FMBTA13

List

List.....1

Package outline.....2

Features.....2

Mechanical data.....2

Maximum ratings 2

Electrical characteristics.....2

Pinning information.....3

Marking.....3

Suggested solder pad layout.....3

Package Information.....4

Reel packing.....5

Suggested thermal profiles for soldering processes.....5

FMBTA13

500mA, 30V Silicon NPN Epitaxial Darlington Transistor

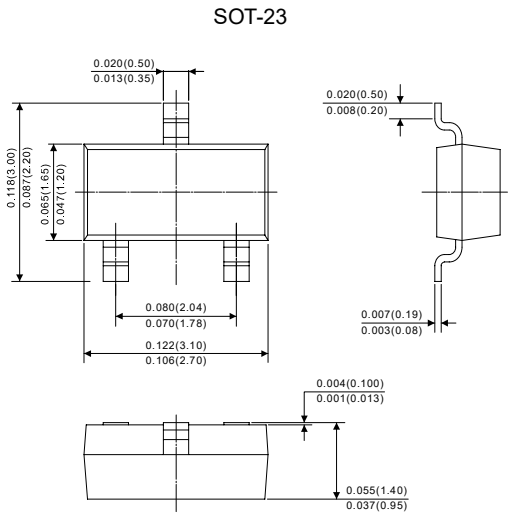
Features

- Darlington amplifier.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen free part, ex. FMBTA13-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

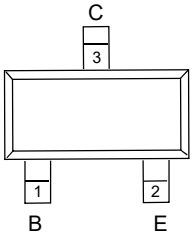
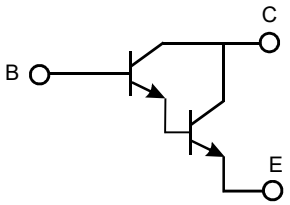
Parameter	Symbol	Value	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	30	V
Emitter to base voltage	V_{EBO}	10	V
Collector current	I_C	500	mA
Total power dissipation	P_D	200	mW
Thermal resistance, junction to ambient	$R_{\theta JA}$	357	℃/W
Junction temperature	T_j	+150	℃
Storage temperature range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (AT T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base cut off current	V_{CB} = 30V	I_{CBO}			0.1	μA
Emitter-Base cut-off current	V_{EB} = 10V	I_{EBO}			0.1	μA
Collector-emitter saturation voltage	I_C =100mA, I_B = 100μA	$V_{CE(SAT)}$			1.5	V
Collector-emitter breakdown voltage	I_C = 100μA	$V_{(BR)CES}$	30			V
Base on voltage	I_C = 100mA, V_{CE} = 5V	$V_{BE(ON)}$			2	V
DC current gain	V_{CE} = 5V, I_C = 10mA	h_{FE}	5000			
	V_{CE} = 5V, I_C = 100mA		10000			
Transition Frequency	V_{CE} = 10V, I_C = 10mA, f = 100MHz	f_T	125			MHz

FMBTA13

Pinning information

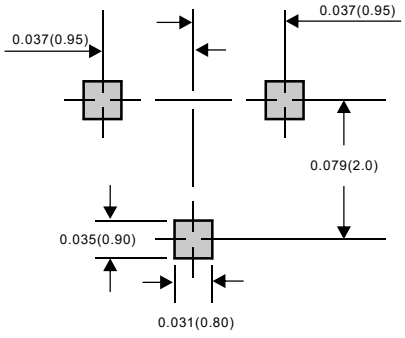
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type Number	Marking Code
FMBTA13	K2D

Suggested solder pad layout

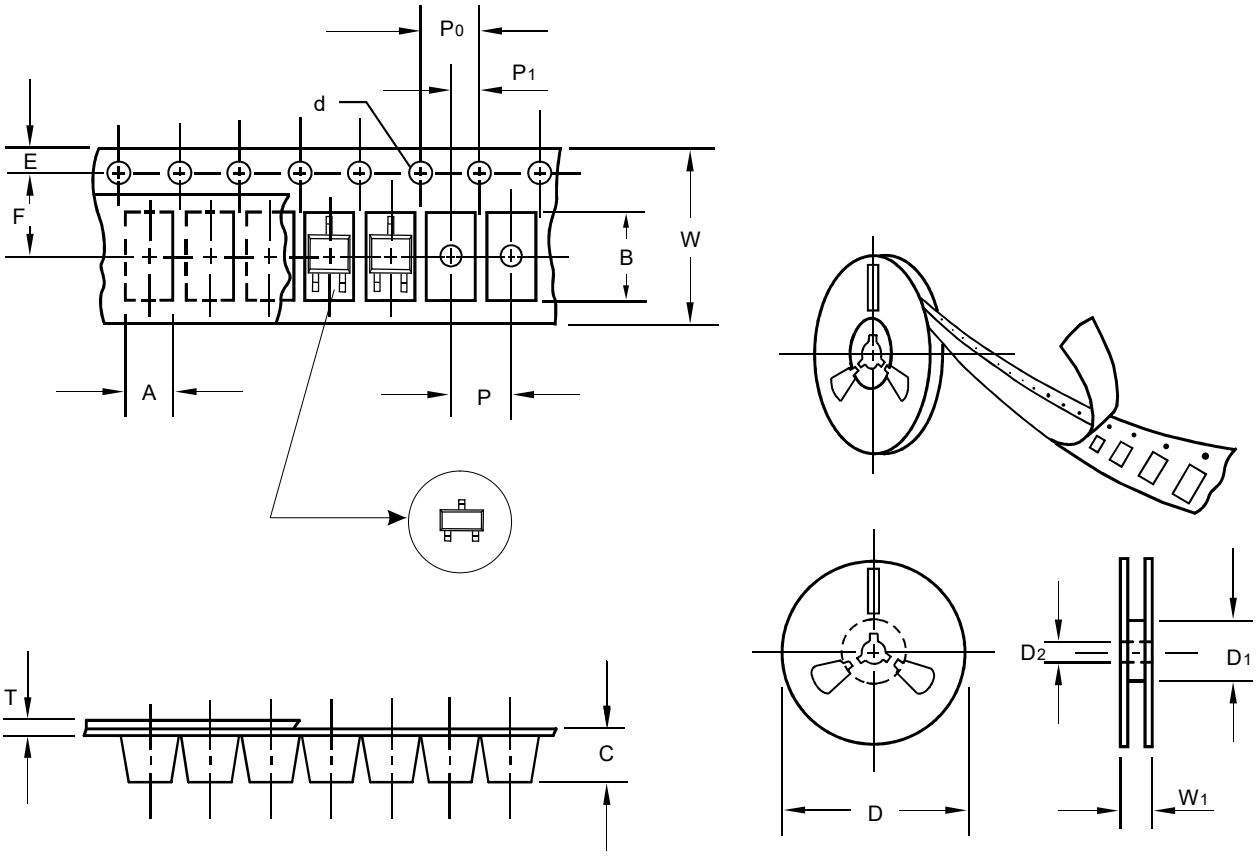
SOT-23



Dimensions in inches and (millimeters)

FMBTA13

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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	54.40
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

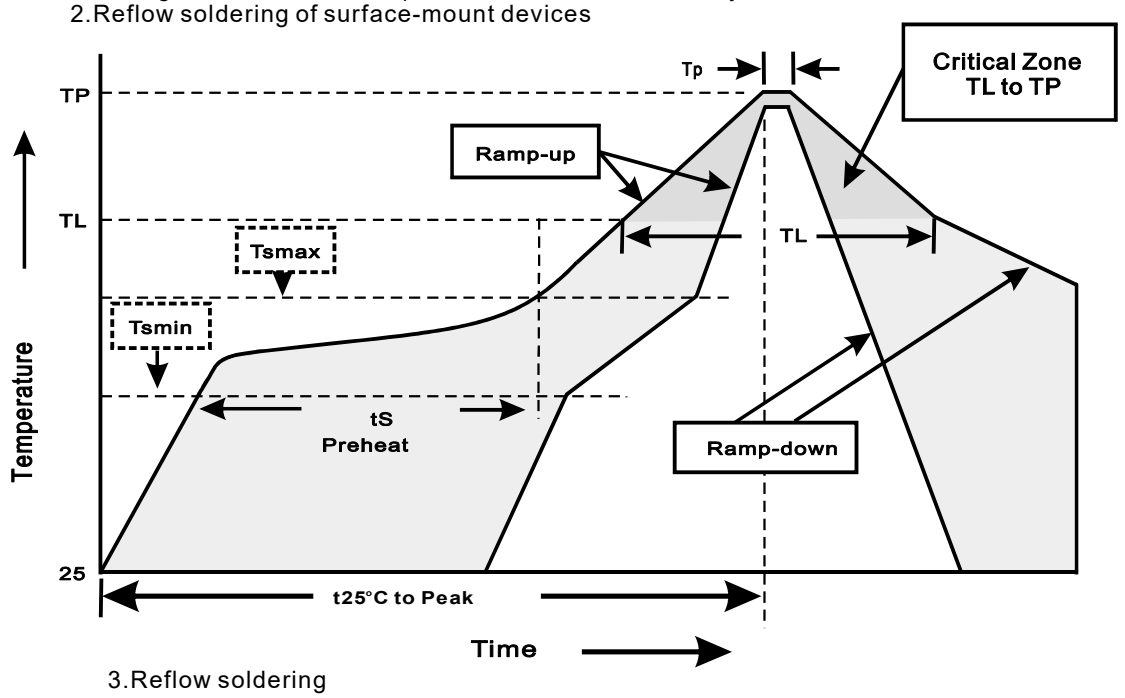
FMBTA13

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)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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