FMOS6041K

List

FMOS6041K

-200mA, -60V P-Channel Enhancement Mode MOSFET

Features

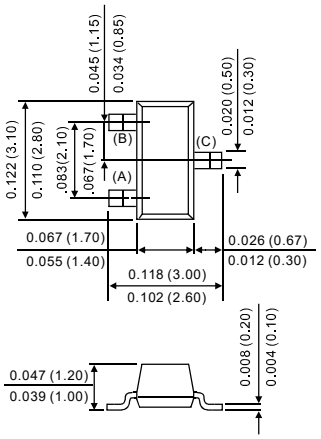
- $-V_{DS}$ = 60V, $-I_D$ = 200mA.
- $R_{DS(ON)} \leq 5.0\Omega$, @$-V_{GS}$=10V, $-I_D$=200mA.
- $R_{DS(ON)} \leq 5.5\Omega$, @$-V_{GS}$=4.5V, $-I_D$=100mA.
- ESD Protected 2KV (Human body mode).
- Reliable and rugged.
- RoHs compliant & Halogen - Free.
- Suffix "-H" indicates Halogen-free part, ex.FMOS6041K-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline

SOT-23



Dimensions in inches and (millimeters)

Maximum ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current (T_A=25℃)	$-I_D$	200	mA
(T_A=100℃)		120	
Pulsed drain current (T_A=25℃, Note 1)	$-I_{DM}$	900	mA
Power dissipation (T_A=25℃)	P_D	360	mW
(T_A=100℃)		230	
Thermal resistance form junction to ambient	$R_{\theta JA}$	350	℃/W
Operating Junction temperature range	T_j	+150	℃
Storage temperature range	T_{STG}	-40 to +150	℃

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Electrical characteristics (At T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{DSS}$	$-I_D$=250μA, V_{GS}=0V	60			V
Drain-source leakage current	$-I_{DSS}$	$-V_{DS}$=48V, V_{GS}=0V			1	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±30	μA
On characteristics						
Gate threshold voltage	$-V_{GS(TH)}$	V_{DS}=V_{GS}, $-I_D$=250μA	1.0	1.6	2.5	V
Static drain-source on-resistance (Note 1)	$R_{DS(ON)}$	$-V_{GS}$=3.5V, $-I_D$=10mA		5.2	6.0	Ω
		$-V_{GS}$=4.5V, $-I_D$=100mA		4.5	5.5	
		$-V_{GS}$=10V, $-I_D$=200mA		4.0	5.0	
Forward Transconductance	g_{FS}	$-V_{GS}$=5V, $-I_D$=100mA		4.4		S
Dynamic Parameters (Note 5)						
Input capacitance	C_{lss}	V_{GS}=0V, $-V_{DS}$=25V, f=1.0MHZ		27.7		pF
Output capacitance	C_{oss}			17.3		
Reverse transfer capacitance	C_{rss}			7.5		
Switching parameters						
Total gate charge	Q_g	$-V_{GS}$=10V, $-V_{DS}$=30V, $-I_D$=200mA		0.84		nC
Gate to source charge	Q_{gs}			0.19		
Gate to Drain charge	Q_{gd}			0.21		
Source-drain diode ratings and characteristics						
Continuous current	$-I_S$			200		mA
Drain - source diode forward voltage (Note 1)	$-V_{SD}$	$-V_{GS}$=0V, $-I_S$=200mA		0.85	1.2	V

Note : 1. Pulse test : Pulse width ≤ 300 μsec, duty cycle ≤ 2%..
2. Independent of operating temperature.
3. Pulse width limited by maximum junction temperature.

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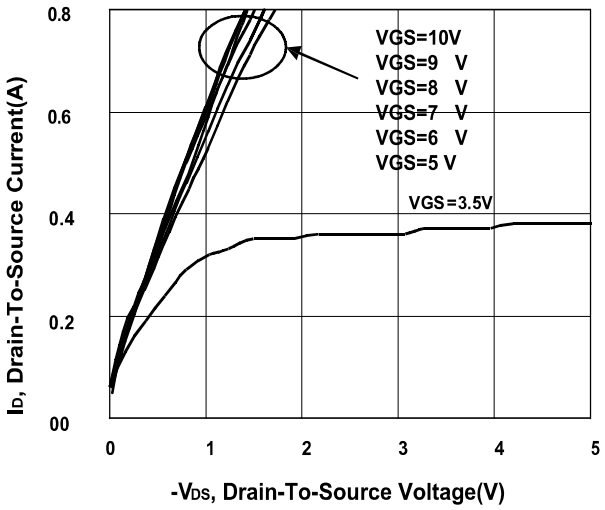
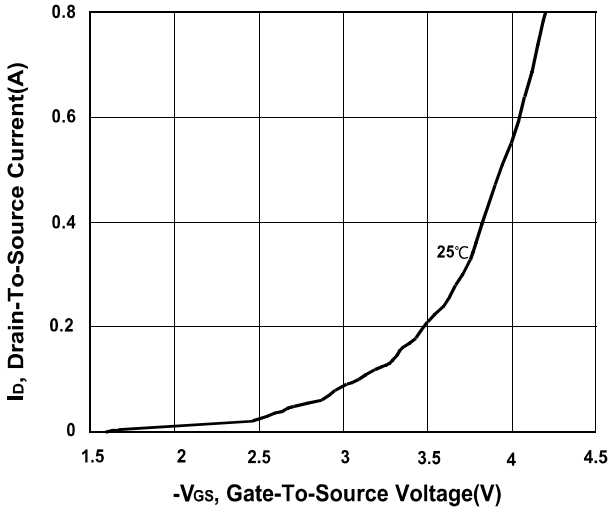
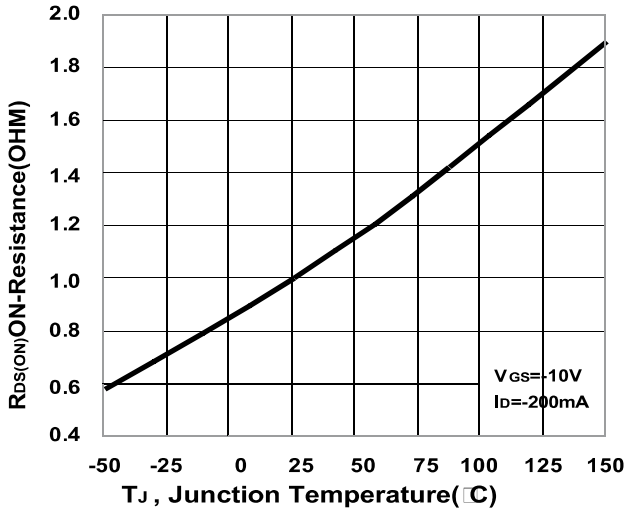
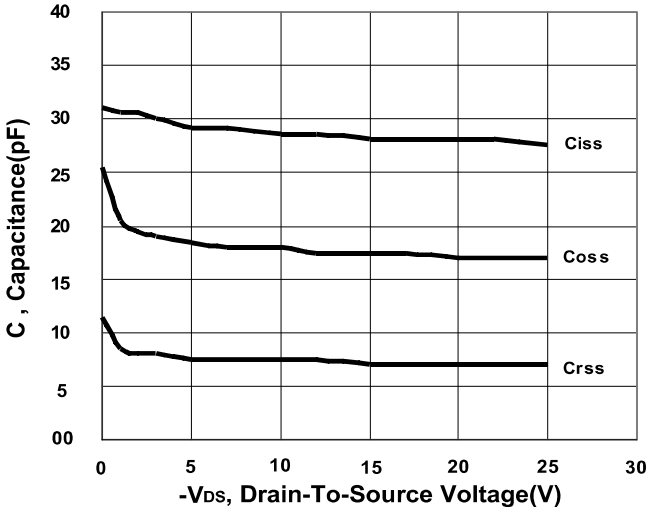
Rating and characteristic curves

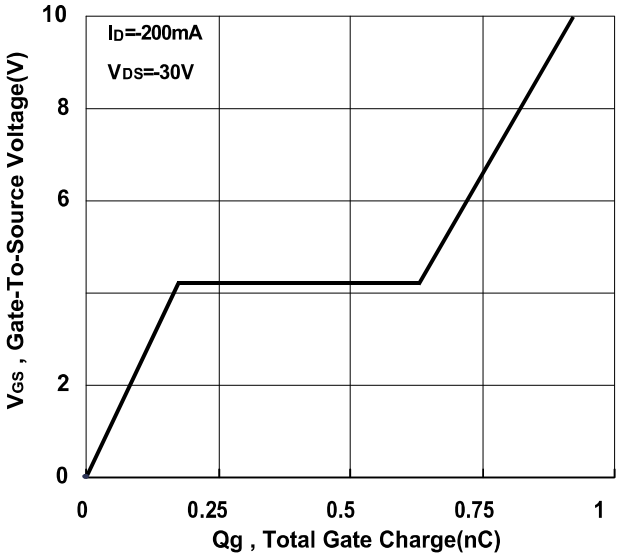


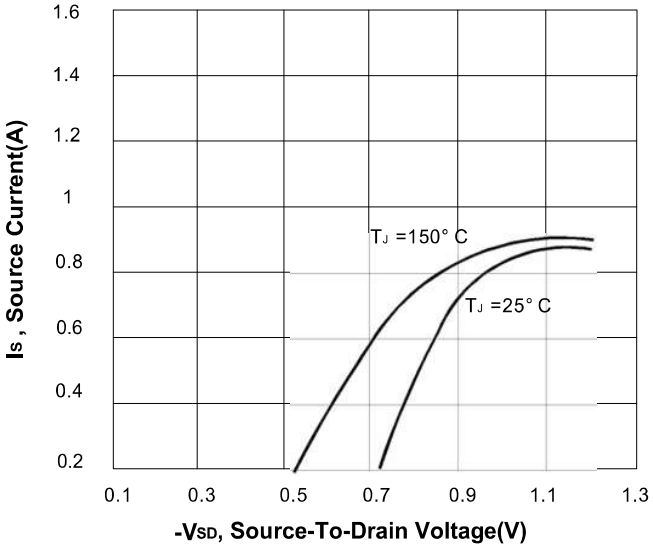




Capacitance Characteristic







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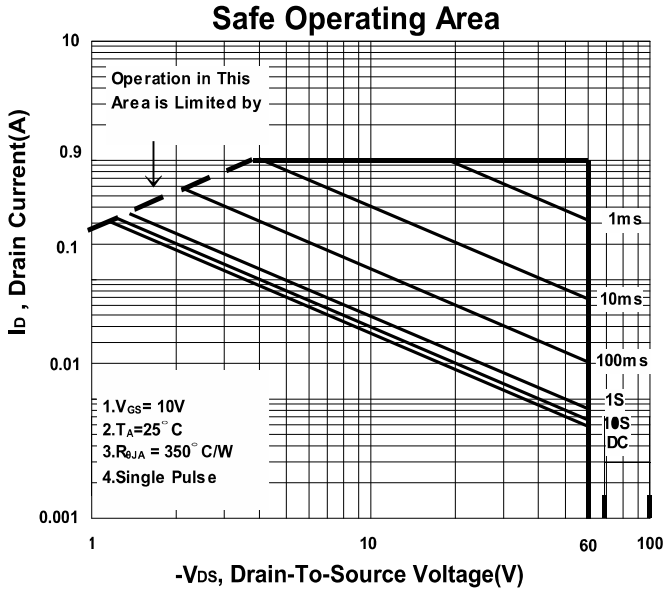

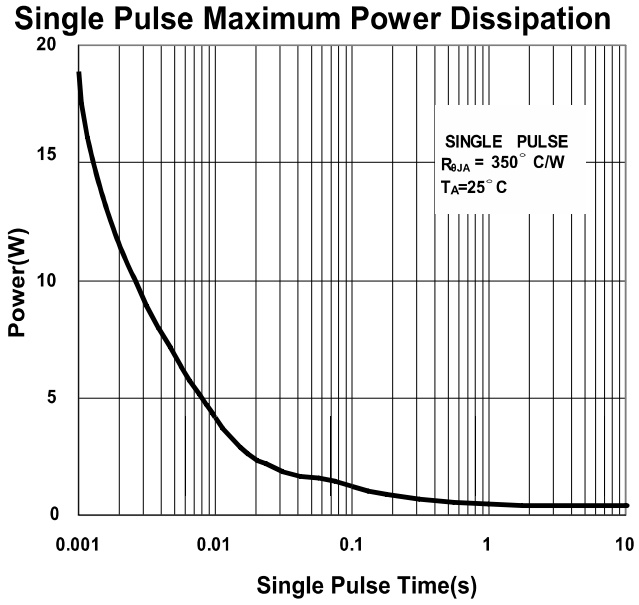

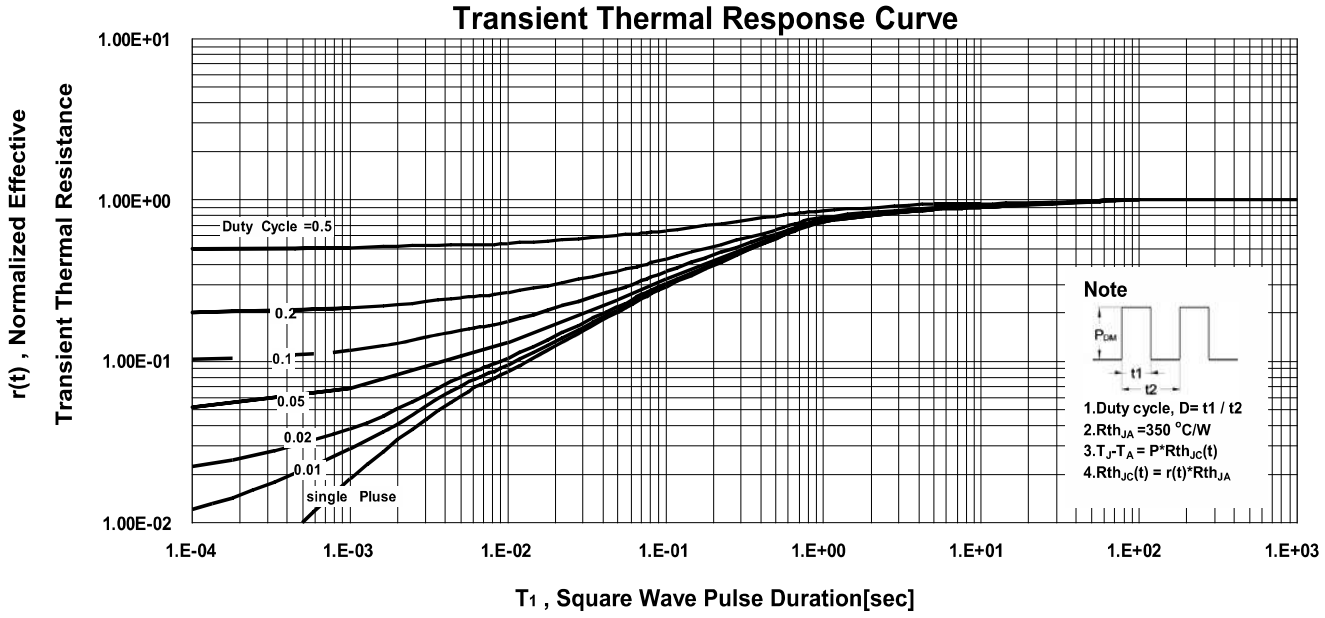

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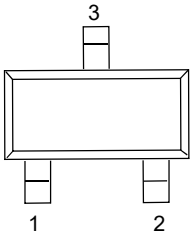
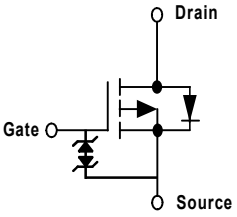
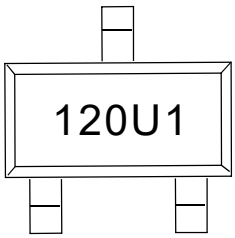
Pinning information

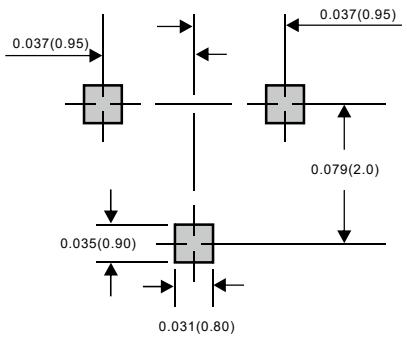
Pin	Simplified outline	Symbol
Pin 1 Gate Pin 2 Source Pin 3 Drain		

Marking



Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

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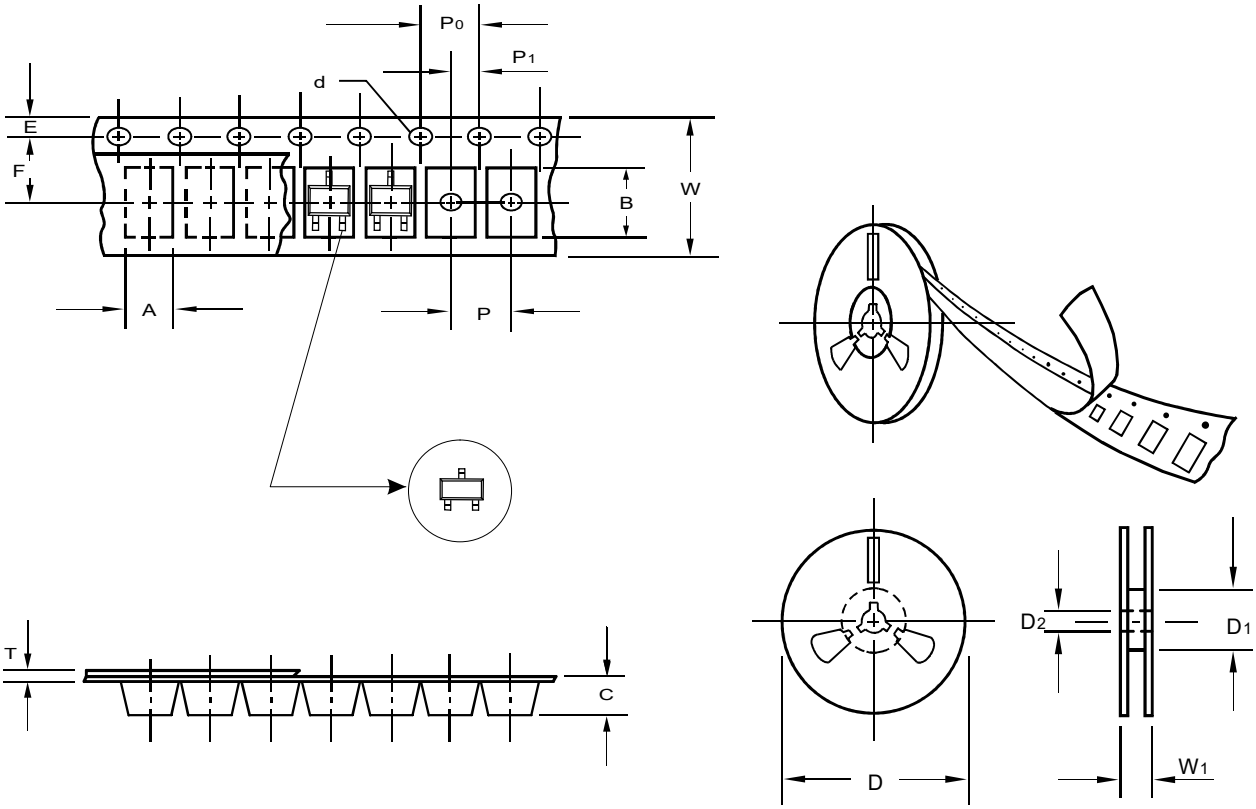
Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	54.40
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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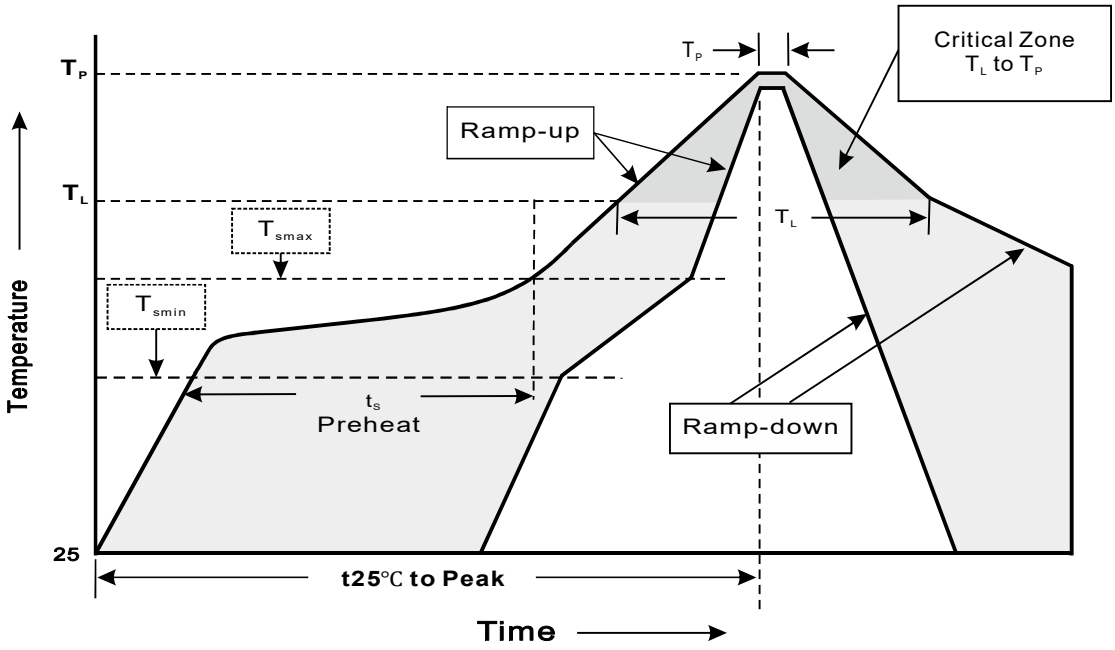
Reel packing

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-23	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℃~40℃ 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℃/sec
Prehaeat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (min to max) (t_S)	 150℃ 200℃ 60 ~120sec
T_{smax} to T_L -Ramp-up rate	 < 3℃/sec
Time maintained above: -Temperature (T_L) -Time(T_L)	 217℃ 60 ~ 260 sec
Peak Temperature(T_P)	255℃ -0/+5℃
Time within 5℃ of actual peak Temperature(T_P)	10 ~ 30sec
Ramp-down rate	< 6℃/sec
Time 25℃ to peak temperature	< 6 minutes