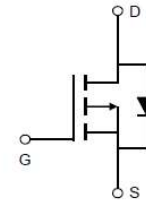


# APM9435

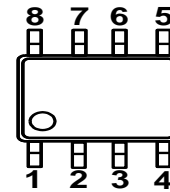
## P-Channel Enhancement Mosfet

### Feature

- -30V,-5.3A  
 $R_{DS(on)} < 58m\Omega @ V_{GS} = -10V$   $T_{YP} = 50m\Omega$   
 $R_{DS(on)} < 80m\Omega @ V_{GS} = -4.5V$   $T_{YP} = 65m\Omega$
- Low RDS(on),
- Low gate charge
- Fast switching speed
- High performance trench technology for extremely
- High power



Schematic Diagram



SOP-8

### Application

- Low switch
- Power management
- Battery protection

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
M9435	APM9435	SOP-8	13inch	-	4000

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current ( $T_a = 25^\circ C$ )	$I_D$	-5.3	A
Pulsed Drain Current	$I_{DM}$	-50	A
Power Dissipation	Note1a	2.5	W
	Note1b	1.2	
	Note1c	1.0	
Thermal Resistance from Junction to Ambient Note1a	$R_{\theta JA}$	50	$^\circ C/W$
Thermal Resistance from Junction to Ambient Note1c	$R_{\theta JA}$	125	$^\circ C/W$
Thermal Resistance from Junction to case Note1	$R_{\theta JC}$	25	$^\circ C/W$
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ C$

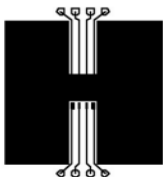
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V	-	-	-1.0	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250uA	-1.0	-1.7	-3.0	V
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -5V	-25			A
Forward Transconductance	G <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -5.3A	-	10		S
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -5.3A T <sub>a</sub> = 25°C	-	50	58	mΩ
		V <sub>GS</sub> = -10V, I <sub>D</sub> = -5.3A T <sub>a</sub> = 125°C		57	77	
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A	-	65	80	
<b>Switching characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GS</sub> = -10V	-	7.0	14	ns
Turn-on rise time	t <sub>r</sub>		-	13	24	
Turn-off delay time	t <sub>d(off)</sub>		-	14	25	
Turn-off fall time	t <sub>f</sub>		-	9.0	17	
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, I <sub>D</sub> = -4A, V <sub>GS</sub> = -10V	-	10	14	nC
Gate-Source Charge	Q <sub>gs</sub>		-	2.2	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	2.0	-	
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1.0MHz	-	528	-	pF
Output Capacitance	C <sub>oss</sub>		-	132	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	70	-	
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -2.1A	-	-0.8	-1.2	V
Diode Forward current	I <sub>S</sub>		-	-	-2.1	A

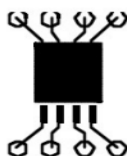
Notes:

1. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R<sub>θJC</sub> is guaranteed by design while R<sub>θCA</sub> is determined by the user's board design.

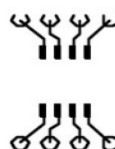
a) 50°C/W when mounted on a 1.0 in<sup>2</sup> pad of 2 oz. copper.



b) 105°C/W when mounted on a 0.04in<sup>2</sup> pad of 2 oz. copper.



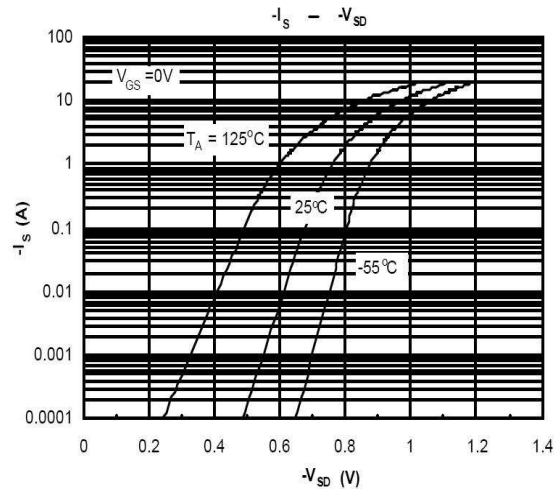
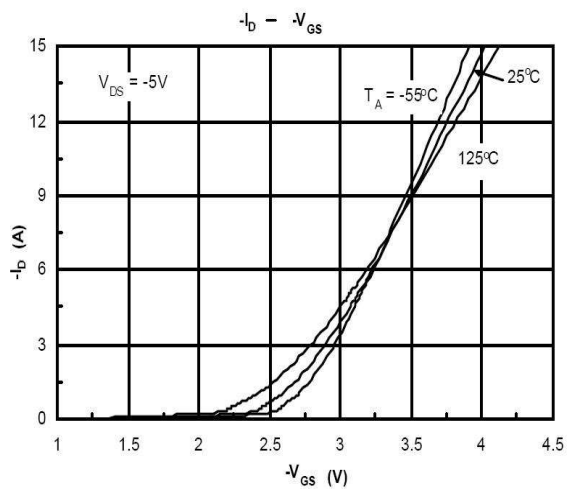
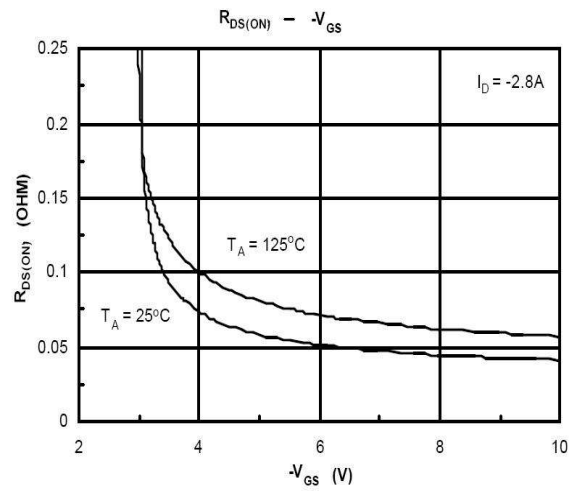
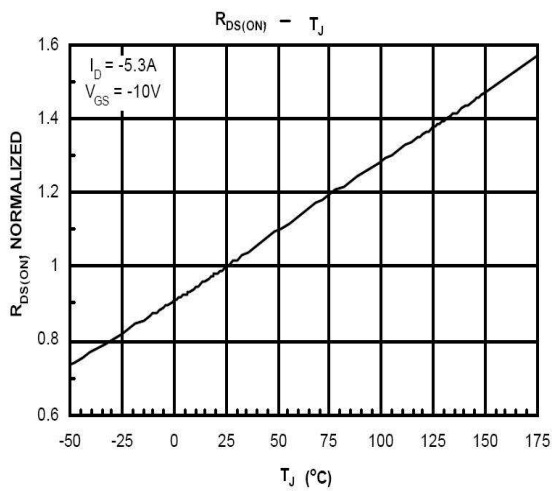
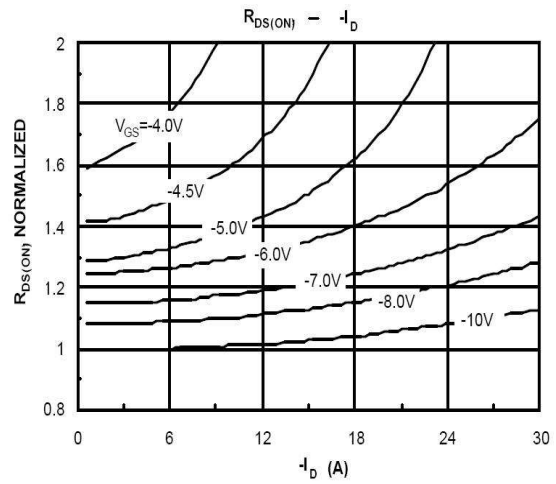
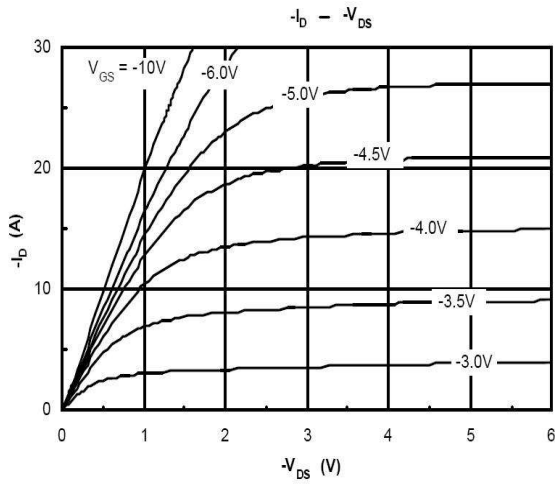
c) 125°C/W when mounted on a minimum pad.



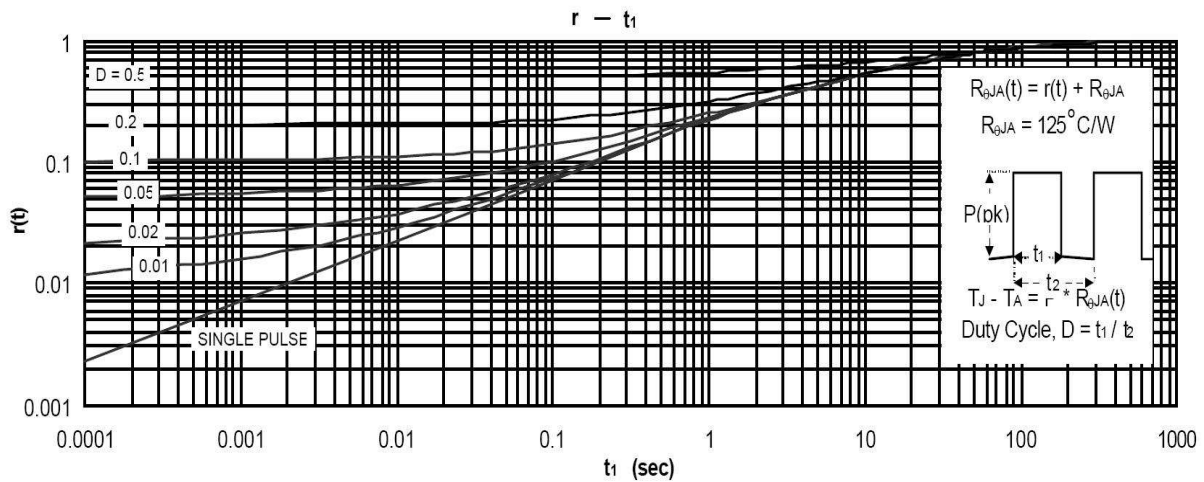
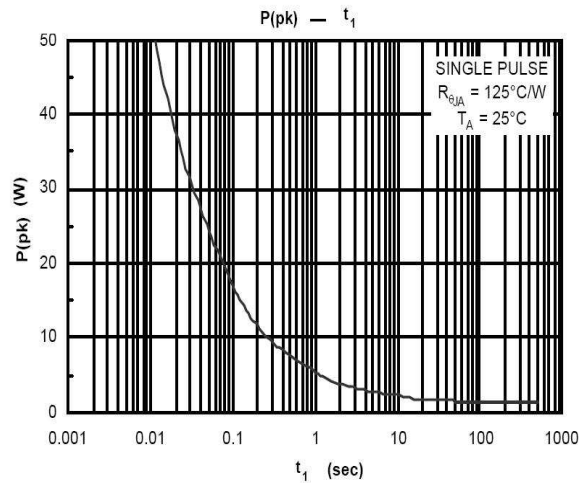
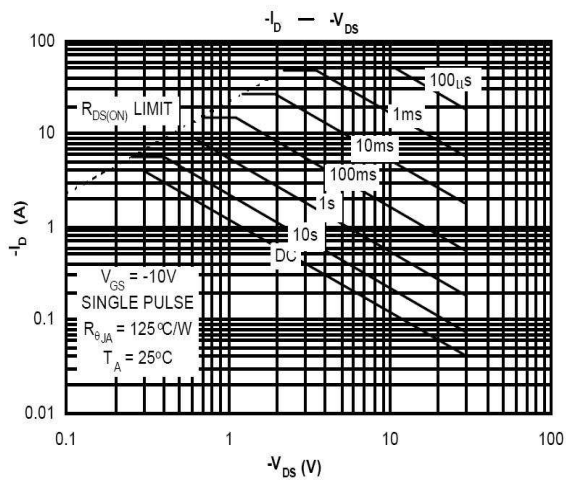
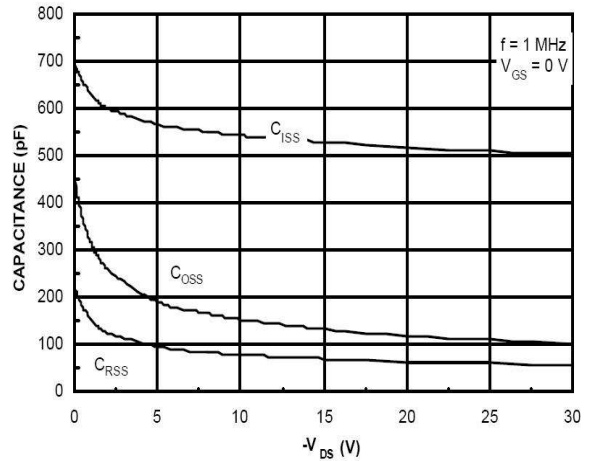
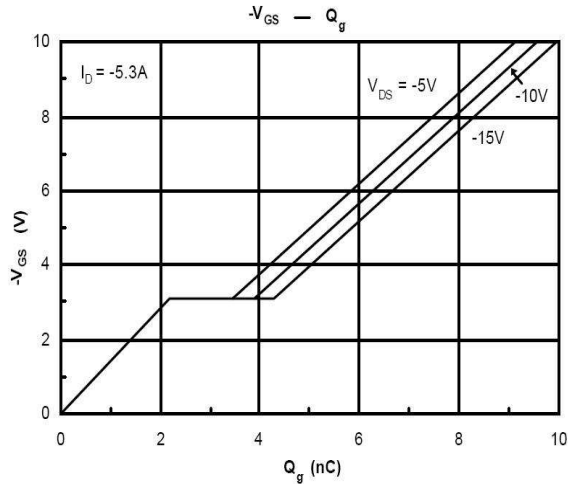
Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

Typical Performance Characteristics



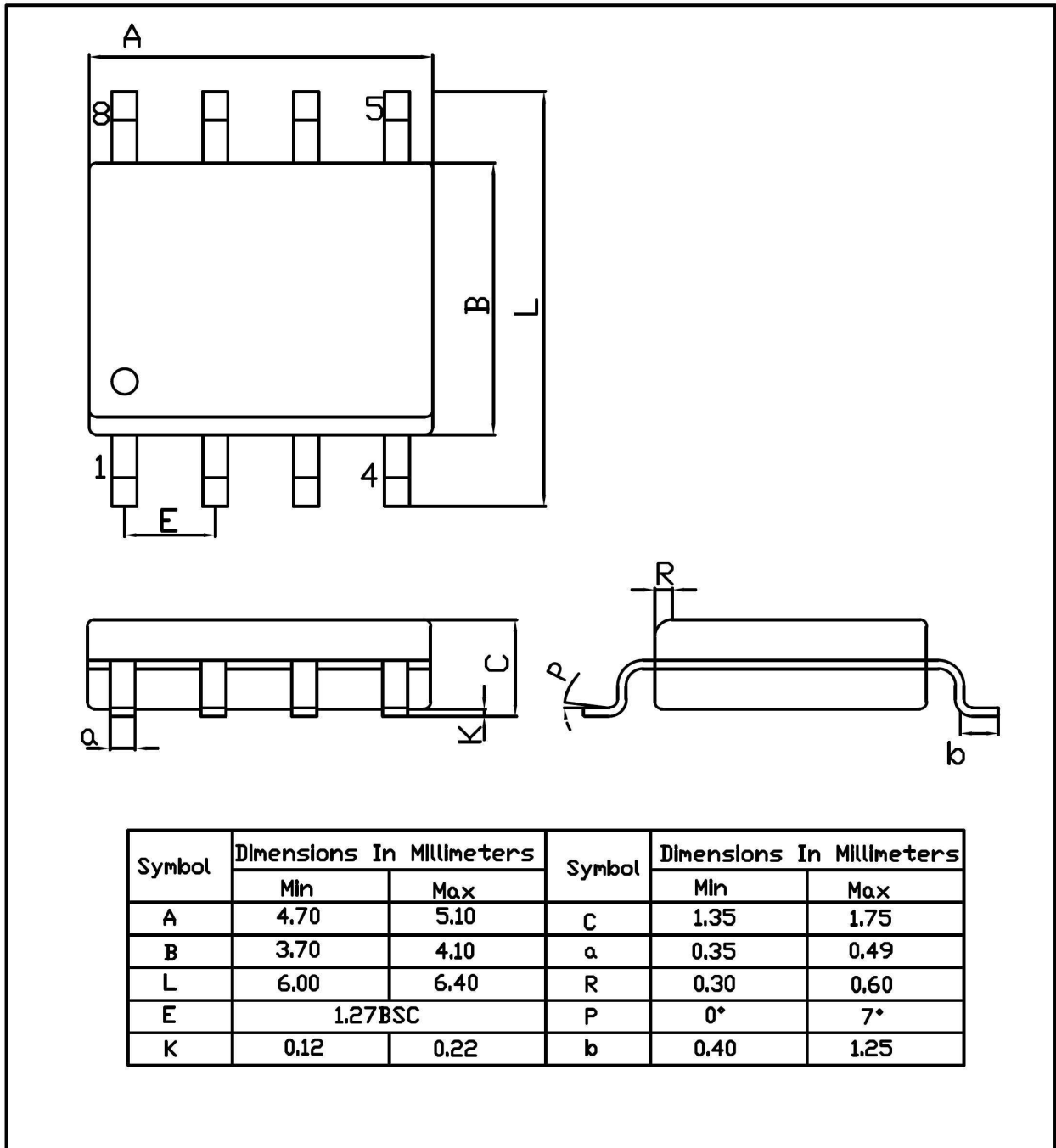
**Typical Performance Characteristics**



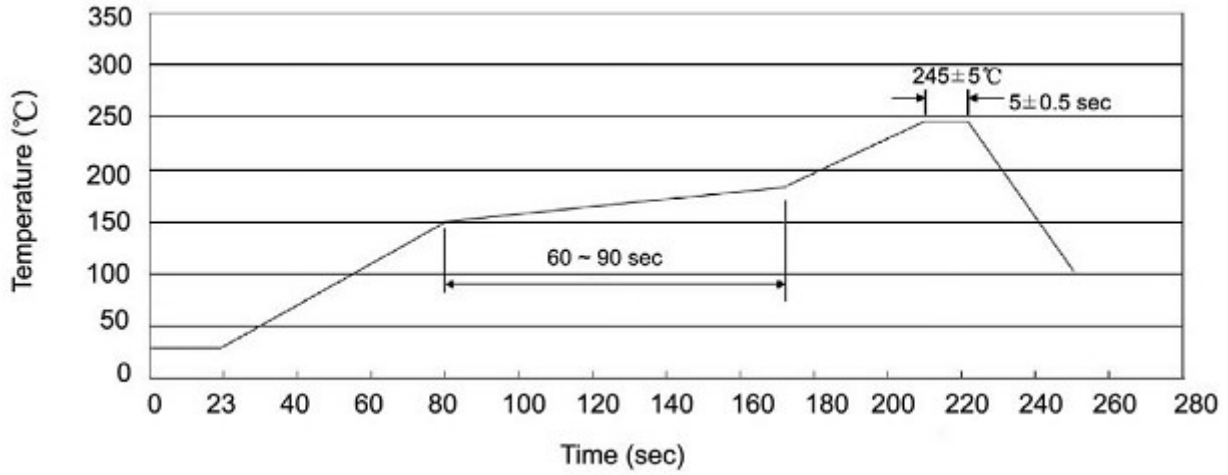
Package Dimensions

SOP-8

Unit:mm



回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)



说明：

- 1、预热温度 25 ~ 150°C，时间 60 ~ 90sec;
- 2、峰值温度 245±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2 ~ 10°C/sec.

Note:

- 1.Preheating:25~150°C, Time:60~90sec.
- 2.Peak Temp.:245±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

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