

FMOSAB42P03

List

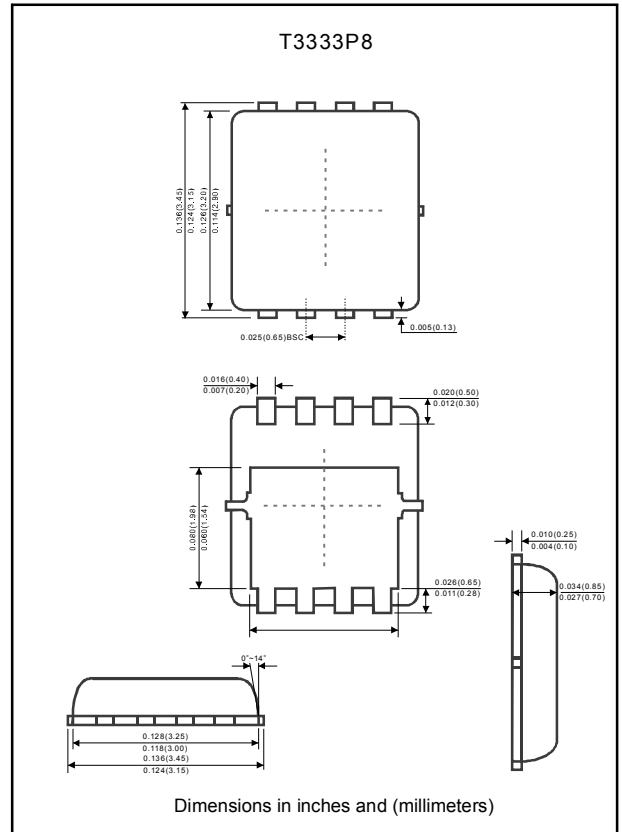
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FMOSAB42P03**-30V, -42A, P-Channel MOSFET****Features**

- $-V_{DS} = 30V$.
- $-I_D = 42V$.
- $R_{DS(ON)} \leq 14m\Omega @ -V_{GS} = 10V$.
- Fast switching.
- 100% EAS guaranteed.
- Green device available.
- Excellent package for good heat dissipation
- Lead-free parts meet RoHS requirements
- Suffix "-H" dinicates Halogen-free part, ex.FMOSAB42P03-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, T3333P8
- Mounting Position : Any
- Weight : Approximated 0.02 gram

Package outline**Maximum ratings** (AT $T_c = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-source voltage	$-V_{DS}$	30	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain Current - Continuous ($T_c = 25^\circ C$)	$-I_D$	42	A
- Continuous ($T_c = 100^\circ C$)		27	
Pulsed drain current (Note 1)	$-I_{DM}$	130	A
Avalanche current	$-I_{AS}$	50	A
Single pulse avalanche energy	E_{AS}	125	mJ
Power dissipation	P_D	37	W
Operating Junction temperature range	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$
Thermal resistance Junction to ambient	$R_{\theta JA}$	75	$^\circ C/W$
Thermal resistance Junction to case	$R_{\theta JC}$	3.36	$^\circ C/W$

Note :

1. Repetitive rating : Pulse width limited by maximum junction temperature.

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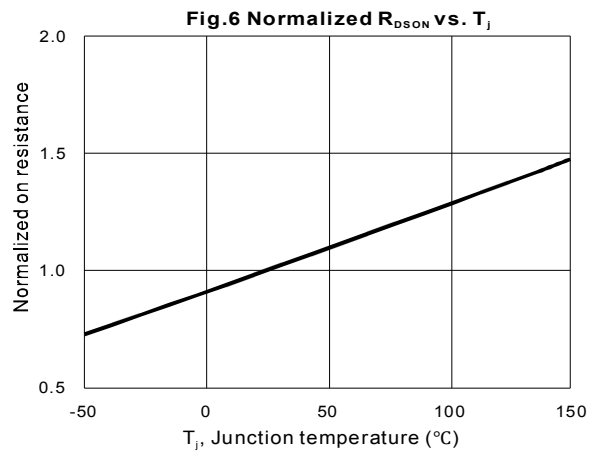
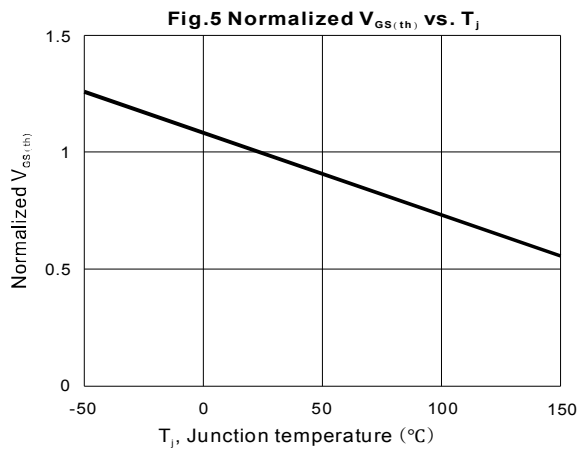
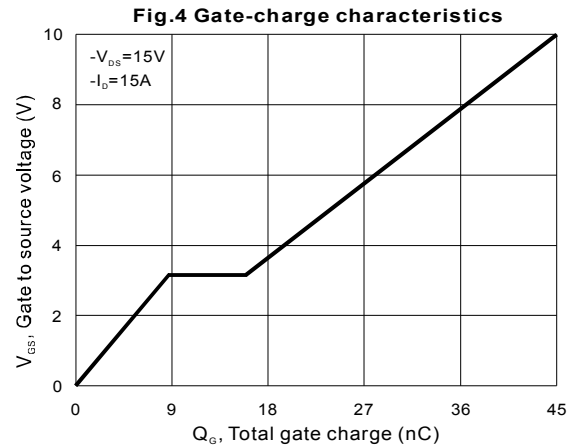
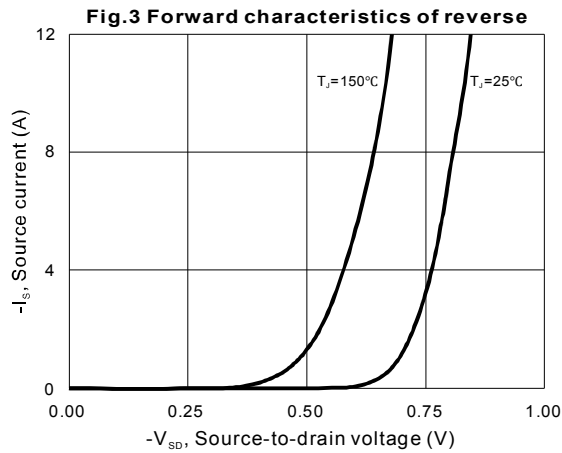
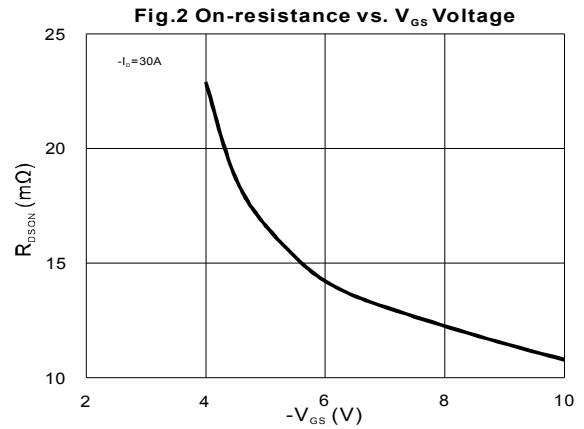
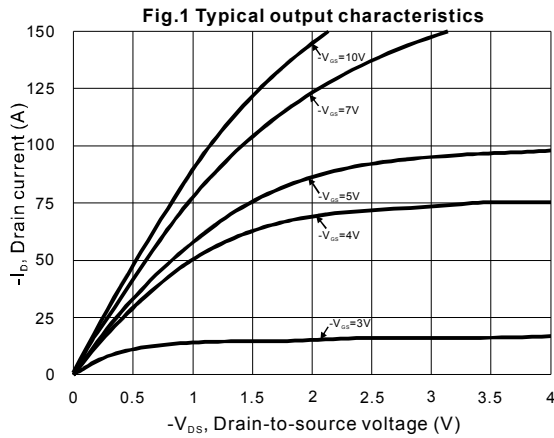
Electrical characteristics (At $T_j=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$-BV_{\text{DSS}}$	$I_{\text{D}}=250\mu\text{A}$, $V_{\text{GS}}=0\text{V}$	30			V
Drain-source leakage current	$-I_{\text{DSS}}$	$V_{\text{DS}}=30\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_{\text{j}}=25^{\circ}\text{C}$			1	μA
Gate-source leakage current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}$, $V_{\text{DS}}=0\text{V}$			± 100	nA
On characteristics (Note2)						
Gate threshold voltage	$-V_{\text{GS}(\text{TH})}$	$V_{\text{GS}}=V_{\text{DS}}$, $I_{\text{D}}=250\mu\text{A}$	1.2		2.5	V
Forward transconductance	g_{FS}	$-I_{\text{SD}}=30\text{A}$, $-V_{\text{DS}}=5\text{V}$		30		S
Static drain-source on-resistance	$R_{\text{DS}(\text{ON})}$	$-V_{\text{GS}}=10\text{V}$, $-I_{\text{D}}=30\text{A}$			14	m Ω
		$-V_{\text{GS}}=4.5\text{V}$, $-I_{\text{D}}=15\text{A}$			22	
Dynamic parameters						
Input capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}$, $-V_{\text{DS}}=15\text{V}$, $f=1.0\text{MHz}$		2215		pF
Out capacitance	C_{oss}			310		
Reverse transfer capacitance	C_{rss}			237		
Switching parameters						
Total gate charge	Q_{g}	$-V_{\text{GS}}=4.5\text{V}$, $-V_{\text{DS}}=15\text{V}$, $-I_{\text{D}}=15\text{A}$		22		nC
Gate to source charge	Q_{gs}			8.7		
Gate to drain charge	Q_{gd}			7.2		
Turn-on delay time	$t_{\text{d}(\text{on})}$	$-V_{\text{DS}}=15\text{V}$, $-V_{\text{GS}}=10\text{V}$, $R_{\text{G}}=3.3\Omega$, $-I_{\text{D}}=15\text{A}$,		8		ns
Rise time	t_{r}			73.7		
Turn-off delay time	$t_{\text{d}(\text{off})}$			61.8		
Fall time	t_{f}			24.4		
Source-drain diode ratings and characteristics						
Maximum body-diode continuous current	$-I_{\text{S}}$	$V_{\text{G}}=V_{\text{D}}=0\text{V}$, Force current			42	A
Drain-source diode forward voltage	$-V_{\text{SD}}$	$-I_{\text{S}}=1\text{A}$, $V_{\text{GS}}=0\text{V}$			1	V
Reverse recovery time	t_{rr}	$-I_{\text{F}}=15\text{A}$, $di/dt=100\text{A}/\mu\text{s}$		19		nS
Reverse recovery charge	Q_{rr}			9		nC

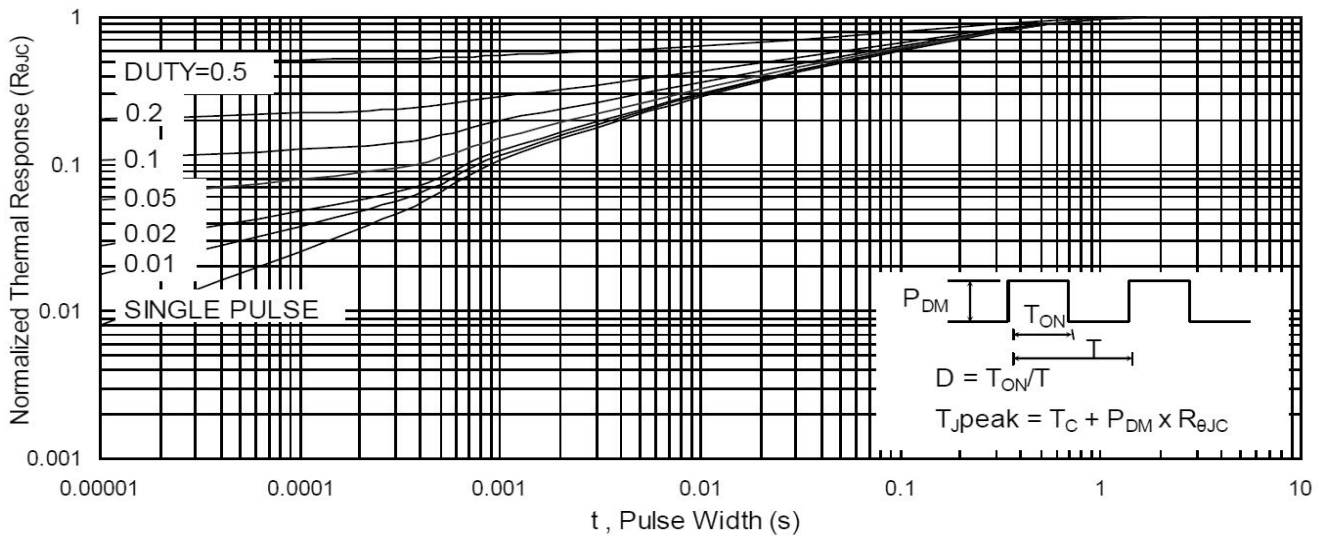
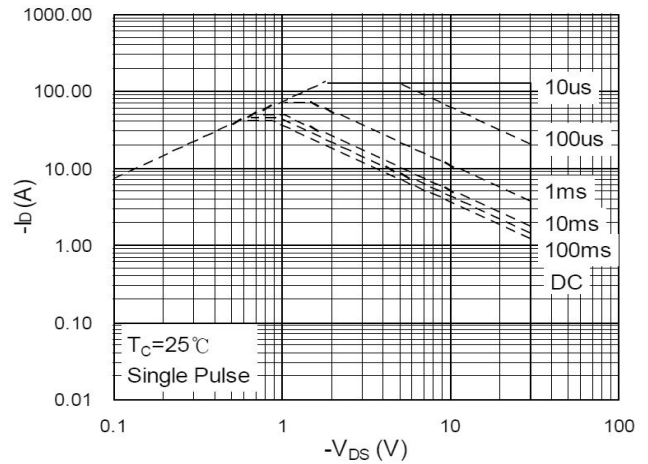
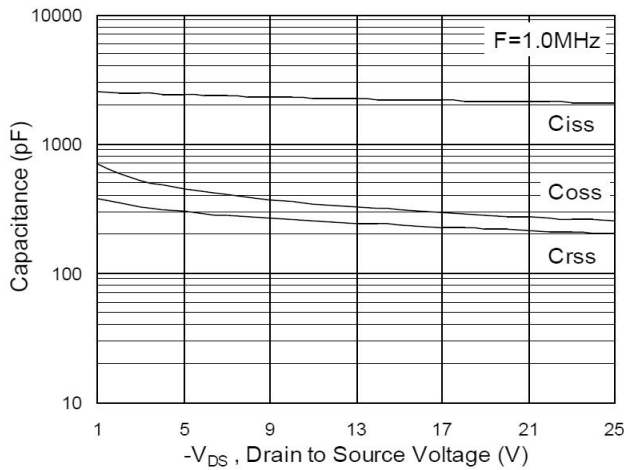
Note :

- A. The value of $R_{\theta\text{JA}}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_{\text{A}}=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.
- B. Repetitive rating, pulse width limited by junction temperature.
- C. The current rating is based on the $t < 10\text{s}$ junction to ambient thermal resistance rating.

Rating and characteristic curves (FMOSAB42P03)

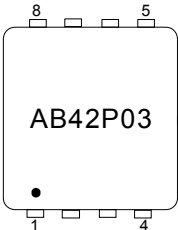
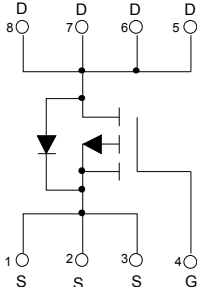


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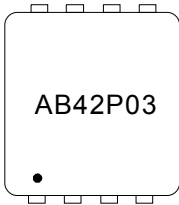


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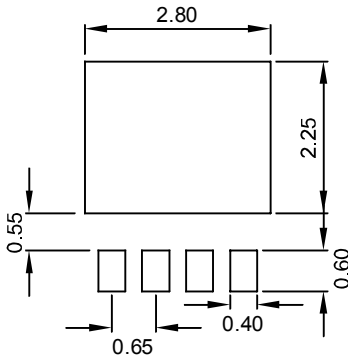
Pinning information

Pin	Simplified outline	Symbol
Pin1 Source Pin2 Source Pin3 Source Pin4 Gate Pin5 Drain Pin6 Drain Pin7 Drain Pin8 Drain		

Marking

Type number	Marking code
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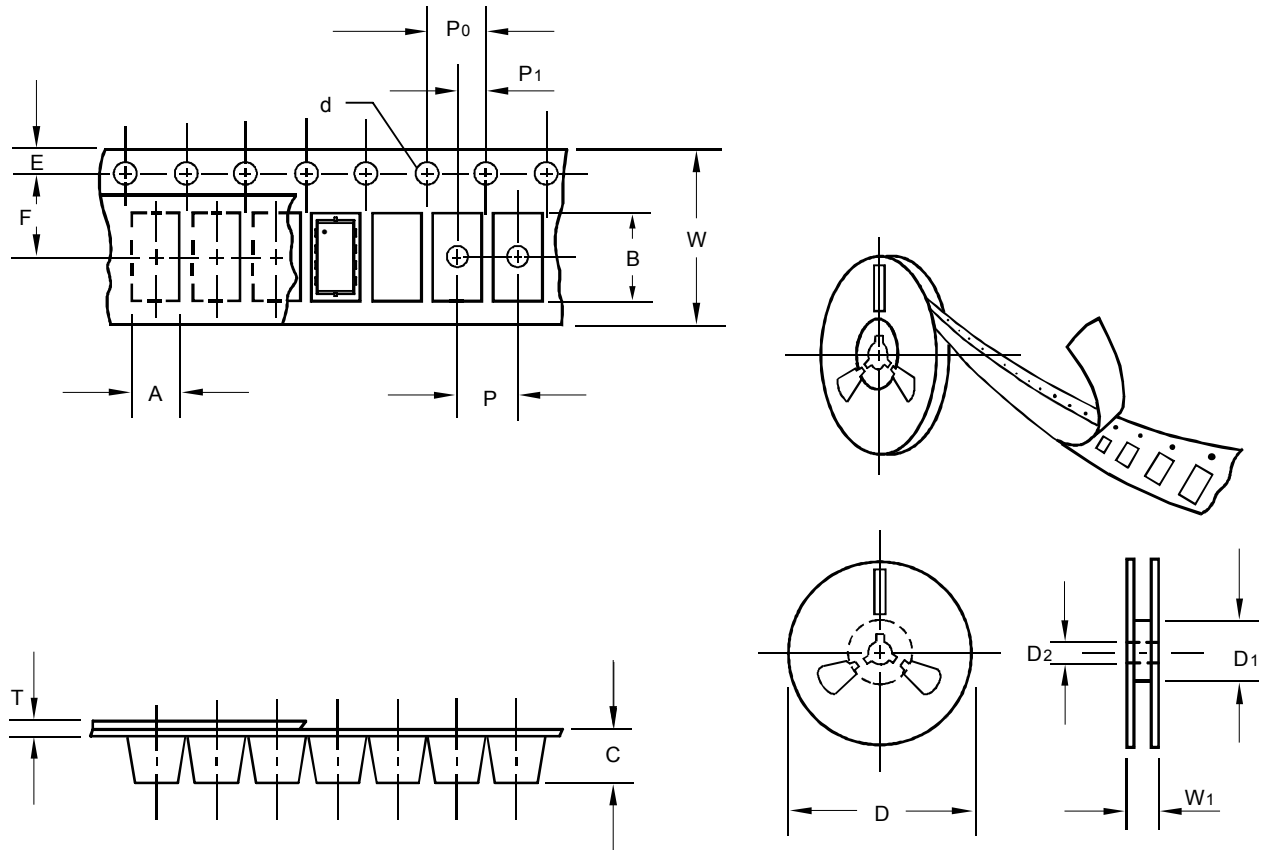
Suggested solder pad layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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Packing information



unit:mm

Item	Symbol	Tolerance	T3333P8
Carrier width	A	0.1	3.55
Carrier length	B	0.1	3.55
Carrier depth	C	0.1	1.10
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	100.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D1	min	-
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
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	12.00
Reel width	W1	1.0	17.60

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

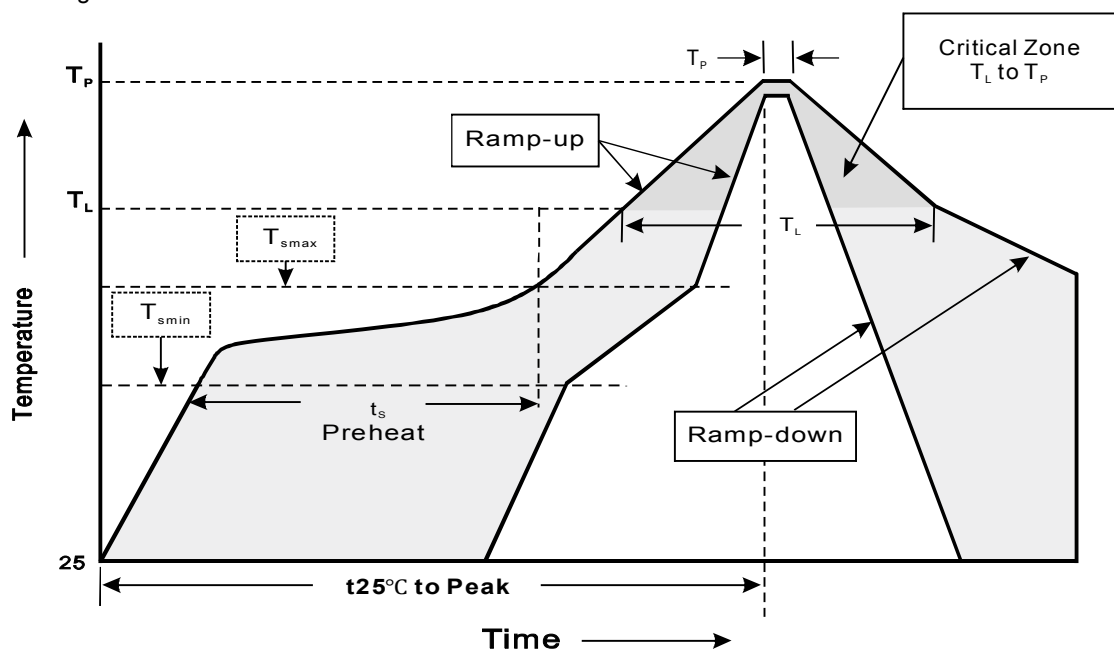
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Reel packing

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)
T3333P8	13"	3,000	8.0	6,000	355*340*50	330	385*300*370	30,000

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)	$< 3^\circ\text{C}/\text{sec}$
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	$< 3^\circ\text{C}/\text{sec}$
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	$< 6^\circ\text{C}/\text{sec}$
Time 25°C to peak temperature	< 6 minutes