

FMOSTHAB35N03-H

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FMOSTHAB35N03-H

35A 30V N-Channel Trench
Enhancement Mode Power MOSFET

Features

- $V_{DS} = 30V$, $I_D = 35A$.
- $R_{DS(ON)} \leq 6.8m\Omega$, @ $V_{GS} = 10V$, $I_D = 10A$.
- $R_{DS(ON)} \leq 10m\Omega$, @ $V_{GS} = 4.5V$, $I_D = 10A$.
- High density cell design for ultra-low on-resistance.
- Fully characterized avalanche voltage and current.
- Excellent package for good heat dissipation.
- Good stability and uniformity with high E_{AS} .
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC 61249-2-21).

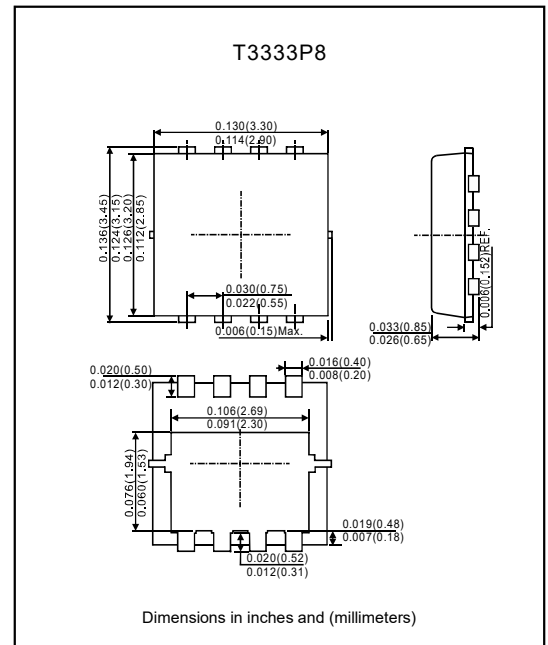
Applications

- High side switch in POL DC/DC converter.
- Secondary side synchronous rectifier.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, T3333P8 (DFN3333-8).
- Mounting Position : Any.

Package outline

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

Parameter	Symbol	Ratings	Unit
Drain-Source voltage	V_{DS}	30	V
Gate-Source voltage	V_{GS}	± 20	V
Continuous drain current (Note1)	I_D	35	A
Pulsed drain current (Note2)	I_{DM}	120	A
Avalanche energy, single pulse (Note3)	E_{AS}	50	mJ
Power dissipation (Note1)	P_D	25	W
Thermal resistance, Junction to ambient (Note6)	$R_{\theta JA}$	83.3	$^\circ C/W$
Thermal resistance, Junction to case (Note1)	$R_{\theta JC}$	5	
Operating junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

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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} =24V, V _{GS} =0V			1	μA
		V _{DS} =24V, V _{GS} =0V, T _J =125°C			100	
Gate-Source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On characteristics (Note4)						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.3	1.7	2.5	V
Static drain-source on-resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A		5.2	6.8	mΩ
		V _{GS} =4.5V, I _D =10A		7.5	10	
Dynamic characteristics (Note5)						
Input capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		1100		pF
Output capacitance	C _{oss}			174		
Reverse transfer capacitance	C _{rss}			143		
Gate resistance	R _G	f=1.0MHz		4.6		Ω
Switching characteristics (Note5)						
Total gate charge	Q _g	V _{GS} =10V, V _{DS} =15V, I _D =10A		24		nC
Gate-Source charge	Q _{gs}			2.6		
Gate-Drain Charge	Q _{gd}			5.4		
Turn-on delay time	t _{d(on)}	V _{DS} =15V, V _{GS} =10V, I _D =11A, R _G =10Ω		25		ns
Turn-on rise time	t _r			40		
Turn-off delay time	t _{d(off)}			90		
Turn-off fall time	t _f			57		
Drain-Source diode characteristics and maximum ratings						
Drain-Source diode forward voltage (Note4)	V _{SD}	I _S =12A, V _{GS} =0V			1.2	V
Body diode reverse recovery time (Note1)	I _S				35	A
Body diode reverse recovery charge (Note2)	I _{SM}				120	A

Note : 1. $T_C=25^{\circ}\text{C}$ limited only by maximum temperature allowed.

2. $P_w \leq 10\mu\text{s}$, duty cycle $\leq 1\%$.

3. E_{AS} condition: $V_{DD}=15\text{V}$, $V_{GS}=10\text{V}$, $L=0.1\text{mH}$, $R_g=25\Omega$, starting $T_J=25^{\circ}\text{C}$.

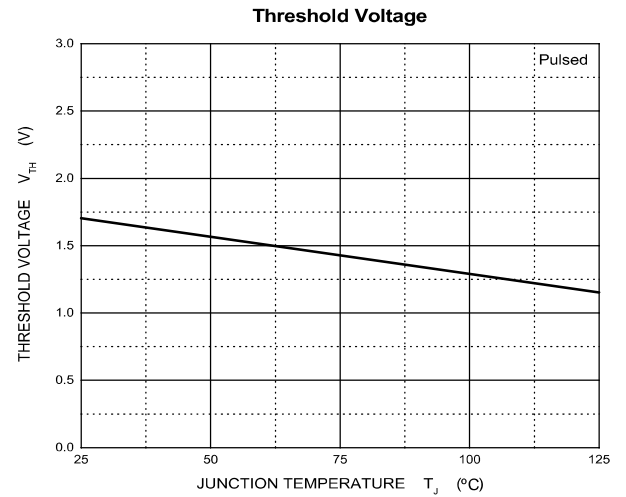
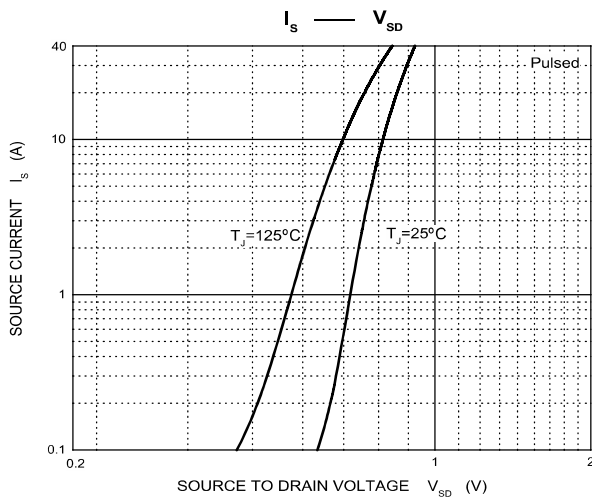
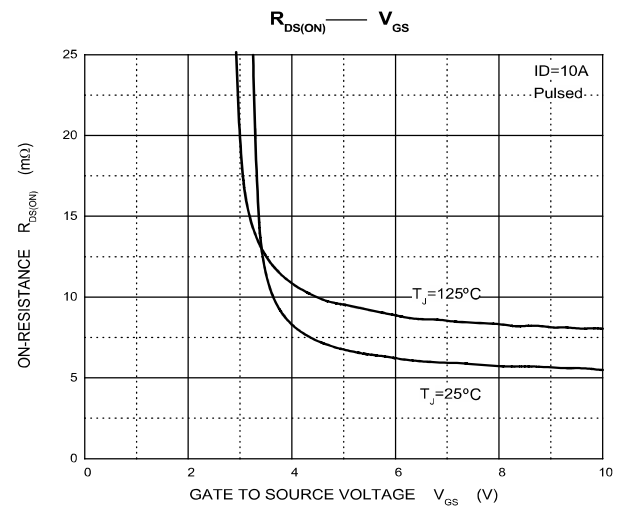
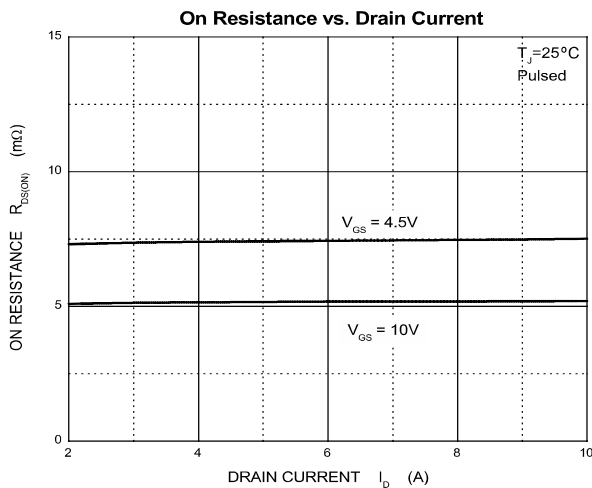
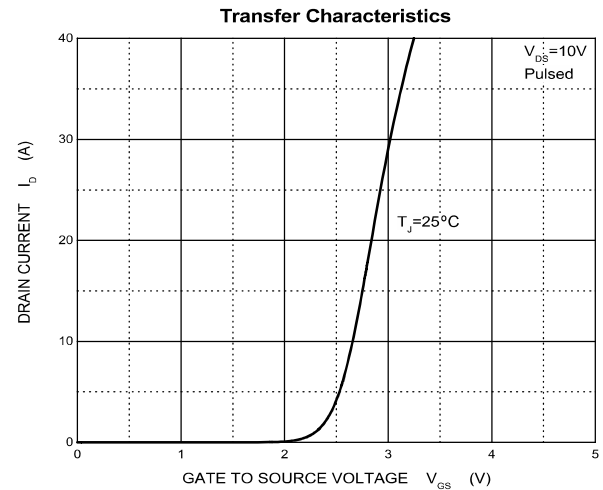
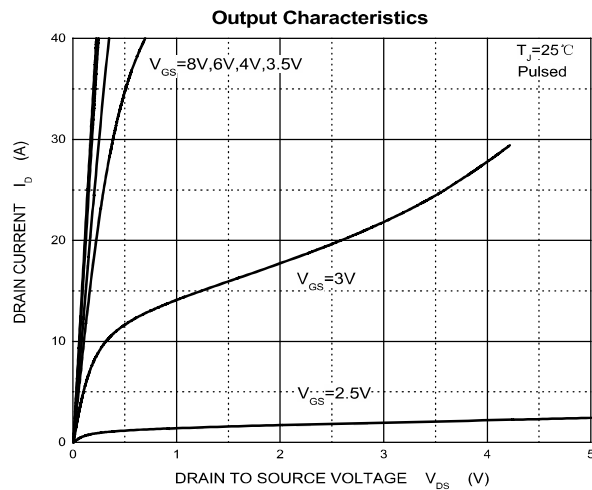
4. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

5. Guaranteed by design, not subject to production.

6. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. copper, in a still air environment with $T_A=25^{\circ}\text{C}$.

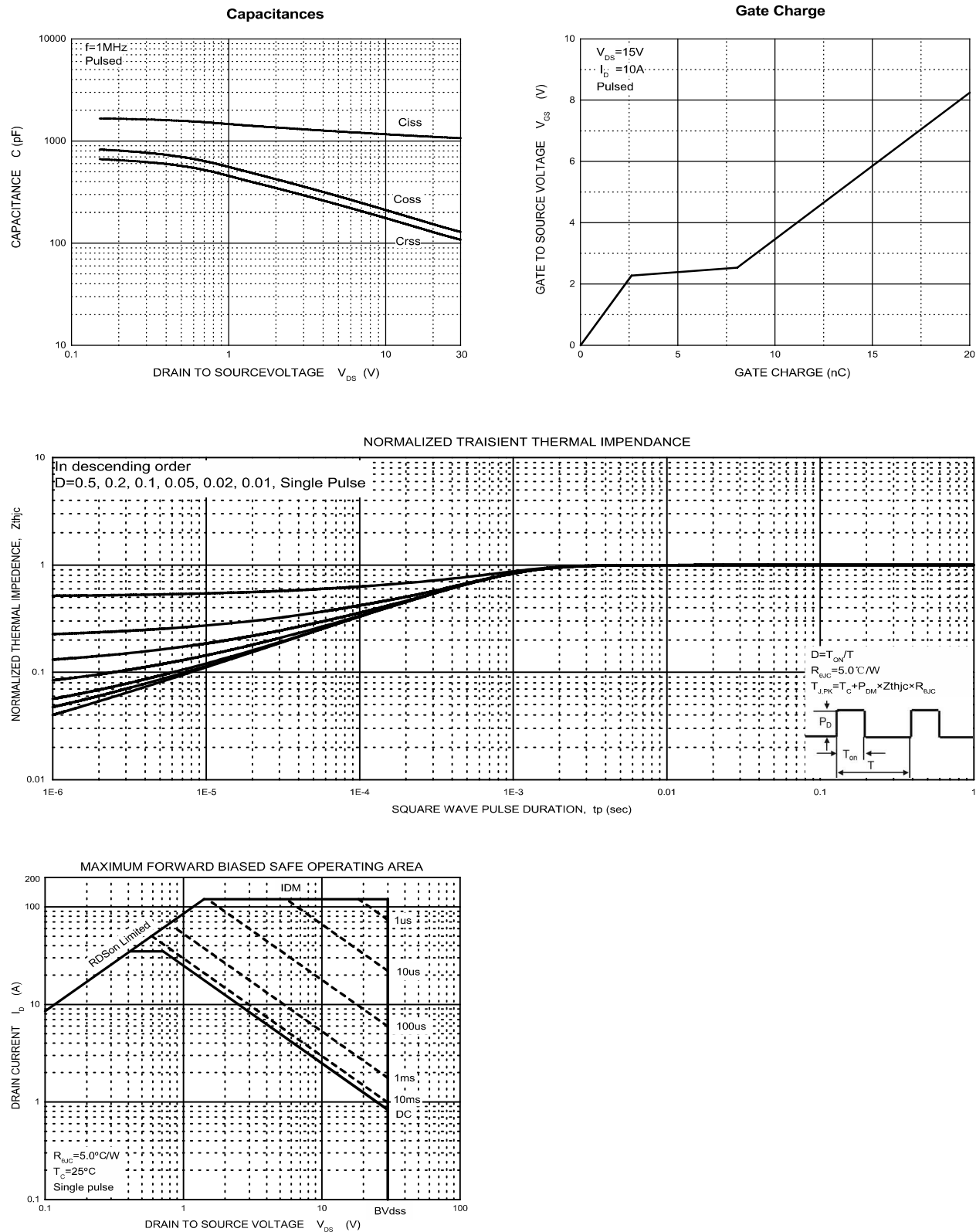
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Rating and characteristic curves



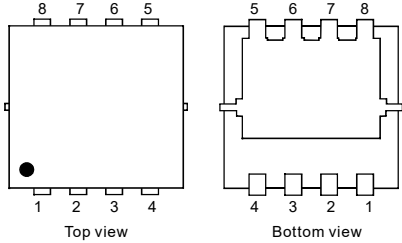
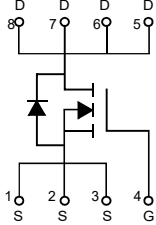
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Rating and characteristic curves



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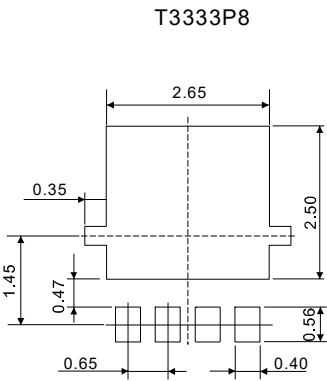
Pinning information

Pin	Simplified outline	Symbol
Pin 1, 2, 3 Source		
Pin 4 Gate		
Pin 5, 6, 7, 8 Drain		

Marking

Type number	Marking code
FMOSTHAB35N03-H	AB35N03

Suggested solder pad layout

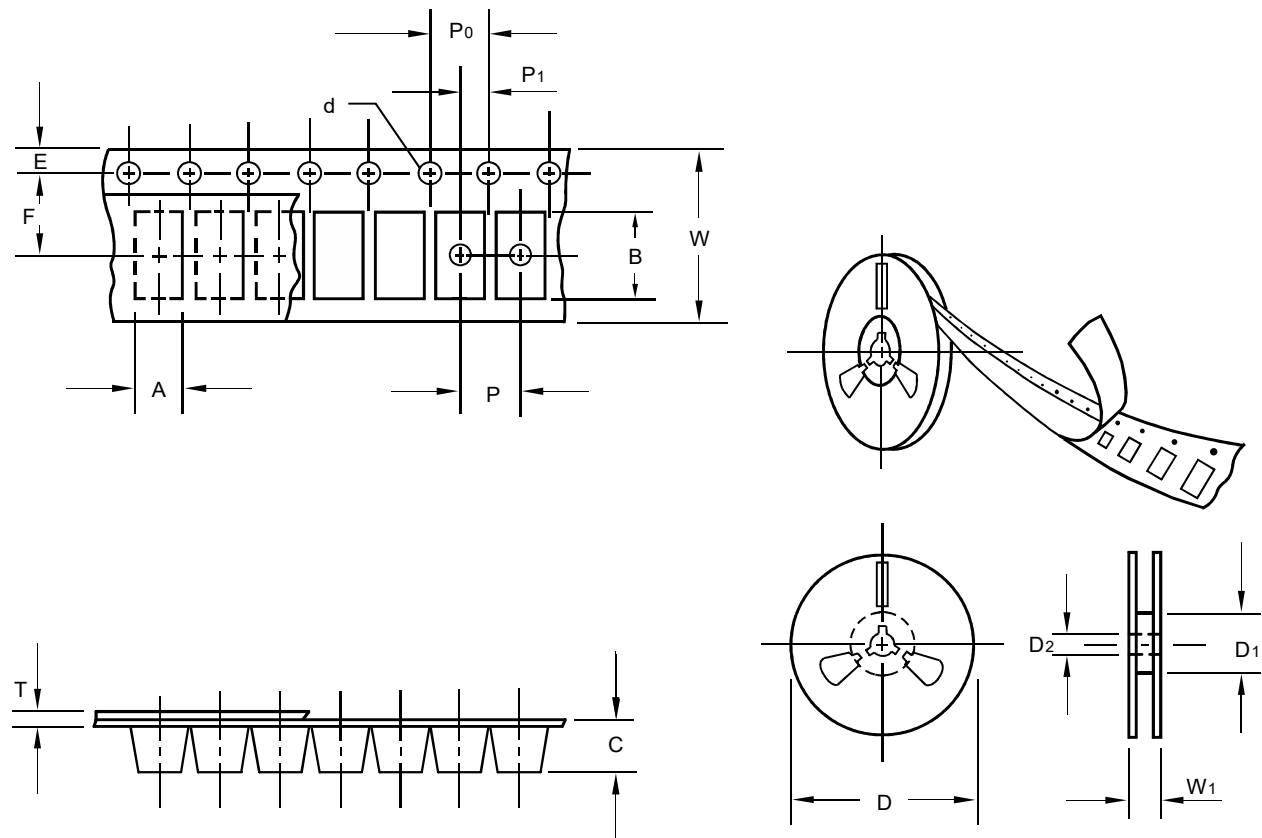


Note:

- 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.

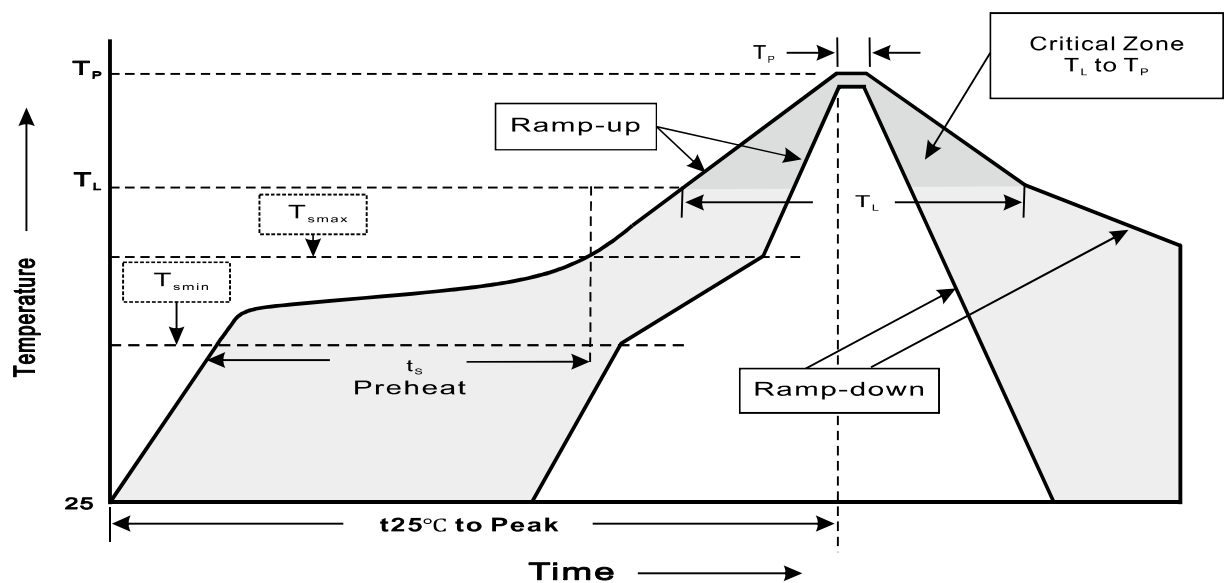
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Reel packing

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"	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