

FMOSAB3005A**List**

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FMOSAB3005A**50A, 30V, N-Channel MOSFET****Features**

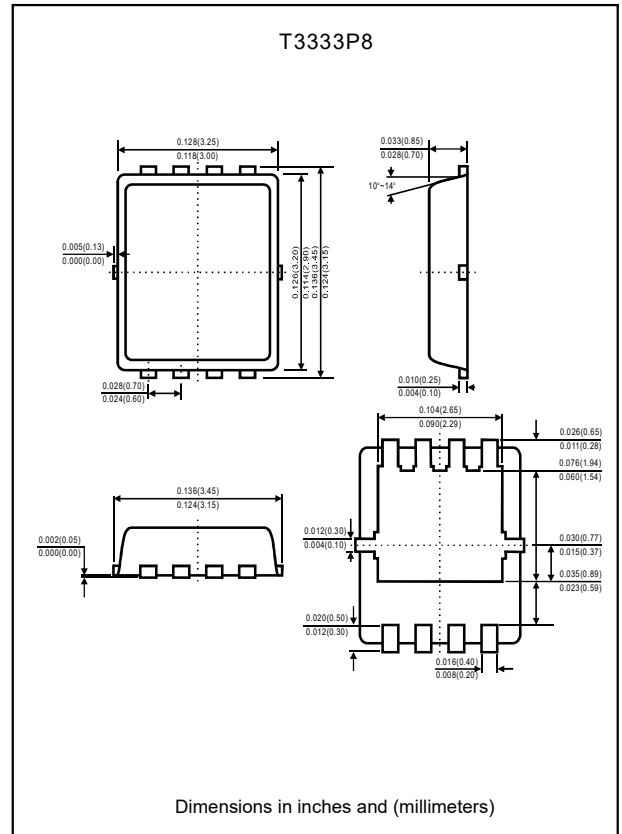
- $V_{DS}=30V$, $I_D=50A$
- $R_{DS(ON)} = 3.5m\Omega(Typ.) @V_{GS}=10V$.
- $R_{DS(ON)} = 7.0m\Omega(Typ.) @V_{GS}=4.5V$.
- Advanced trench technology .
- Provide excellent $R_{DS(ON)}$ and low gate charge.
- Green device available.
- Excellent package for good heat dissipation
- Lead-free parts meet RoHS requirments
- Suffix "-H" dinicates Halogen-free part, ex.FMOSAB3005A-H.

Application

- Load Switch.
- PWM Application.

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 ($T_c=25^\circ C$) - Continuous ($T_c=100^\circ C$)	I_D	50	A
		32	
Pulsed drain current (Note 1)	I_{DM}	200	A
Single pulse avalanche energy	E_{AS}	270	mJ
Power dissipation	P_D	27	W
Operating Junction temperature range	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$
Thermal resistance Junction to case	$R\theta_{JC}$	4.5	$^\circ C/W$

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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 _{DSS}	I _D =250μA, V _{GS} =0V	30			V
Drain-source leakage current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	μA
Gate-source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On characteristics						
Gate threshold voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	1.0	1.5	2.5	V
Forward trans conductance	g _{FS}	V _{DS} =5V, I _D =15A		28		S
Static drain-source on-resistance (Note 3)	R _{DS(ON)}	V _{GS} =10V, I _D =30A		3.5	4.7	mΩ
		V _{GS} =4.5V, I _D =20A		7.0	10	
Dynamic parameters						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1.0MHZ		2153		pF
Out capacitance	C _{oss}			327		
Reverse transfer capacitance	C _{rss}			287		
Switching parameters						
Total gate charge	Q _g	V _{GS} =10V, V _{DS} =25V, I _D =30A		45		nC
Gate to source charge	Q _{gs}			3		
Gate to drain charge	Q _{gd}			15		
Turn-on delay time	t _{d(on)}	V _{DS} =15V, V _{GS} =10V, R _G =3Ω, I _D =30A		21		ns
Rise time	t _r			32		
Turn-off delay time	t _{d(off)}			59		
Fall time	t _f			34		
Source-drain diode ratings and characteristics						
Maximum body-diode continuous current	I _S	V _G =V _D =0V			50	A
Source current pulsed	I _{SM}				200	
Drain-source diode forward voltage	V _{SD}	I _S =30A, V _{GS} =0V			1.2	V
Body diode reverse recovery time	t _{rr}	I _F =20A, dI/dt = 100A/μs		15		ns
Body diode reverse recovery charge	Q _{rr}			4		nC

Notes :

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

2. E_{AS} condition : $T_J=25^{\circ}\text{C}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$.3.Pulse test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 0.5\%$.

Rating and characteristic curves (FMOSAB3005A)

Figure1: Output Characteristics

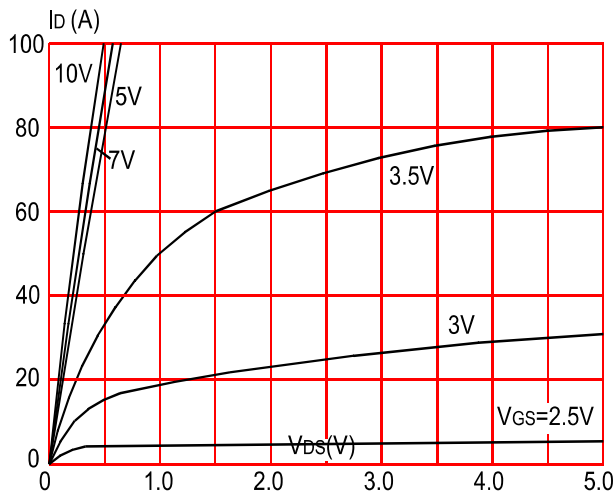


Figure 2: Typical Transfer Characteristics

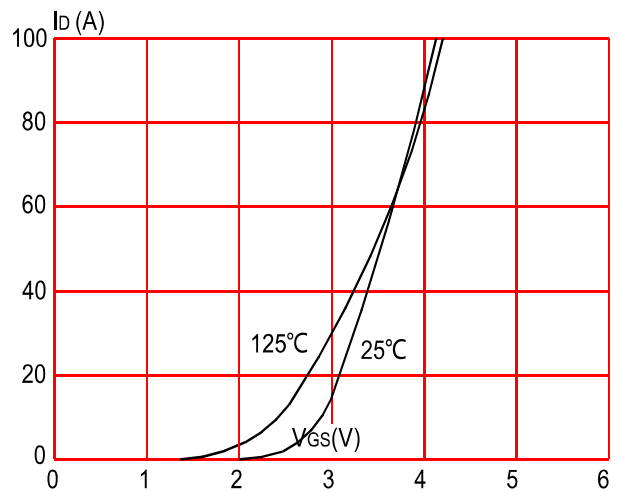


Figure 3: On-resistance vs. Drain Current

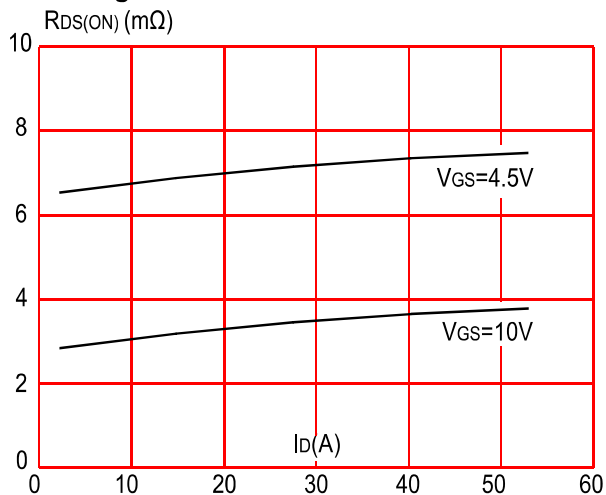


Figure 4: Body Diode Characteristics

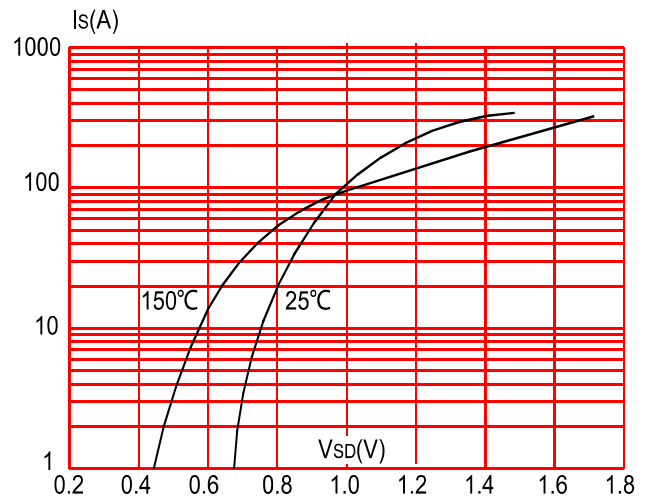


Figure 5: Gate Charge Characteristics

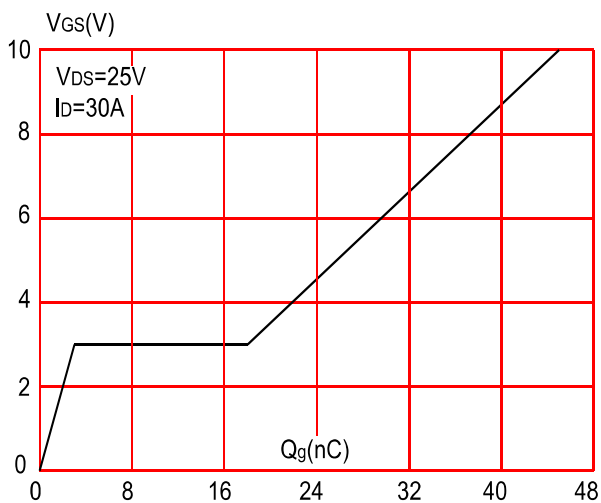
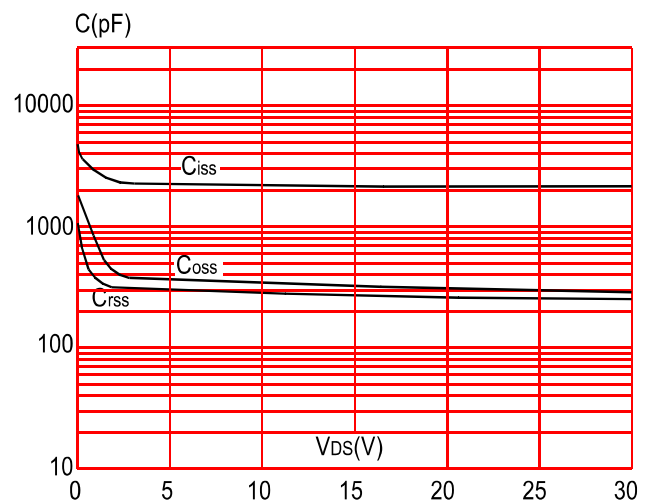


Figure 6: Capacitance Characteristics



Rating and characteristic curves (FMOSAB3005A)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

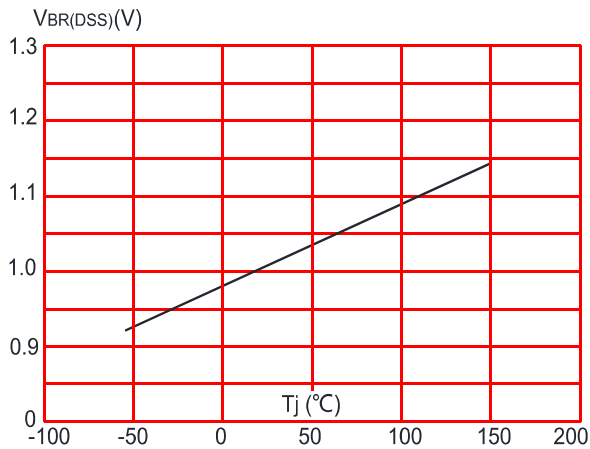


Figure 8: Normalized on Resistance vs. Junction Temperature

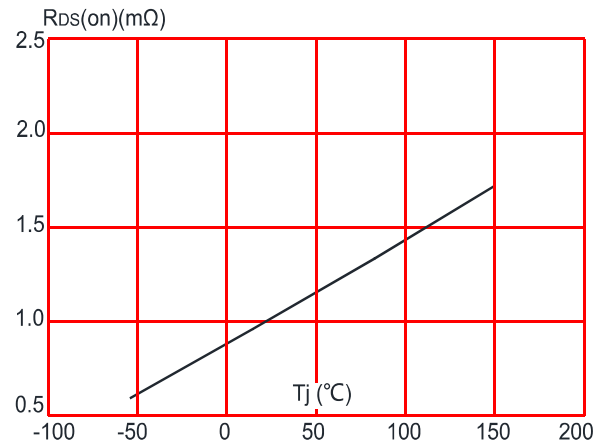


Figure 9: Maximum Safe Operating Area

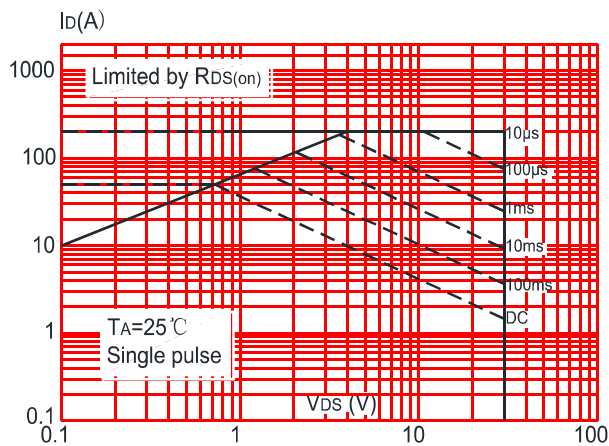


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

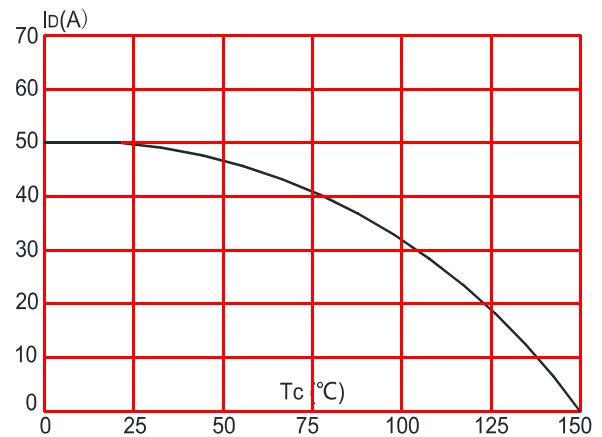
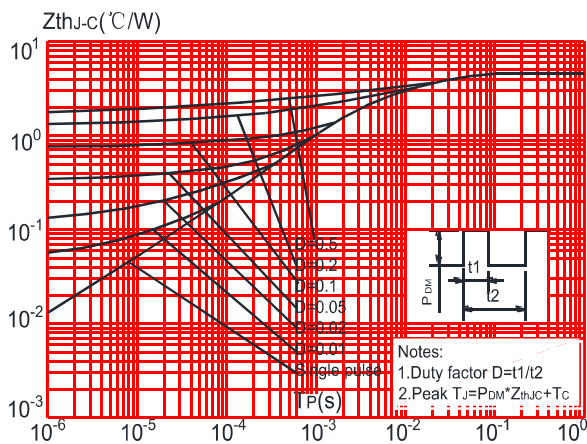
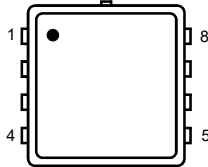
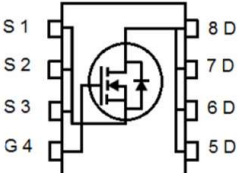


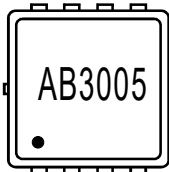
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

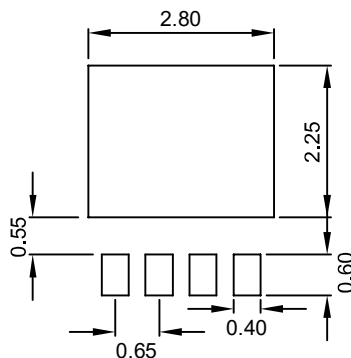


FMOSAB3005A**Pinning information**

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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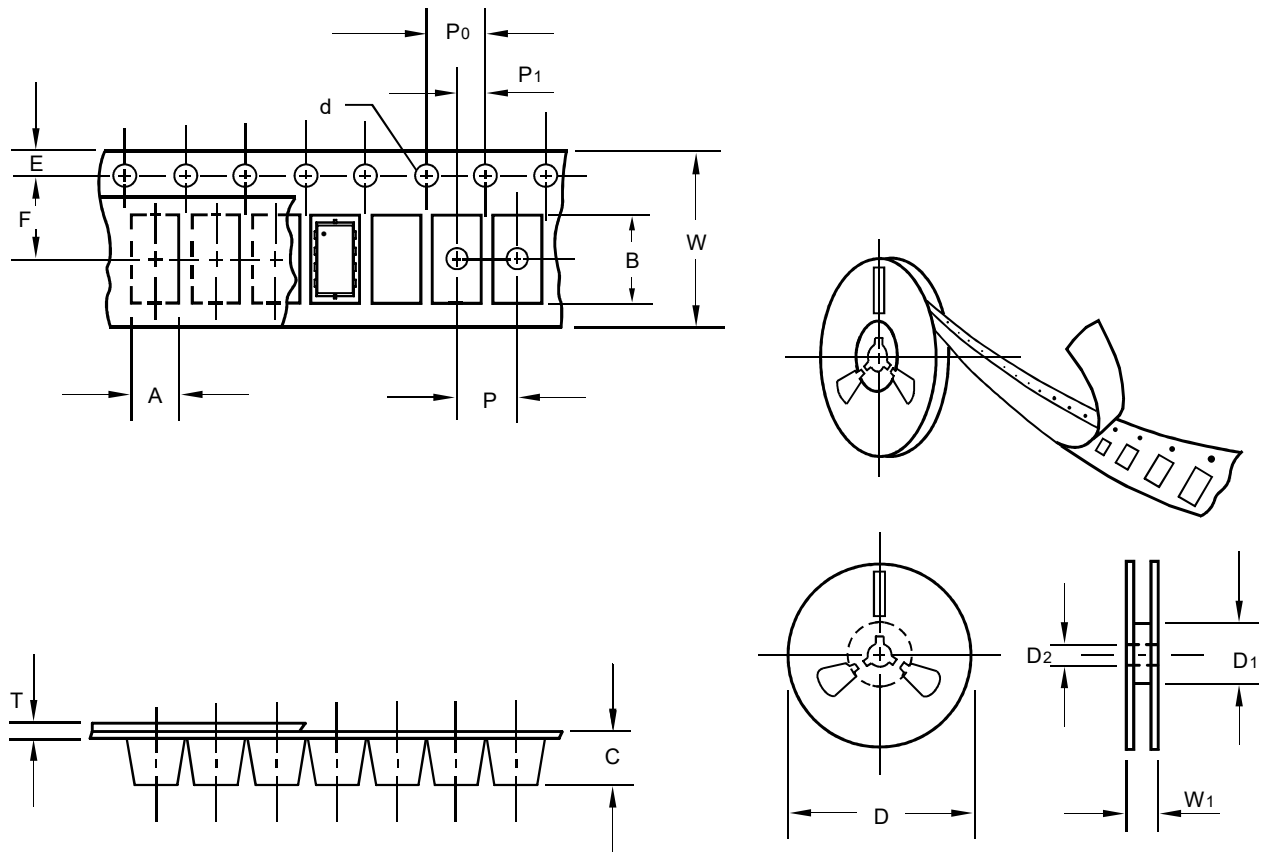
Suggested solder pad layout

Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
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.

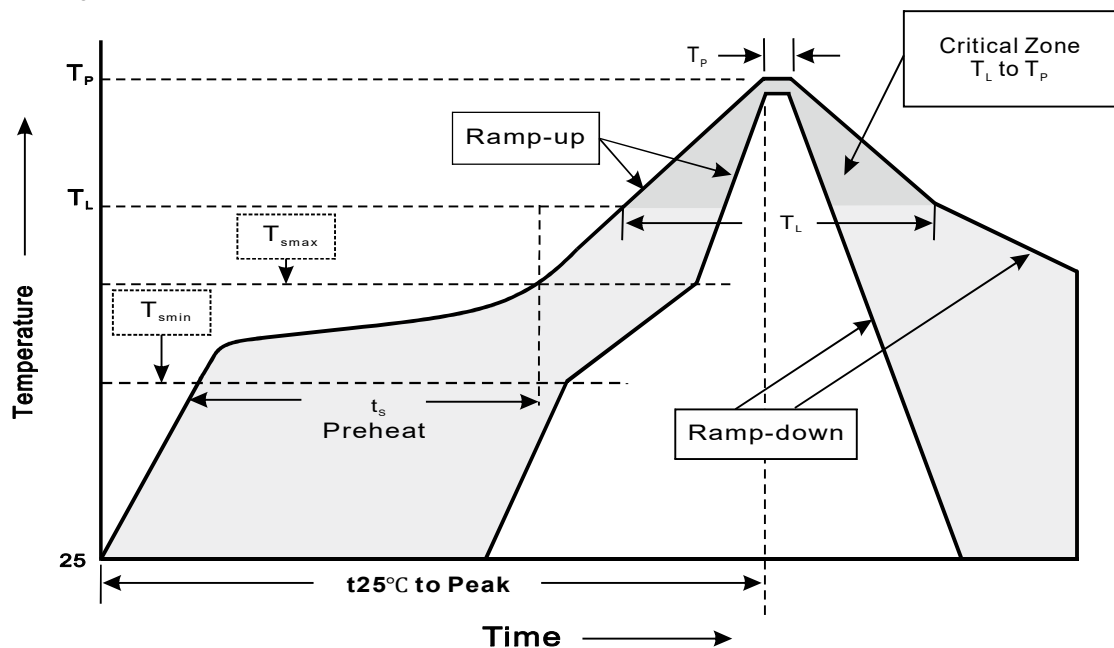
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Reel packing

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"	5,000	8.0	10,000	355*335*38	330	350*330*360	80,000

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-up rate	< 3°C/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°C/sec
Time 25°C to peak temperature	< 6 minutes