

FMOSG0P8N02E-H

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FMOSG0P8N02E-H

0.82A 20V N-Channel
Small Signal MOSFET

Features

- $R_{DS(ON)} \leq 260m\Omega$ @ $V_{GS}=4.5V$, $I_D=0.55A$.
- $R_{DS(ON)} \leq 310m\Omega$ @ $V_{GS}=2.5V$, $I_D=0.45A$.
- $R_{DS(ON)} \leq 380m\Omega$ @ $V_{GS}=1.8V$, $I_D=0.35A$.
- ESD Rating(HBM) : 2KV.
- Super high density cell design.
- Excellent on-resistance and extremely low threshold voltage.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

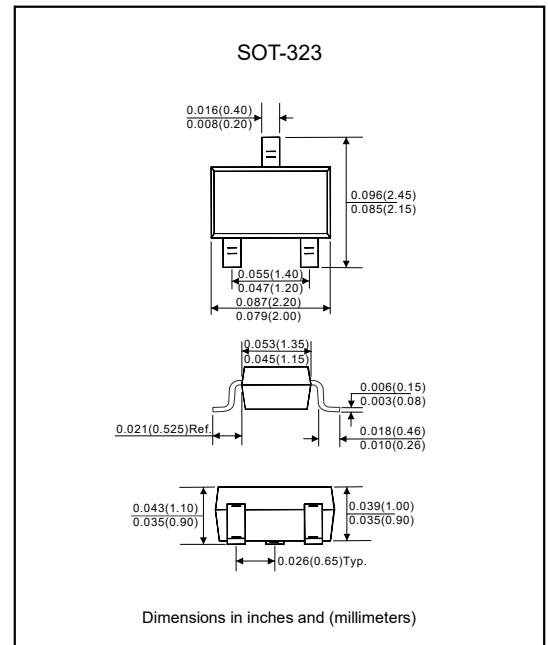
Applications

- DC-DC converter circuit.
- Small signal switch.
- Load switch.
- Level shift.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-323.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.
- Weight: 0.006 grams (Approximate).

Package outline

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

Parameter	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	± 6	V
Continuous drain current (Note1)	I_D	($T_A=25^{\circ}C$) 0.82	A
		($T_A=70^{\circ}C$) 0.65	
Power dissipation (Note1)	P_D	($T_A=25^{\circ}C$) 0.31	W
		($T_A=70^{\circ}C$) 0.20	
Continuous drain current (Note2)	I_D	($T_A=25^{\circ}C$) 0.70	A
		($T_A=70^{\circ}C$) 0.56	
Power dissipation (Note2)	P_D	($T_A=25^{\circ}C$) 0.23	W
		($T_A=70^{\circ}C$) 0.14	
Pulse drain current (Note3)	I_{DM}	1.4	A
Thermal resistance, junction to ambient (Note1)	$R_{\theta JA}$	395	$^{\circ}C/W$
Thermal resistance, junction to ambient (Note2)		535	
Operating Junction temperature	T_J	+150	$^{\circ}C$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$

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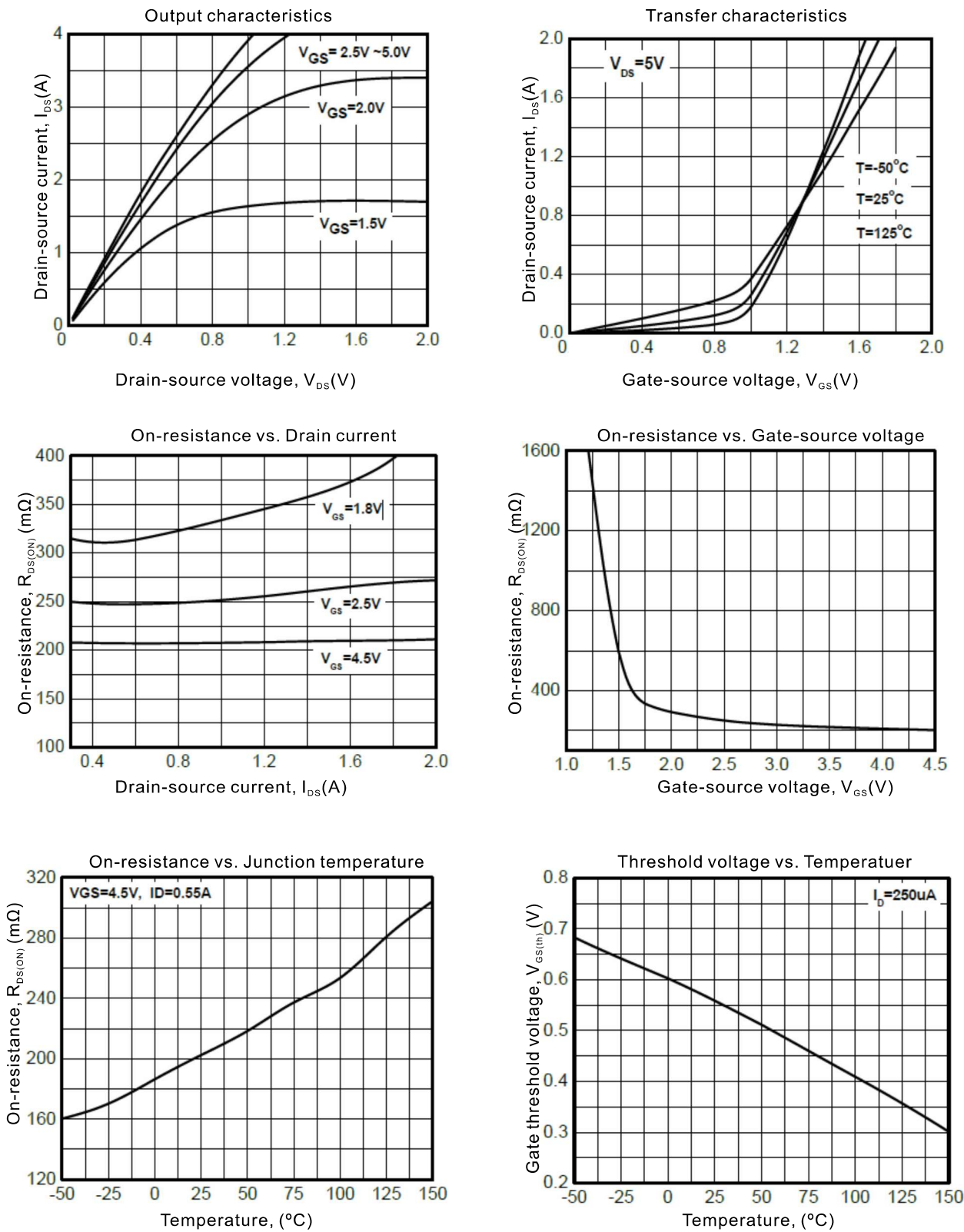
Electrical characteristics (At $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	20			V
Drain-source leakage current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			100	nA
Gate-source leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±5V			5	μA
On characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.58	0.85	V
Static drain-source on-resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =0.55A		220	260	mΩ
		V _{GS} =2.5V, I _D =0.45A		260	310	
		V _{GS} =1.8V, I _D =0.35A		320	380	
Forward transconductance	g _{FS}	V _{DS} =5V, I _D =0.55A		2.0		S
Dynamic parameters						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =10V, f=1.0MHz		50		pF
Out capacitance	C _{oss}			13		
Reverse transfer capacitance	C _{rss}			8		
Switching parameters						
Total gate charge	Q _{g(tot)}	V _{GS} =4.5V, V _{DS} =10V, I _D =0.55A		1.15		nC
Threshold gate charge	Q _{g(th)}			0.06		
Gate-source charge	Q _{gs}			0.15		
Gate-drain charge	Q _{gd}			0.23		
Turn-on delay time	t _{d(on)}	V _{DS} =10V, V _{GS} =4.5V, R _L =3Ω, R _G =6Ω		22		ns
Rise time	t _r			80		
Turn-off delay time	t _{d(off)}			700		
Fall time	t _f			380		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage	V _{SD}	I _S =0.35A , V _{GS} =0V	0.5	0.7	1.1	V

- Note: 1. Surface mounted on FR4 board using 1 square inch pad size, 1oz copper.
2. Surface mounted on FR4 board using minimum pad size, 1oz copper.
3. Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, duty cycle=1%.
4. Repetitive rating, pulse width limited by junction temperature $T_J=150^{\circ}\text{C}$.

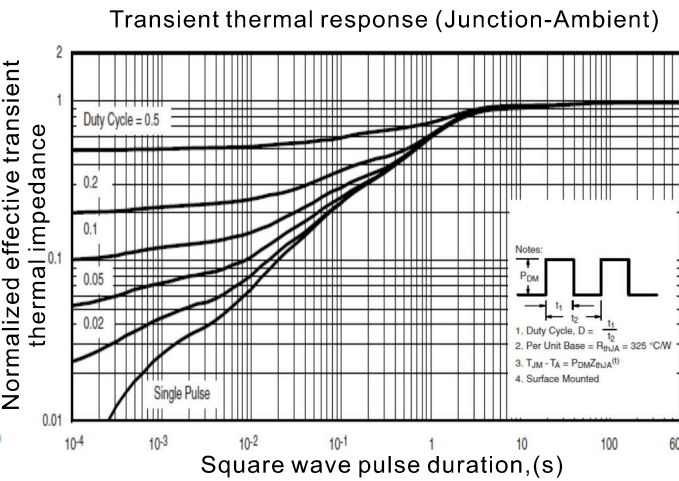
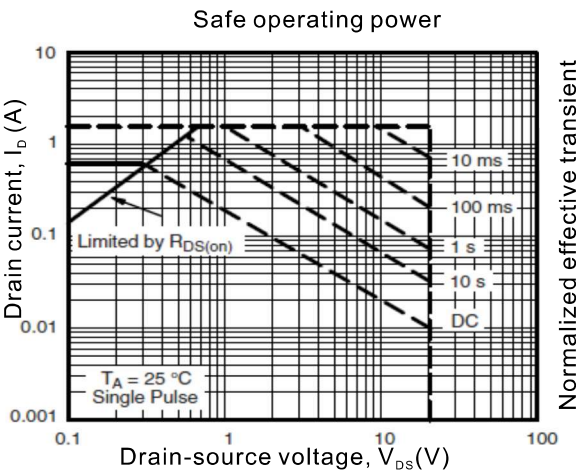
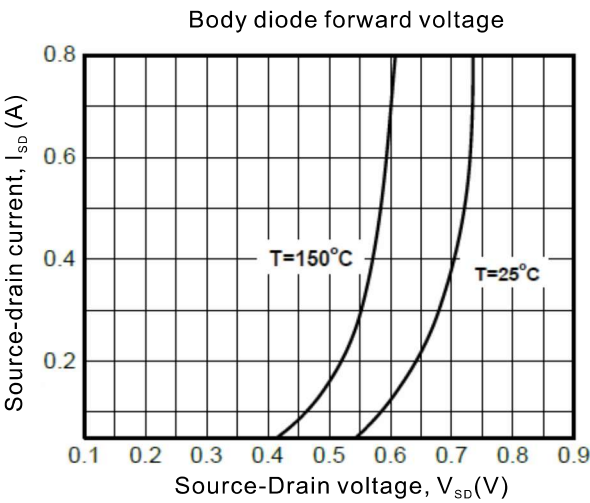
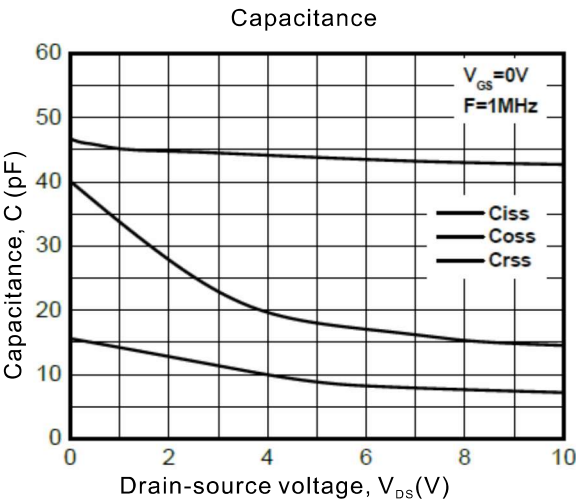
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Rating and characteristic curves



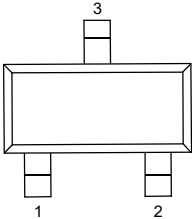
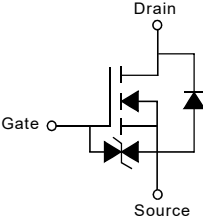
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Rating and characteristic curves



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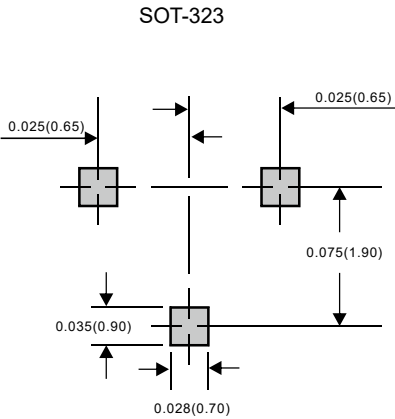
Pinning information

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

Marking

Type number	Marking code
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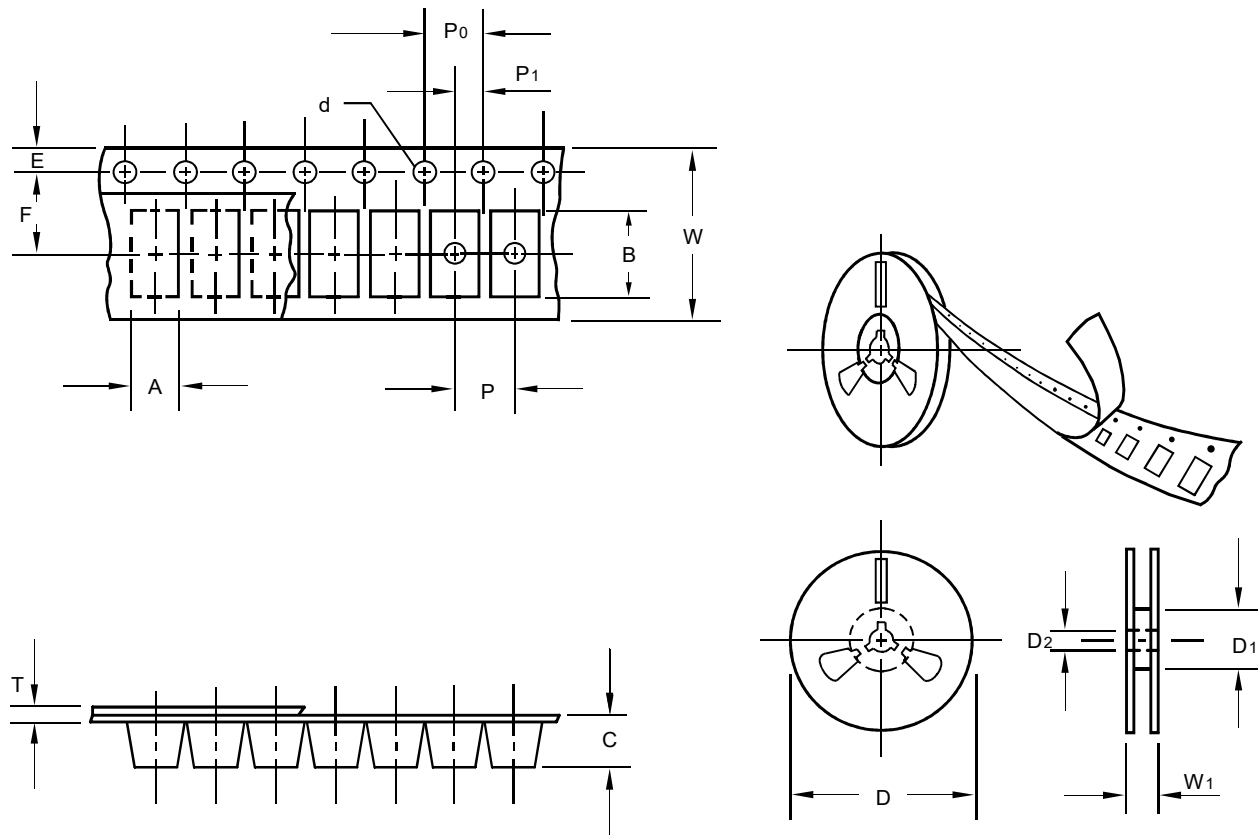
Suggested solder pad layout



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
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	62.00
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	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

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

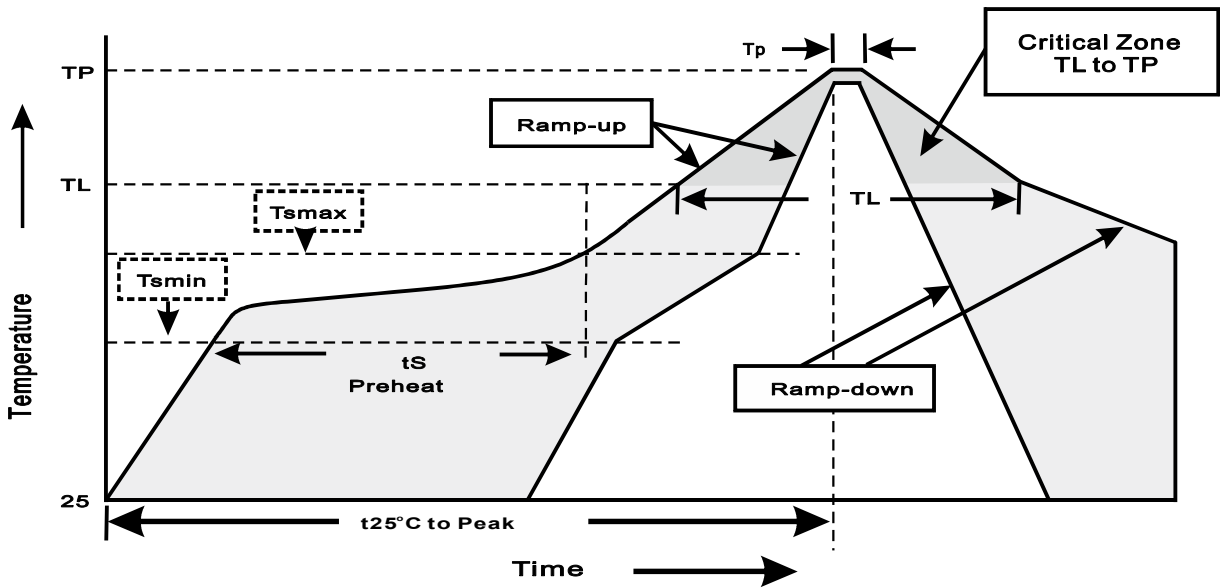
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Reel packing

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)
SOT-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000

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-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
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	<6minutes