

FMOS2SK3019WT

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FMOS2SK3019WT

200mA, 50V N-Channel MOSFET

Features

- $R_{DS(ON)} \leq 3.5\Omega$ @ $V_{GS}=10V$, $I_D=200mA$.
- $R_{DS(ON)} \leq 4\Omega$ @ $V_{GS}=4.5V$, $I_D=200mA$.
- Super high density cell design for extremely low $R_{DS(ON)}$.
- Exceptional on-resistance and maximum DC current capability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" dinicates Halogen-free part, ex.FMOS2SK3019WT-H.

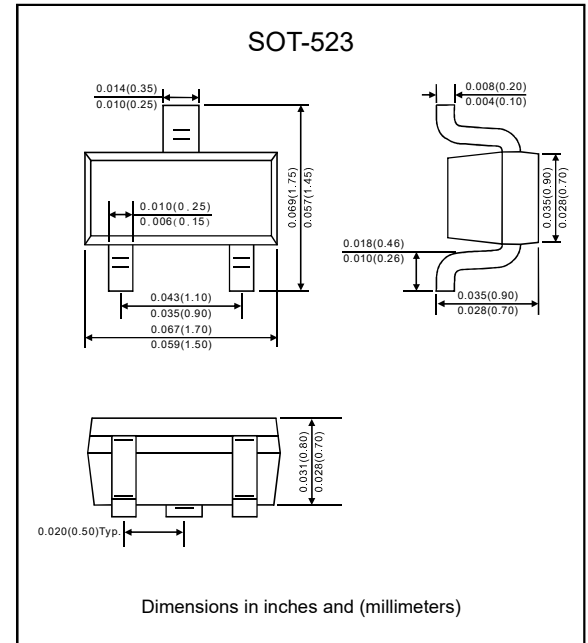
Applications

- Power management in Note book.
- DC / DC Converter.
- Load switch.
- LCD display inverter.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-523
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.003 gram

Package outline



Maximum ratings (At $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	50	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain Current ($T_A=25^\circ C$)	I_D	200	mA
Continuous drain Current ($T_A=85^\circ C$)		100	
Continuous source current (diode conduction)	I_S	250	mA
Pulsed drain current (Note 4)	I_{DM}	1000	mA
Power dissipation ($T_A=25^\circ C$)	P_D	250	mW
Power dissipation ($T_A=85^\circ C$)		140	
Operating Junction temperature range	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

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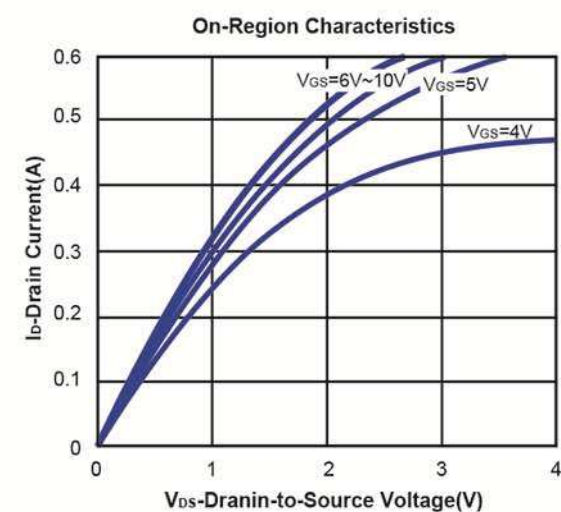
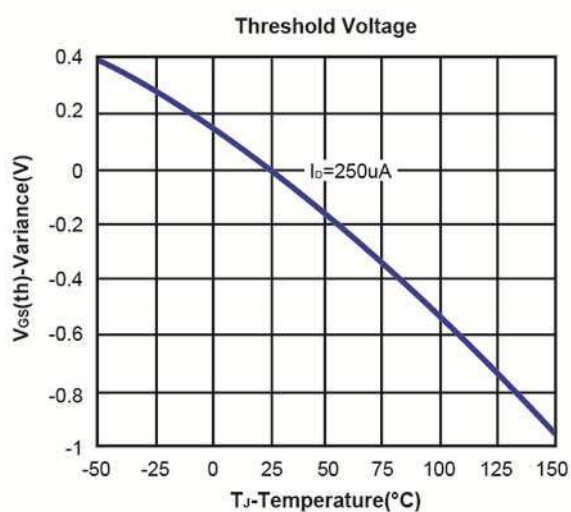
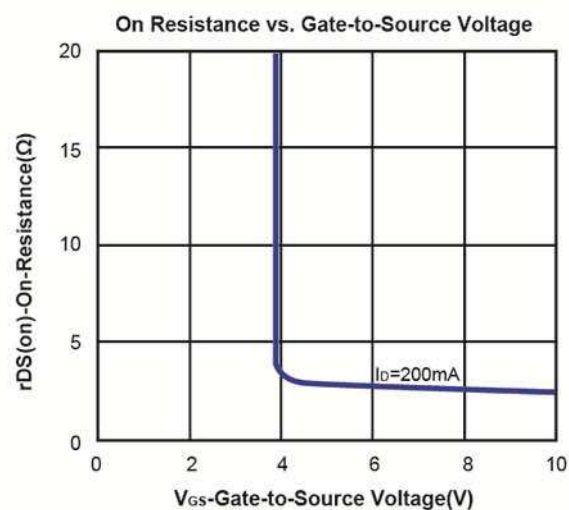
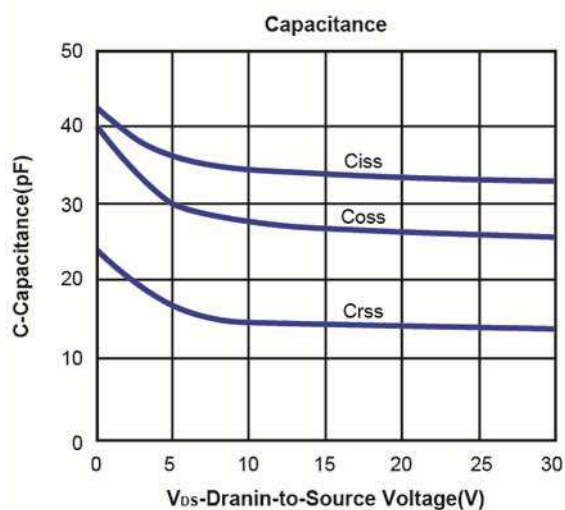
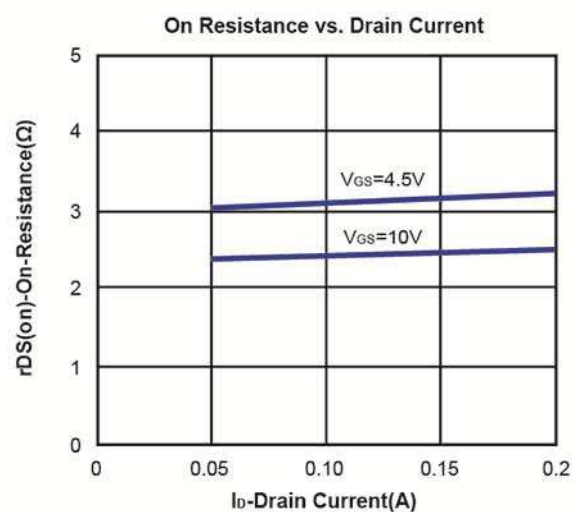
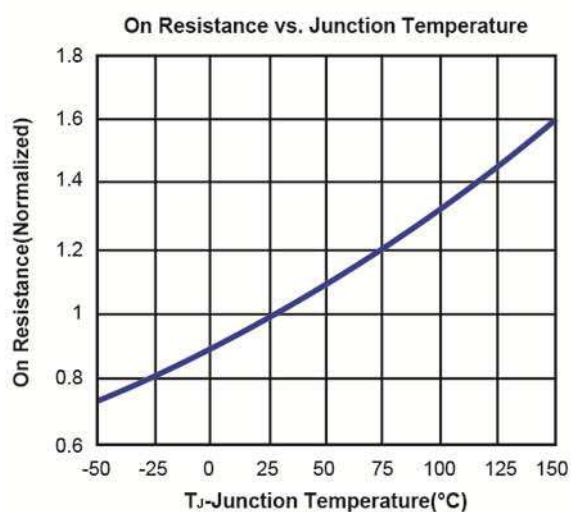
Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	50			V
Drain-source leakage current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			1	μA
Gate-source leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Gate threshold voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =1mA	0.6		1.5	V
Static drain-source on-resistance (Note 4)	R _{DS(ON)}	V _{GS} =10V, I _D =200mA		2.5	3.5	Ω
		V _{GS} =4.5V, I _D =200mA		3.1	4	Ω
Diode forward voltage	V _{SD}	V _{GS} =0V, I _S =440mA		0.8	1.4	V
Dynamic characteristics						
Input capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f = 1MHz		33		pF
Output capacitance	C _{oss}			25		
Reverse transfer capacitance	C _{rss}			13		
Total gate charge	Q _g	V _{DS} =25V, V _{GS} =10V, I _D =220mA		4.7		nC
Gate-source charge	Q _{gs}			1.7		
Gate-drain charge	Q _{gd}			0.8		
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{GS} =5V, V _{DD} =5V, R _g =10Ω, R _L =500Ω		10.1		ns
Turn-on rise time	t _r			7.3		
Turn-off delay time	t _{d(off)}			31.3		
Turn-off fall time	t _f			28.2		

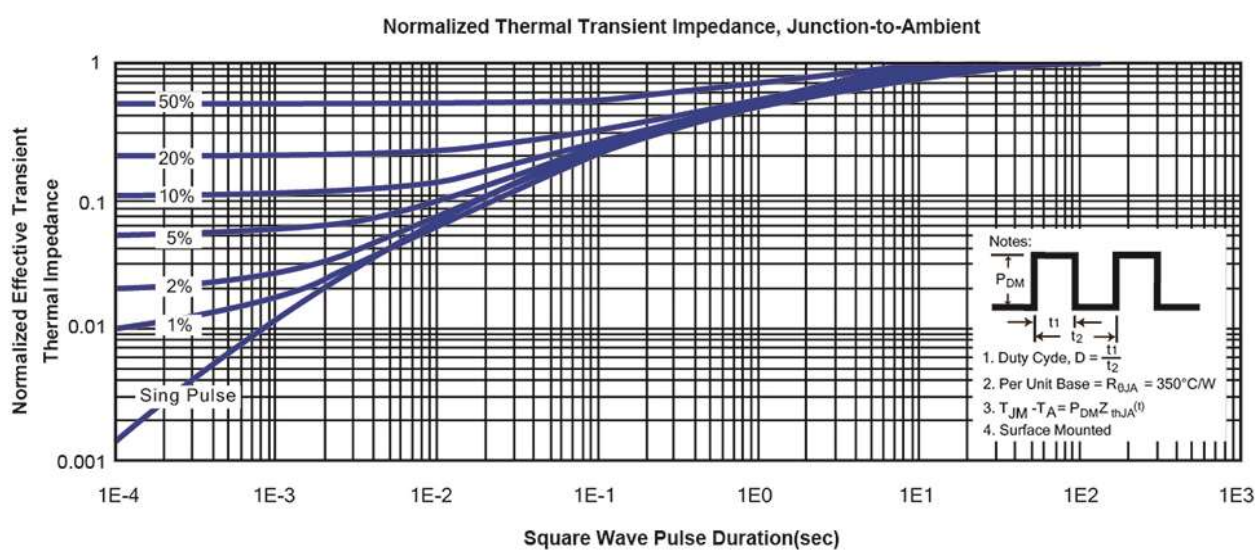
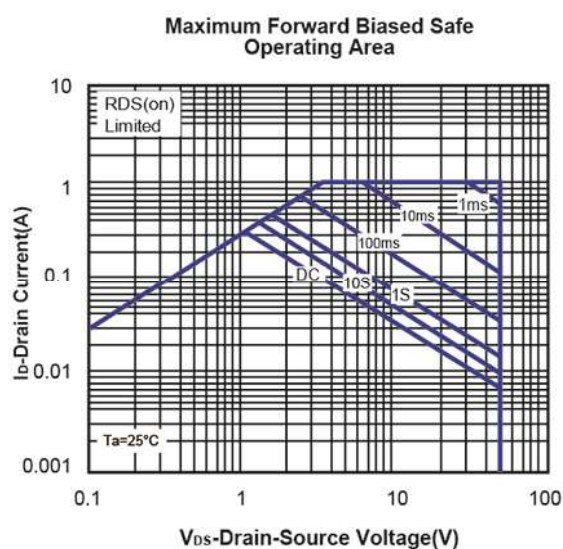
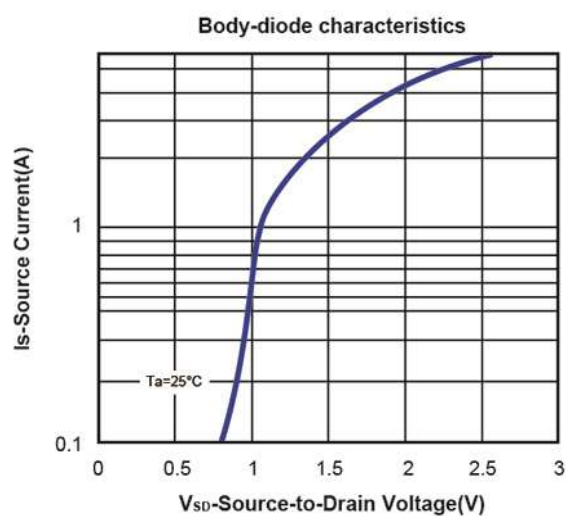
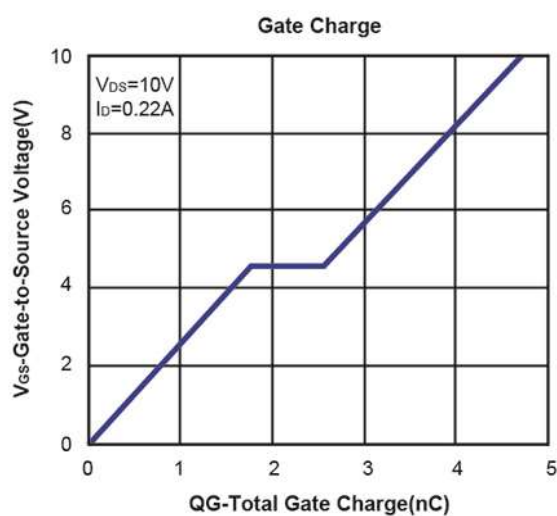
Note :

1. Pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 board.
3. Pulse test : pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$, Guaranteed by design, not subject to production testing.

Rating and characteristic curves (FMOS2SK3019WT)

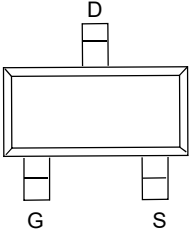
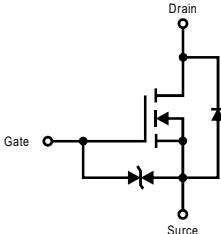


Rating and characteristic curves (FMOS2SK3019WT)



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Pinning information

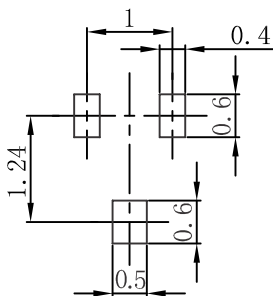
Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

Type number	Marking code
FMOS2SK3019WT	5N3K or KN

Suggested solder pad layout

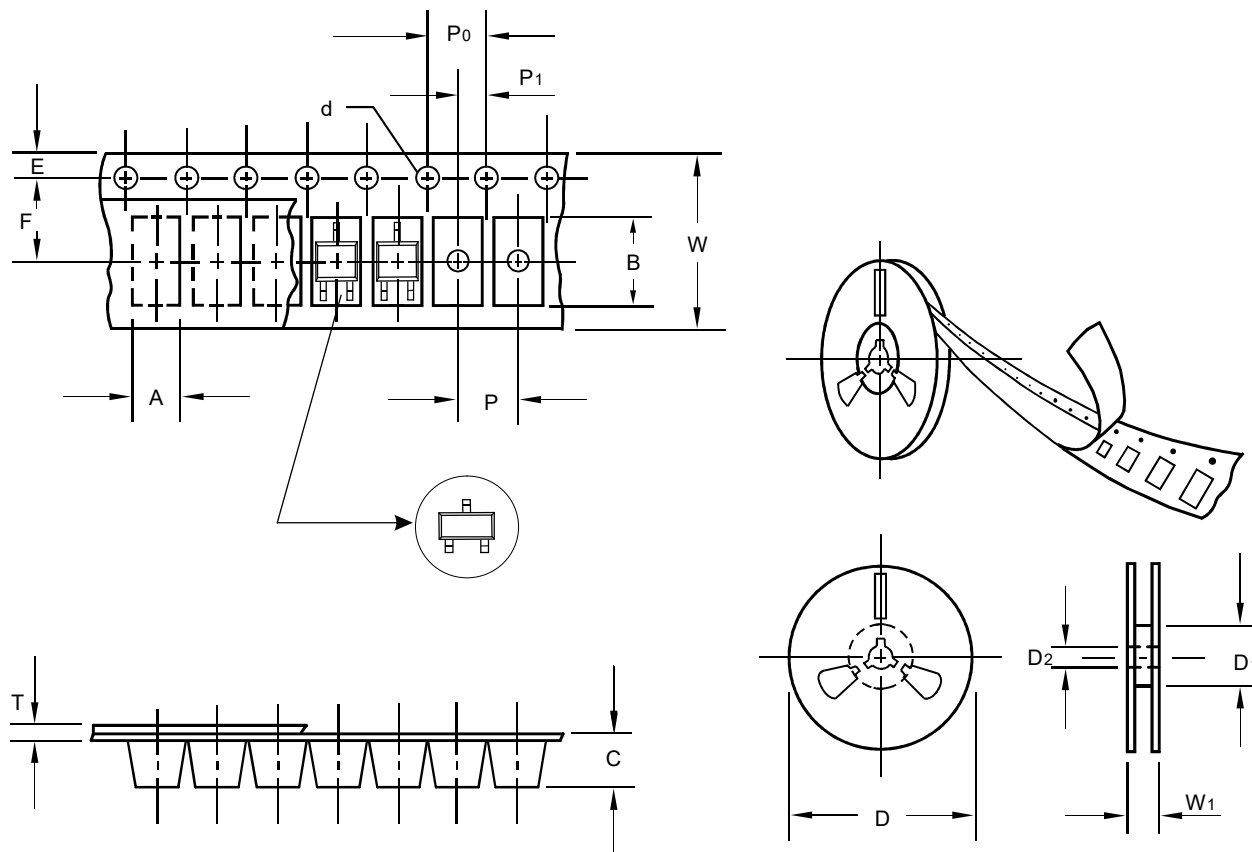
SOT-523



- Note :
- 1. Controlling dimension : in millimeters.
 - 2. General tolerance : $\pm 0.05\text{mm}$.
 - 3. The pad layout is for reference purposes only.

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-523
Carrier width	A	0.1	1.85
Carrier length	B	0.1	1.85
Carrier depth	C	0.1	0.875
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	54.40
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.30

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

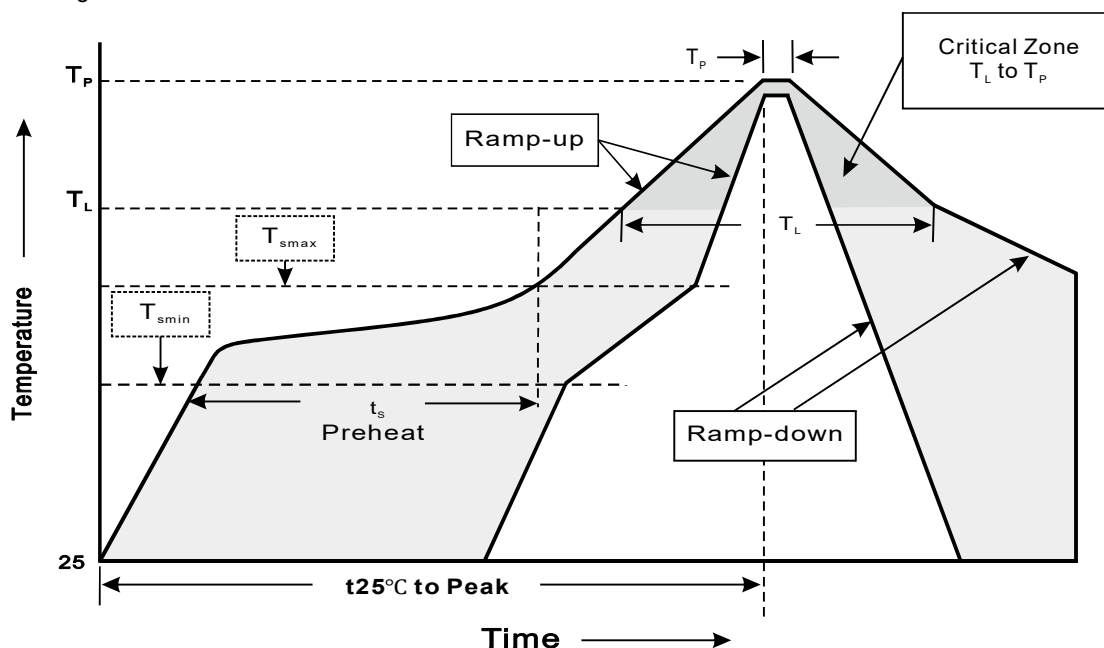
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-523	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

- 1.Storage environment : Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile feature	Soldering Condition
Average ramp-up rate (T_L to T_p)	< 3°C/sec
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (min to max) (t_s)	150°C 200°C 60 ~ 120sec
T_{smax} to T_L -Ramp-up rate	< 3°C/sec
Time maintained above: -Temperature (T_L) -Time(T_L)	217°C 60 ~ 260 sec
Peak Temperature(T_p)	255°C -0/+5°C
Time within 5°C of actual peak Temperature(T_p)	10 ~ 30sec
Ramp-down rate	< 6°C/sec
Time 25°C to peak temperature	< 6 minutes