

FMS2307

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FMS2307

30V P-Channel Enhancement Mode MOSFET

Features

- $R_{DS(ON)} \leq 70m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} \leq 95m\Omega @ V_{GS} = -4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free part, ex. FMS2307-H

Applications

- Power management in note book
- Portable equipment
- Battery powered system
- Load switch
- DSC

Mechanical data

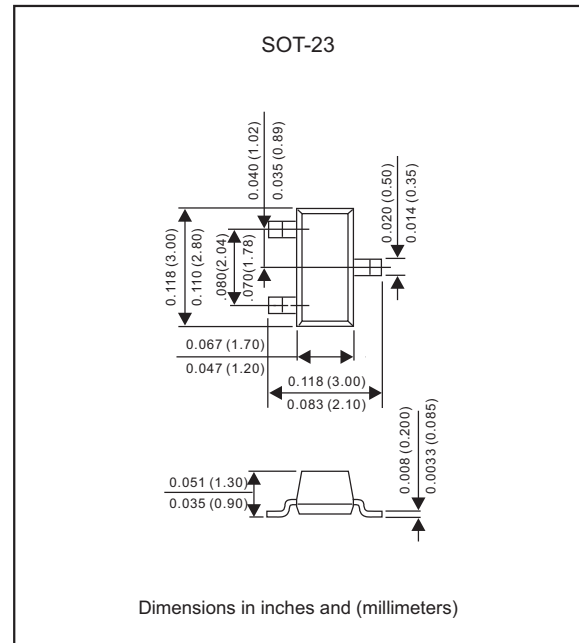
- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

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

Parameter	Symbol	Maximum ratings	Unit
Drain-source voltage	V_{DS}	-30	V
Drain current-continuous*	I_D	-3.5	A
		-2.8	
-pulsed	I_{DM}	-14	
Gate- source voltage	V_{GS}	± 20	V
Maximum power dissipation	P_D	1.4	W
		0.9	
Typical thermal resistance-junction to ambient *	$R_{\theta JA}$	90	$^\circ C/W$
Operation junction temperature range	T_J	-55 to +150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

* The device mounted on 1in² FR4 board with 2 oz copper

Package outline



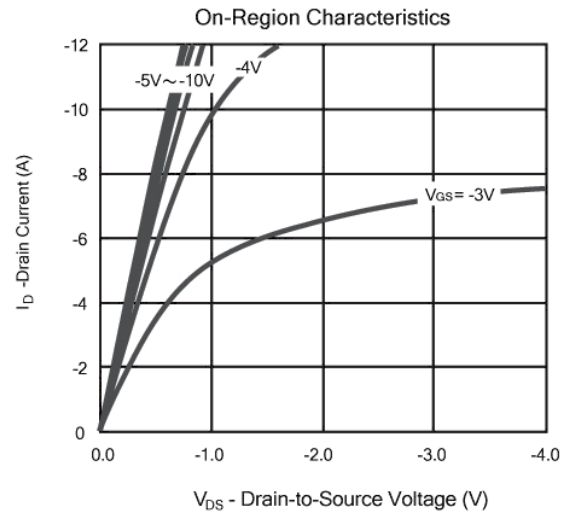
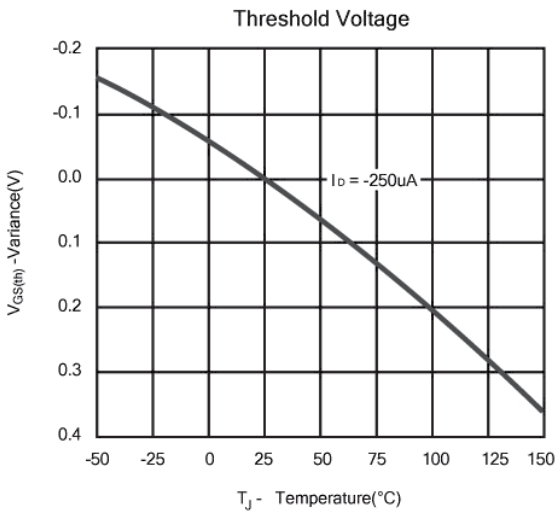
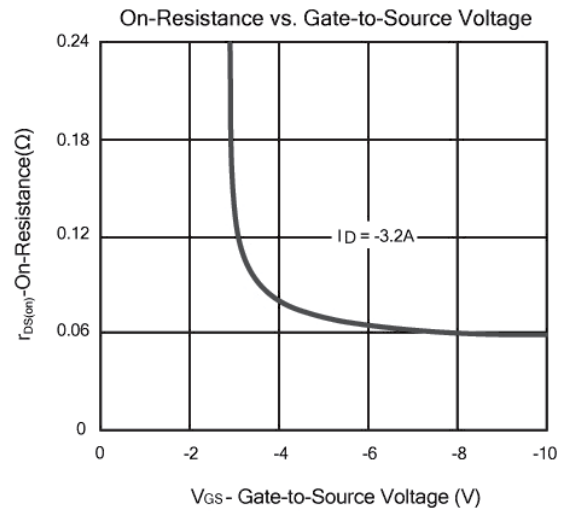
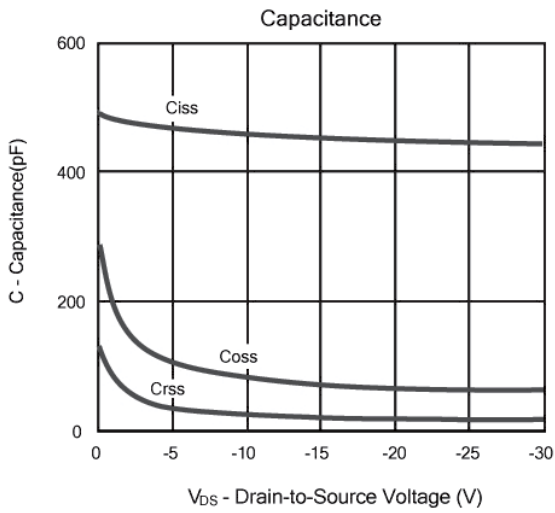
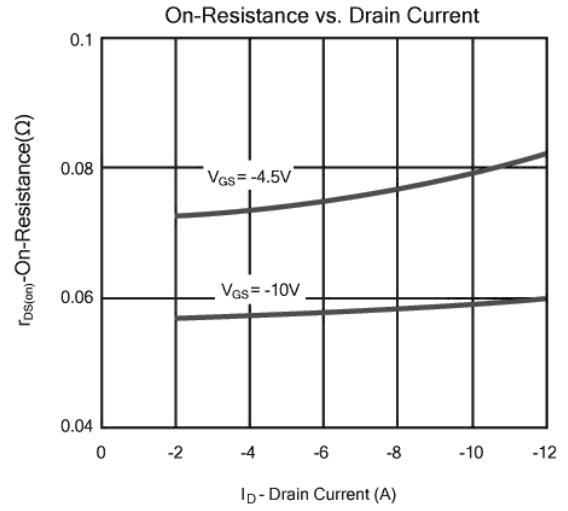
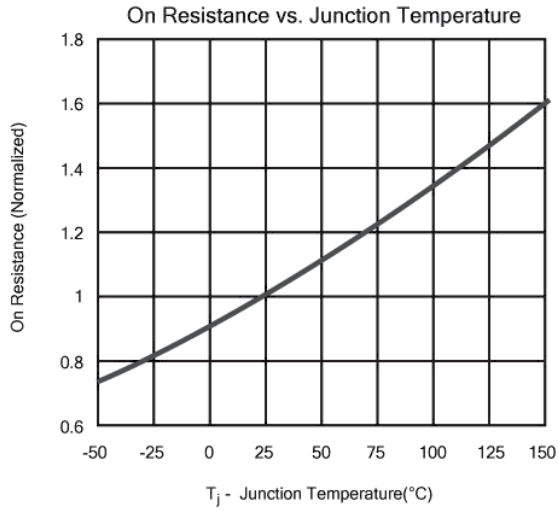
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Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

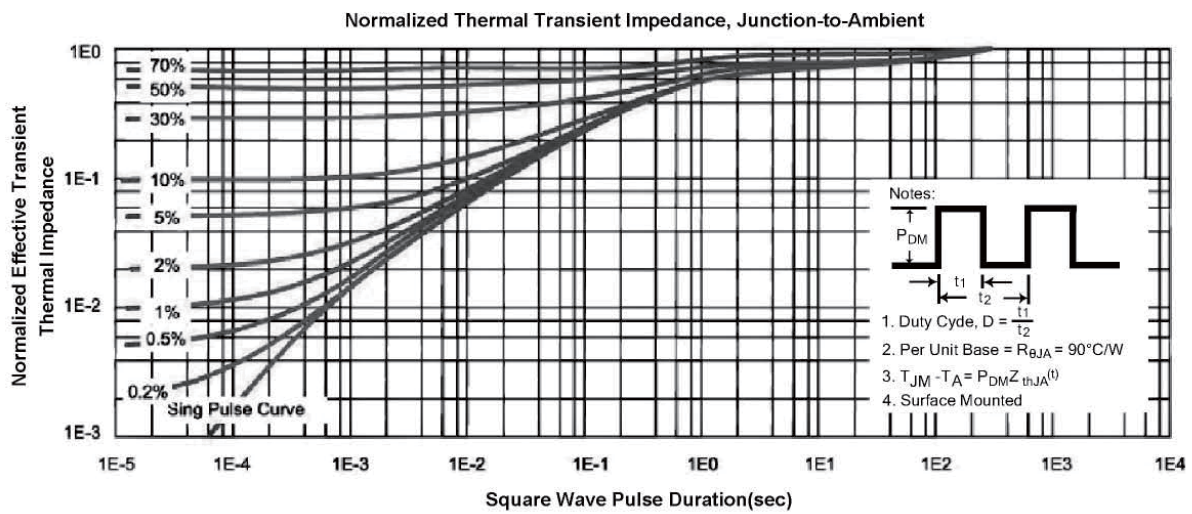
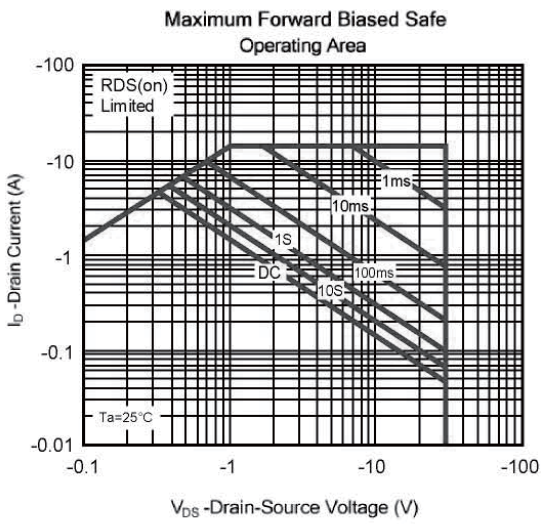
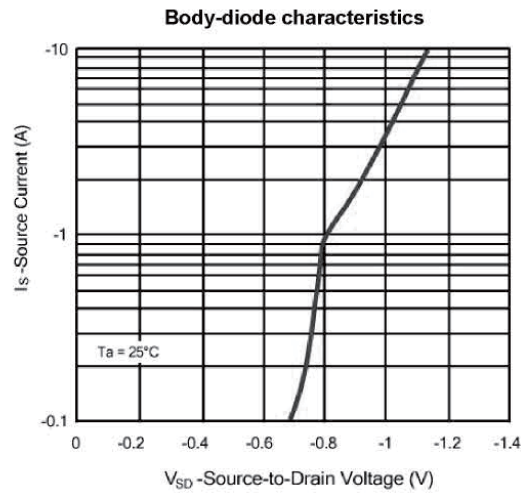
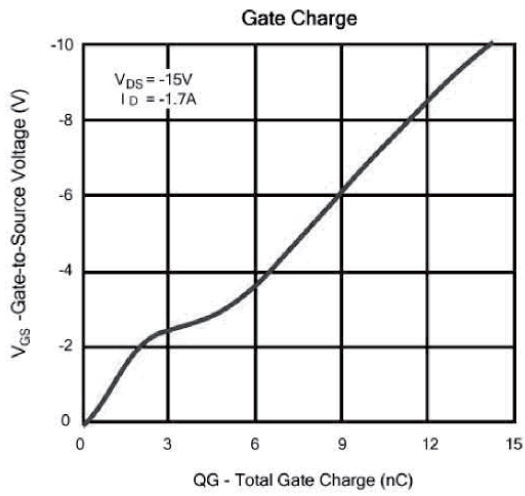
Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
STATIC						
Drain-source breakdown voltage	$V_{GS} = 0V, I_D = -250\mu A$	BV_{DSS}	-30			V
Zero gate voltage drain current	$V_{DS} = -30V, V_{GS} = 0V$	I_{DSS}			-1.0	μA
Gate-body leakage current	$V_{GS} = \pm 20V, V_{DS} = 0$	I_{GSS}			± 100	nA
Gate threshold voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(th)}$	-1.0		-3.0	V
Drain-source on-resistance *	$V_{GS} = -10V, I_D = -3.2A$ $V_{GS} = -4.5V, I_D = -2.5A$	$R_{DS(ON)}$		58 75	70 95	m Ω
Diode forward voltage	$V_{GS} = 0V, I_S = -1.0A$	V_{SD}		-0.8	-1.2	V
DYNAMIC						
Input capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}		460	540	pF
Output capacitance		C_{oss}		74		
Reverse transfer capacitance		C_{rss}		23		
Total gate charge	$V_{DS} = -15V, V_{GS} = -10V, I_D = -1.7A$	Q_g		14	18	nC
Total gate charge	$V_{DS} = -15V, I_D = -1.7A$ $V_{GS} = -4.5V$	Q_g		6.8		
Gate-source charge		Q_{gs}		2.8		
Gate-drain charge		Q_{gd}		2.3		
Gate resistance	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$	R_g		3.5	4.5	Ω
Turn-on delay time	$V_{DS} = -15V, R_L = 15\Omega, R_{GEN} = 6\Omega$ $V_{GS} = -10V$	$t_{d(on)}$		33	43	ns
Turn-on rise time		t_r		17	22	
Turn-off delay time		$t_{d(off)}$		39	52	
Turn-off fall time		t_f		5	6.5	

*Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$, Guaranteed by design, not subject to production testing.

Rating and characteristic curves (FMS2307)

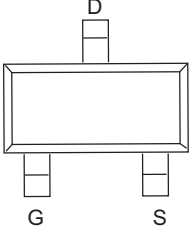
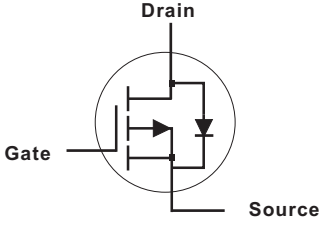


Rating and characteristic curves (FMS2307)



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Pinning information

Pin	Simplified outline	Symbol
PinD Drain PinG Gate PinS Source		

Marking

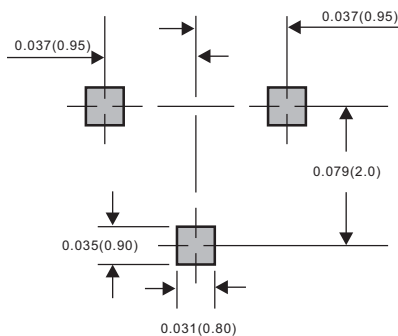
Type number	Marking code
FMS2307	WGXX (Note 1)
	WGGXX (Note 2)

Note 1:
 "WG" shown on the 1st~2nd position on --- Marking code
 Control code:
 A~Z shown on the 3rd position on --- Control code
 D/C:
 A~Z shown on the 4th position on --- 1 week~26 week
 A~Z shown on the 4th position on --- 27 week~52 week

Note 2:
 "WGG" shown on the 1st~3rd position on --- Marking code
 Control code:
 A~Z shown on the 4th position on --- Control code
 D/C:
 A~Z shown on the 5th position on --- 1 week~26 week
 A~Z shown on the 5th position on --- 27 week~52 week

Suggested solder pad layout

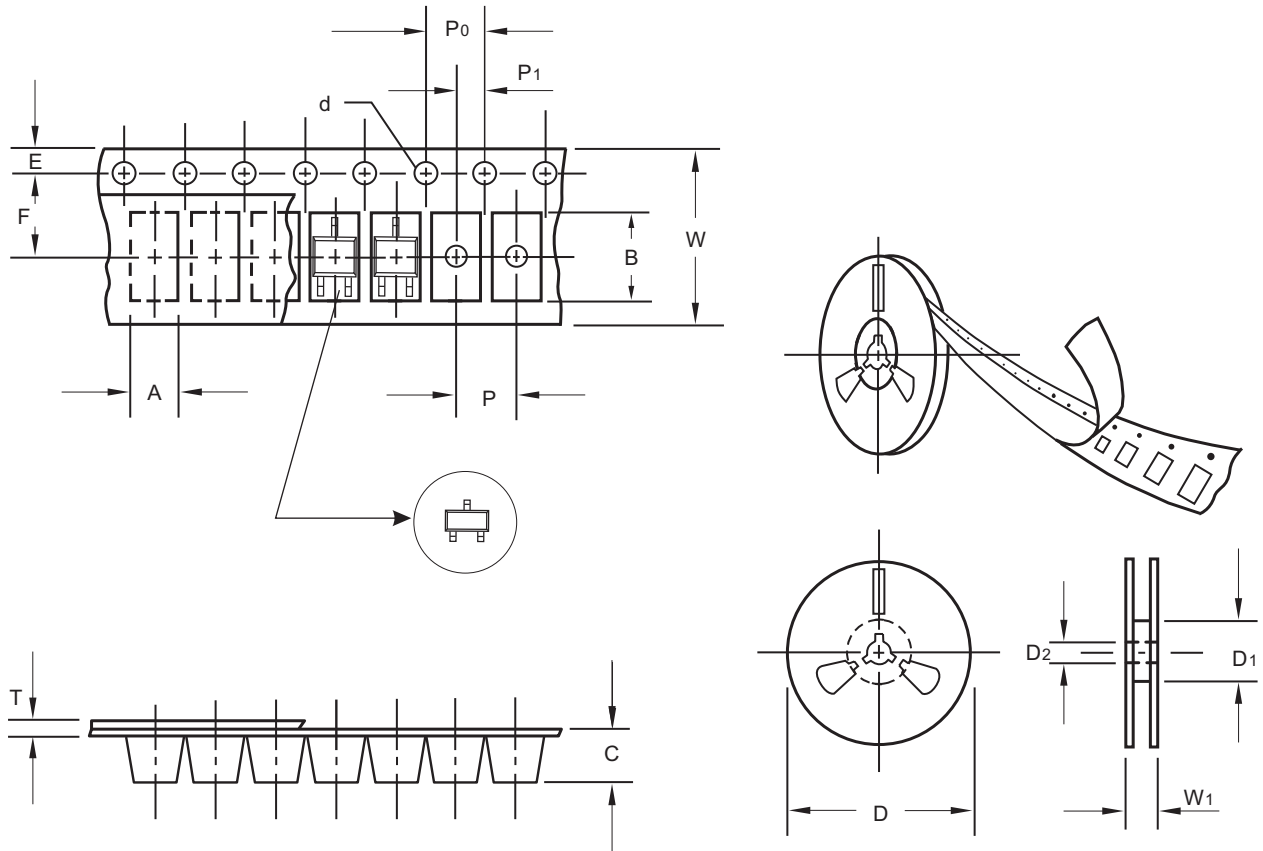
SOT-23



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.25
Carrier length	B	0.1	3.15
Carrier depth	C	0.1	1.55
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	55.00
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	0.05	0.25
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.0

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

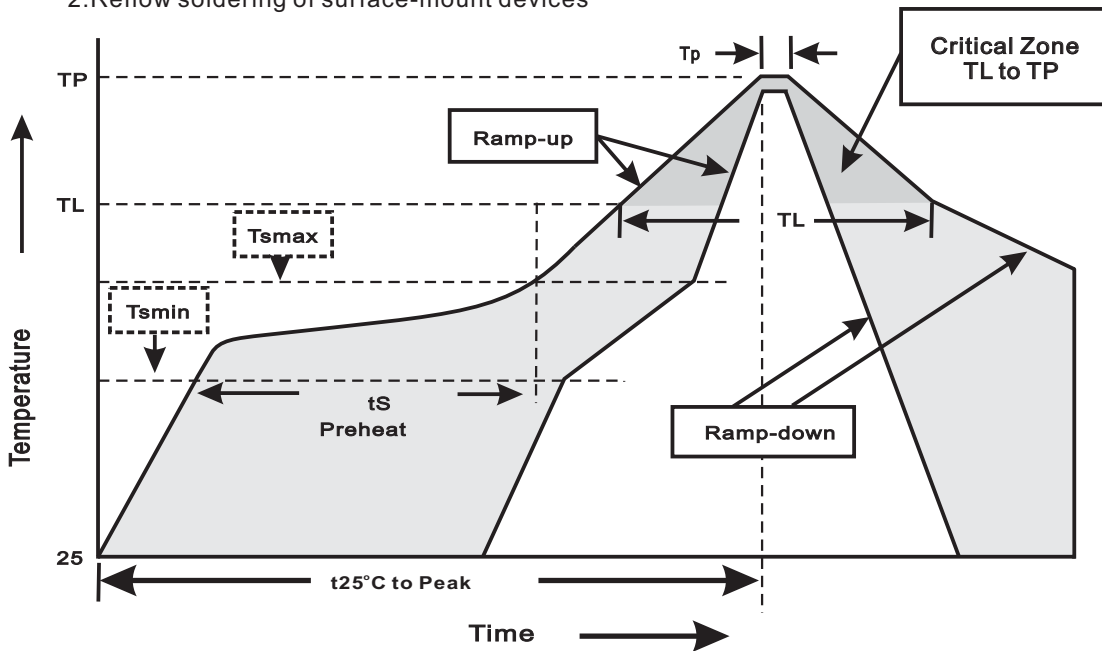
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Reel packing

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-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°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes