

FMOS3407C-H

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FMOS3407C-H

-4.1A -30V P-Channel Enhancement Mode Power MOSFET

Features

- $V_{DS} = -30V$, $I_D = -4.1A$.
- $R_{DS(ON)} < 55m\Omega$, $V_{GS} = -10V$, $I_D = -3.5A$.
- $R_{DS(ON)} < 85m\Omega$, $V_{GS} = -4.5V$, $I_D = -2.5A$.
- Low thermal resistance .
- Fast gate charge.
- Lead-free parts meet RoHS requirements.

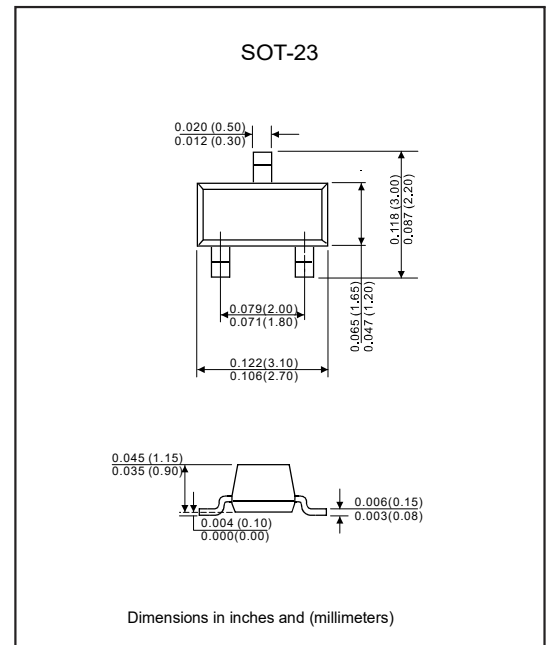
Applications

- Load switch for portable devices.
- Voltage controlled small signal switch.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-23.
- Mounting Position : Any.

Package outline



Maximum Ratings (At $T_A = 25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain source voltage	$-V_{DS}$	30	V
Gate source voltage	V_{GS}	± 20	V
Drain current continuous $T_c = 25^\circ C$	$-I_D$	4.1	A
Pulsed drain current	$-I_{DM}$	25	A
Power dissipation $T_c = 25^\circ C$	P_D	1.25	W
Thermal resistance, junction to ambient (Note1)	$R_{\theta JA}$	100	$^\circ C/W$
Operating junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 to +150	$^\circ C$

Note: 1. Device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with $T_A = 25^\circ C$.

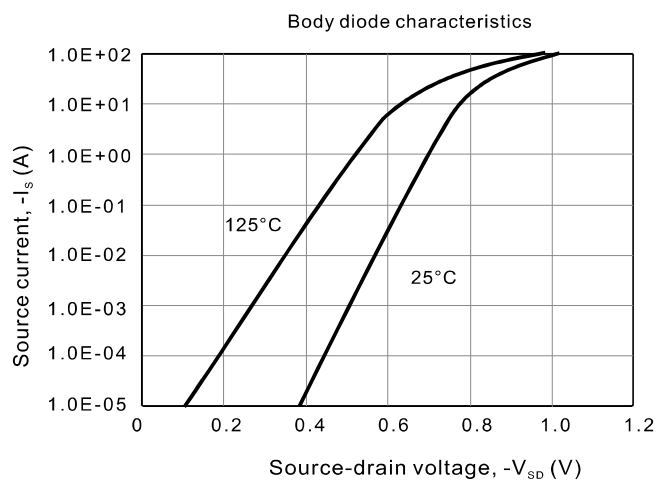
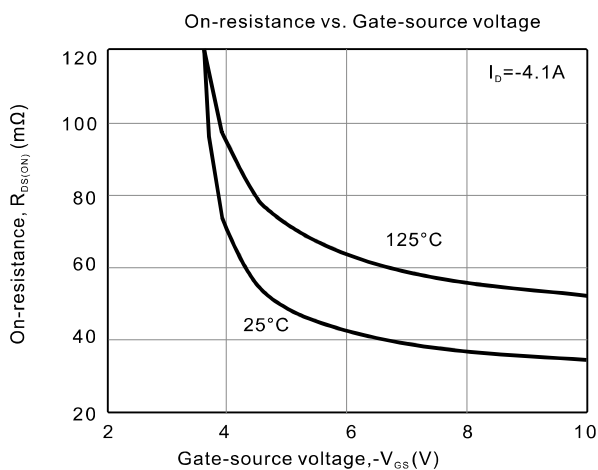
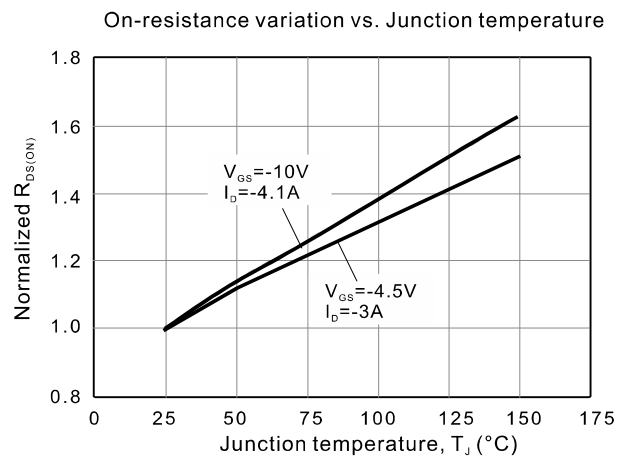
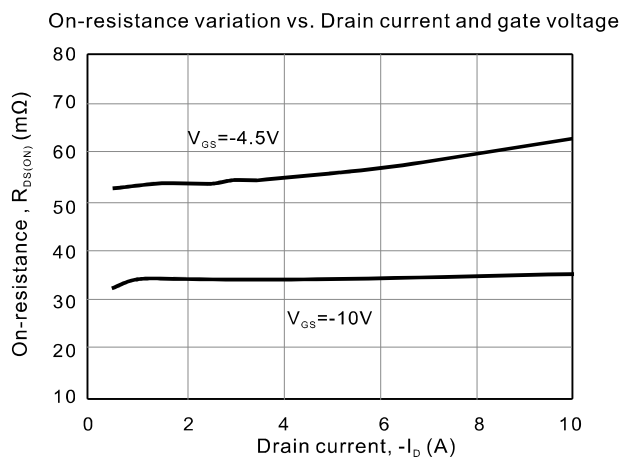
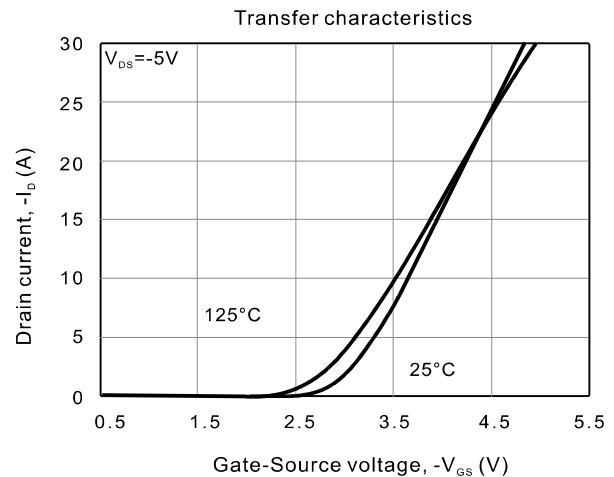
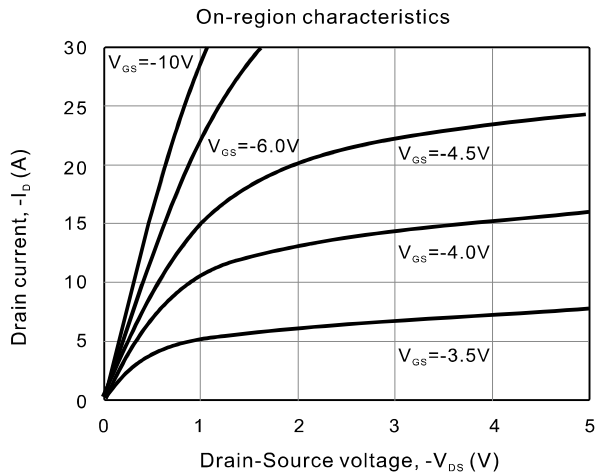
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Electrical characteristics (At $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$-I_D=250\mu\text{A}$	$-BV_{\text{DSS}}$	30			V
Drain-source leakage current	$-V_{\text{DS}}=30\text{V}$, $V_{\text{GS}}=0\text{V}$	$-I_{\text{DSS}}$			1	μA
Gate-source leakage current	$V_{\text{GS}}=\pm 20\text{V}$, $V_{\text{DS}}=0\text{V}$	I_{GSS}			± 100	nA
On characteristics						
Gate threshold voltage	$V_{\text{DS}}=V_{\text{GS}}$, $-I_D=250\mu\text{A}$	$-V_{\text{GS(TH)}}$	1		2.5	V
Static drain-source on-state resistance	$-V_{\text{GS}}=10\text{V}$, $-I_D=3.5\text{A}$	$R_{\text{DS(ON)}}$		42	55	m Ω
	$-V_{\text{GS}}=4.5\text{V}$, $-I_D=2.5\text{A}$			62	85	
Forward transconductance	$-V_{\text{DS}}=5\text{V}$, $-I_D=4.1\text{A}$	g_{FS}		10		S
Dynamic parameters						
Input capacitance	$V_{\text{GS}}=0\text{V}$, $-V_{\text{DS}}=15\text{V}$, $f=1.0\text{MHz}$	C_{iss}		520		pF
Out capacitance		C_{oss}		100		
Reverse transfer capacitance		C_{rss}		65		
Gate resistance	$-V_{\text{DS}}=0\text{V}$, $f=1.0\text{MHz}$	R_g		7.5		Ω
Switching parameters						
Total gate charge	$-V_{\text{GS}}=10\text{V}$, $-V_{\text{DS}}=15\text{V}$, $-I_D=4.1\text{A}$	Q_g		9.2		nC
	$-V_{\text{GS}}=4.5\text{V}$, $-V_{\text{DS}}=15\text{V}$, $-I_D=4.1\text{A}$			4.6		
Gate to source charge	$-V_{\text{GS}}=10\text{V}$, $-V_{\text{DS}}=15\text{V}$, $-I_D=4.1\text{A}$	Q_{gs}		1.6		
Gate to drain charge		Q_{gd}		2.2		
Turn-on delay time	$-V_{\text{DS}}=15\text{V}$, $-V_{\text{GS}}=10\text{V}$, $R_g=3.65\Omega$, $R_{\text{GEN}}=3\Omega$	$t_{\text{d(on)}}$		7.5		ns
Rise time		t_r		5.5		
Turn-off delay time		$t_{\text{d(off)}}$		19		
Fall time		t_f		7		
Source-drain diode ratings and characteristics						
Drain-source diode forward voltage	$-I_{\text{SD}}=0.75\text{A}$, $V_{\text{GS}}=0\text{V}$	$-V_{\text{SD}}$			1	V
Diode continuous current	$-I_{\text{SD}}=4\text{A}$, $di/dt=100\text{A}/\mu\text{s}$	t_{rr}		11		A
Pulsed drain-source diode forward current	$-I_{\text{SD}}=4\text{A}$, $di/dt=100\text{A}/\mu\text{s}$	Q_{rr}		5.3		A

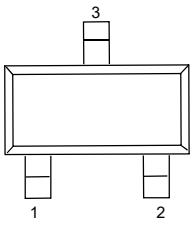
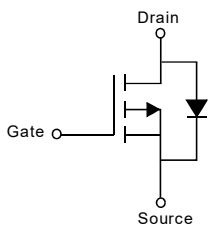
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Rating and Characteristic Curves



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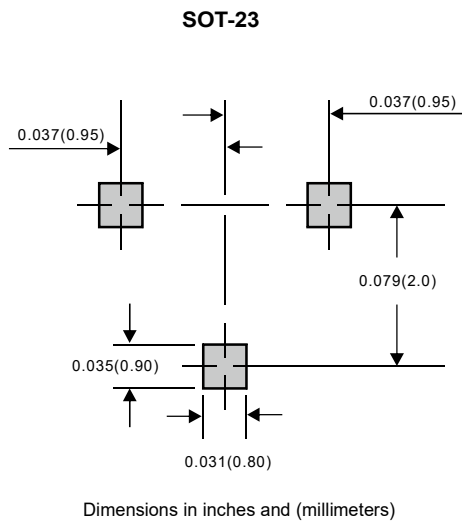
Pinning information

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

Marking

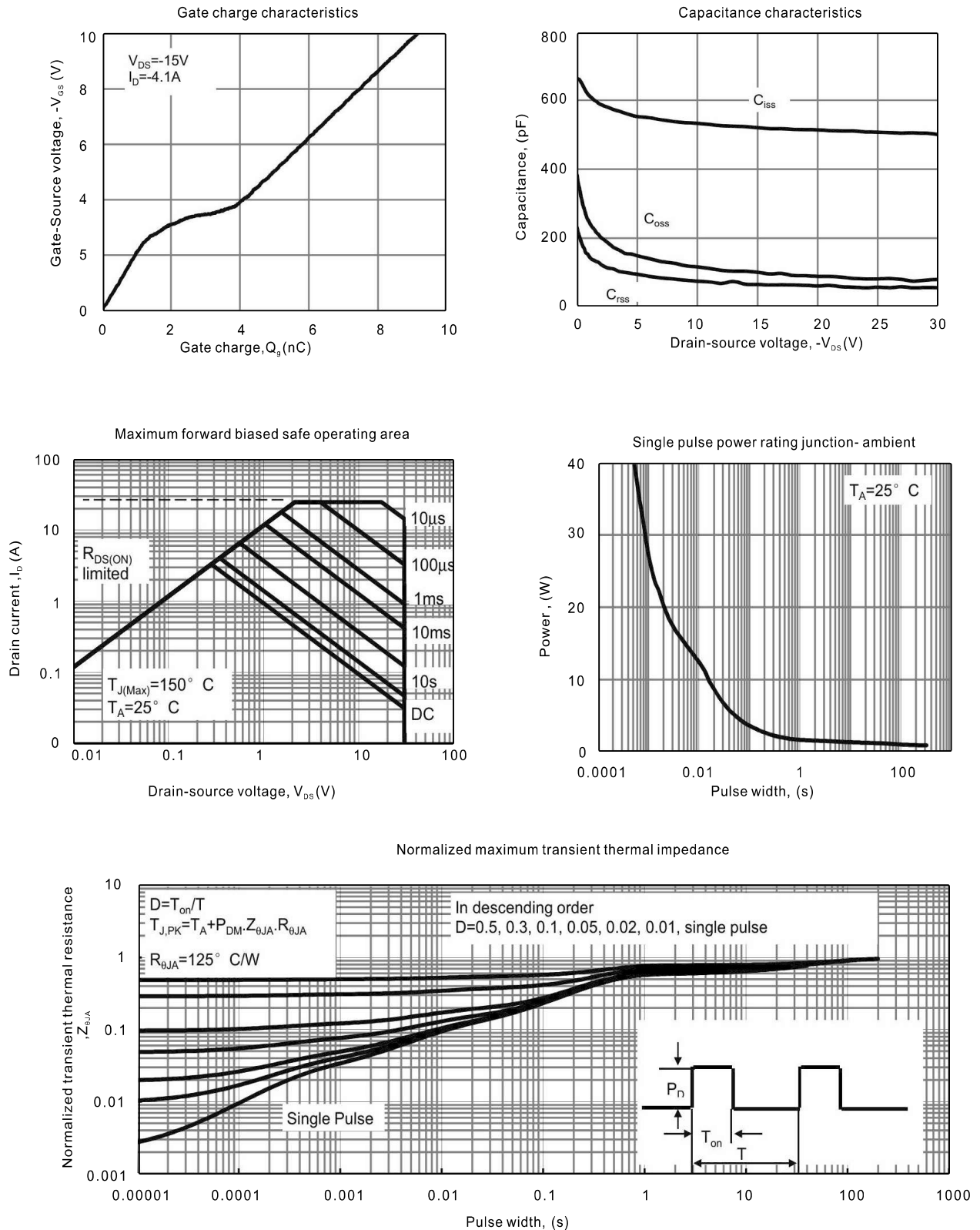
Type number	Marking code
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Suggested solder pad layout



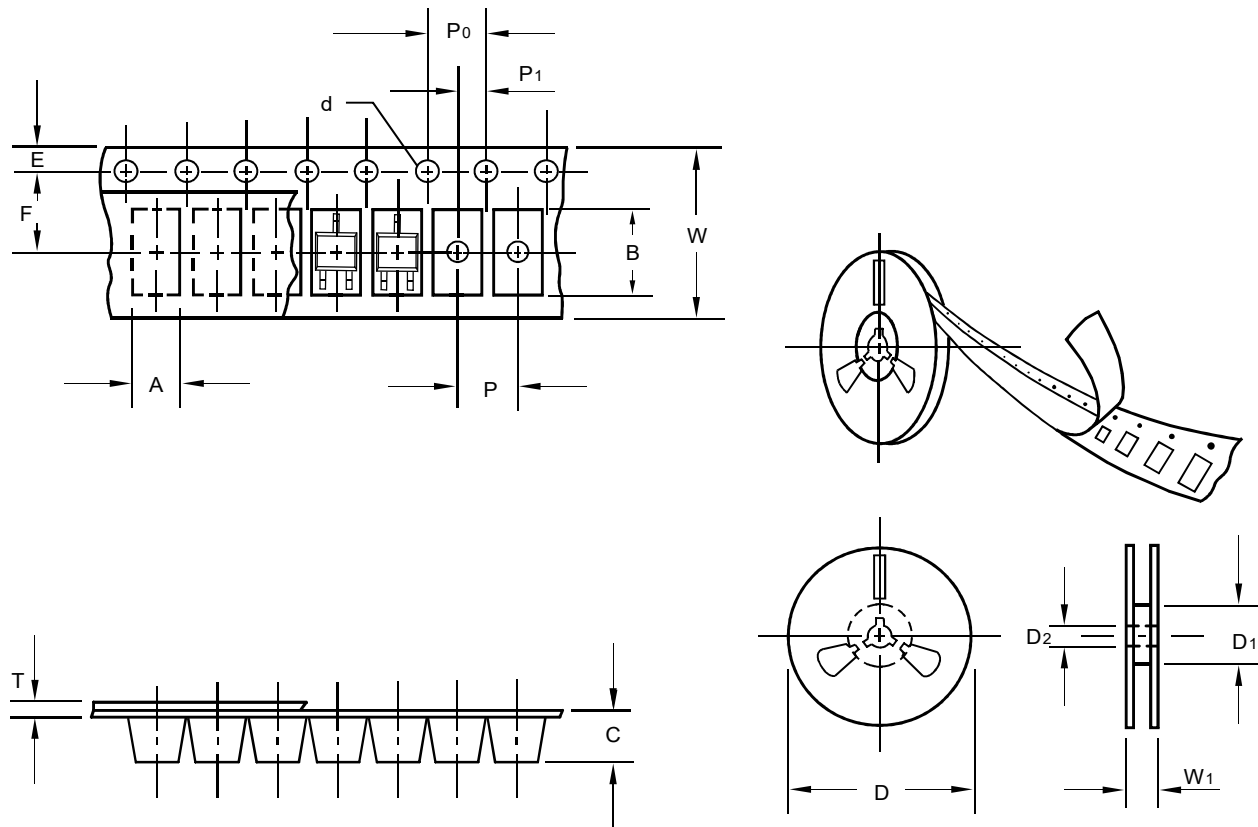
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Rating and Characteristic Curves



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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
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	54.40
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	12.3

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

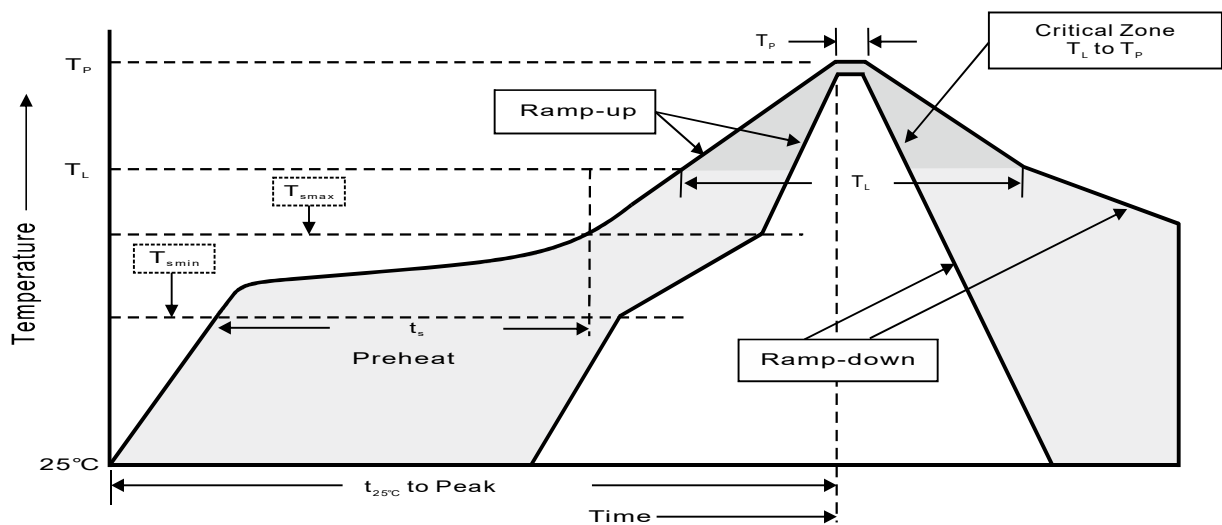
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Reel packing

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)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*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 ~ 120 sec
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 with 5°C of actual peak temperature (T_p)	10 ~30 sec
Ramp-down rate	< 6 °C/sec
Time 25°C to peak temperature	< 6 minutes