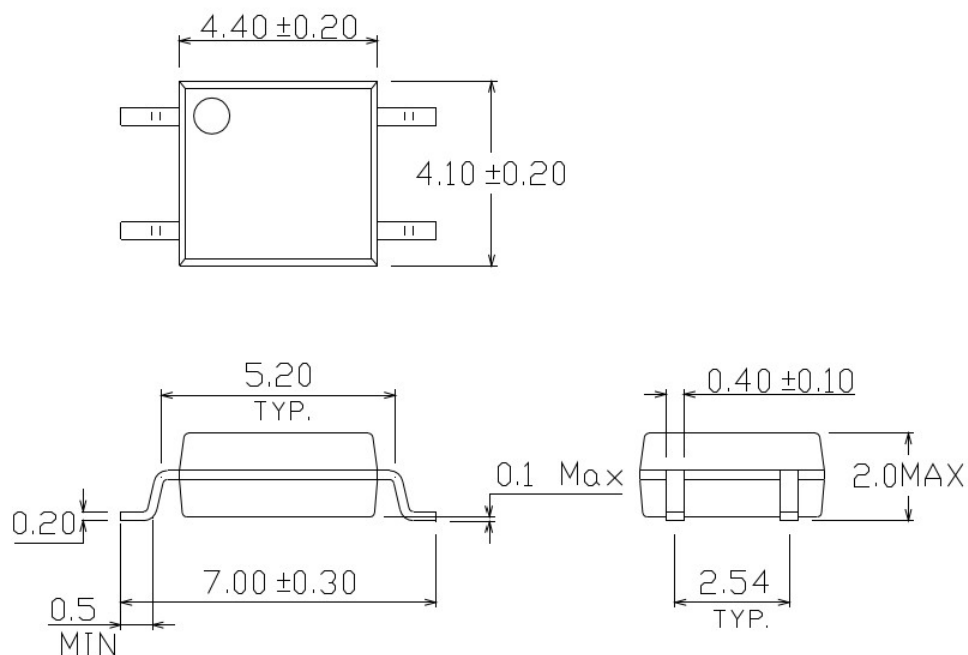
Note :	Device	Optional Marking
	MF3033	MF303#
	MF3043	MF304#
	MF3063	MF306# / MF3064
	MF3083	MF308#



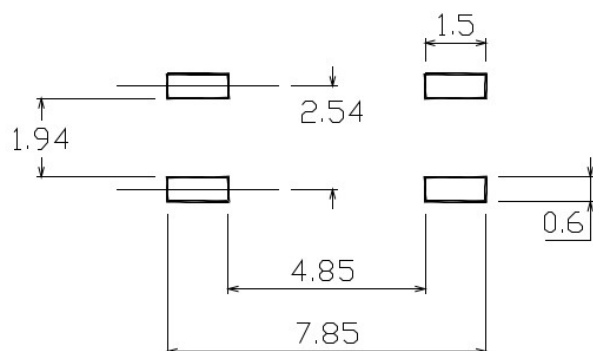
ISOCOM
COMPONENTS

MF303#, MF304#, MF306#, MF308# Series

PACKAGE DIMENSIONS (mm)



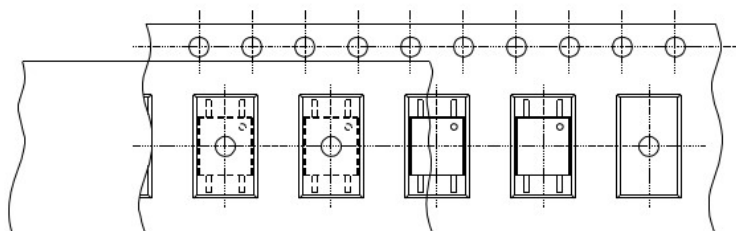
RECOMMENDED PAD LAYOUT (mm)



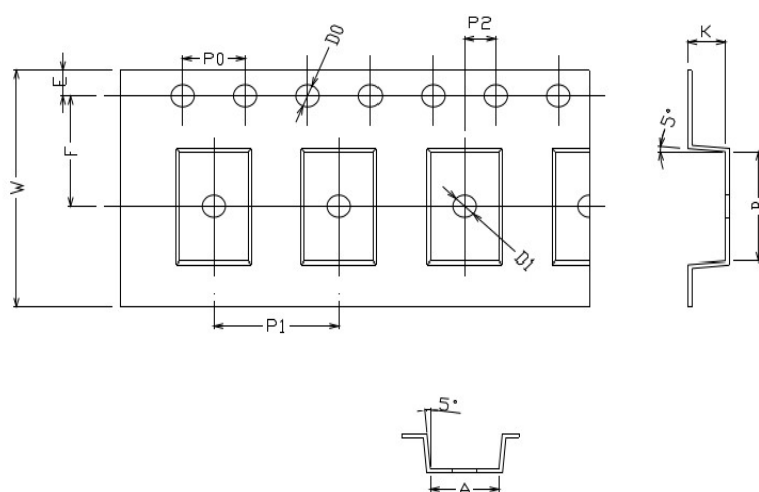
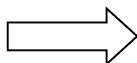


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TAPE AND REEL PACKAGING (mm)



Direction of feed from reel



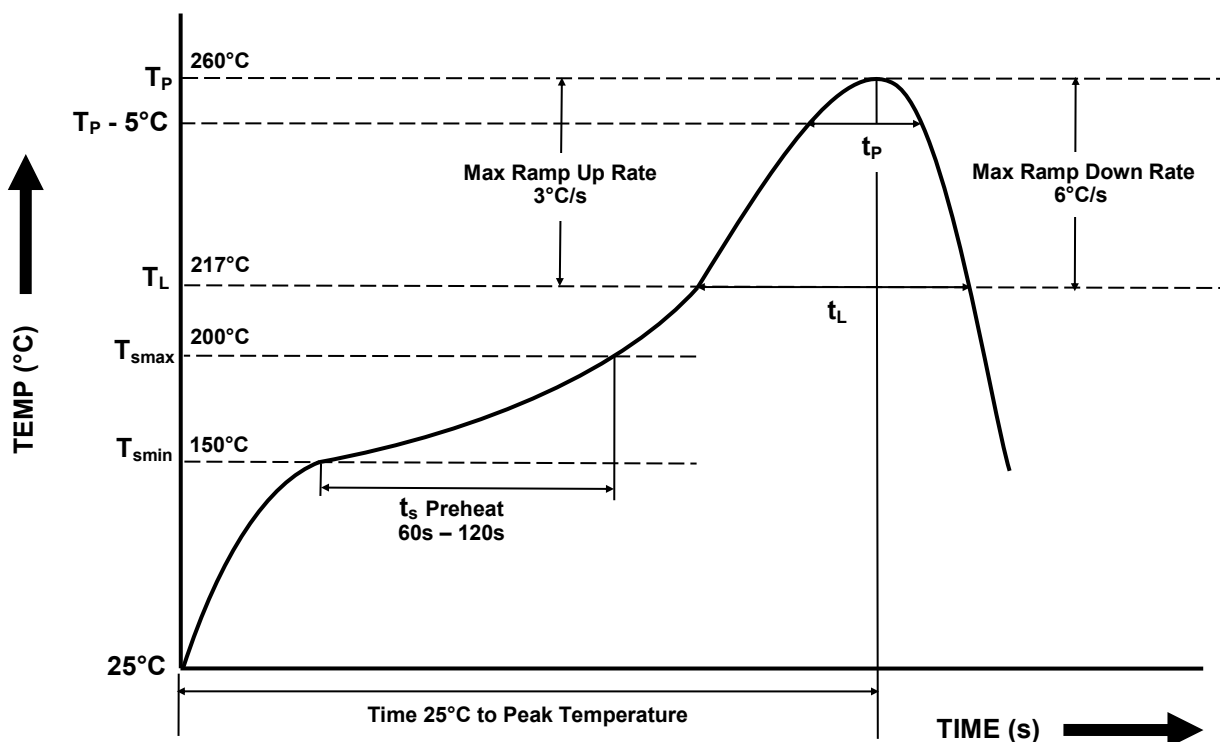
Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	4.4±0.1	7.4±0.1	1.5±0.1/-0	1.5+0.1	1.75±0.1	7.5±0.1
Dimension No.	Po	P1	P2	t	W	K
Dimension (mm)	4.0±0.15	8.0±0.1	2.0±0.1	0.25±0.03	16.0±0.2	2.4±0.1



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IR REFLOW SOLDERING TEMPERATURE PROFILE

(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat - Min Temperature (T_{smin}) - Max Temperature (T_{smax}) - Time T_{smin} to T_{smax} (t_s)	150°C 200°C 60s – 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	260°C 217°C 30s 60s – 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

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