

FS8050**List**

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FS8050

NPN Plastic-Encapsulate Transistor

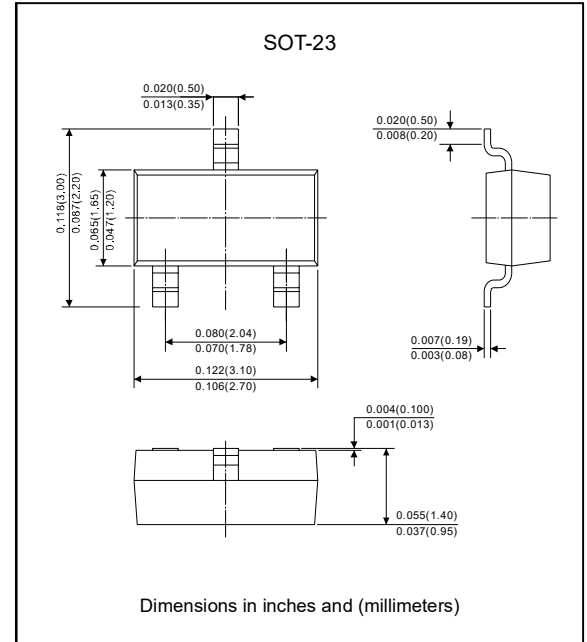
Features

- Switching transistor.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. FS8050-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



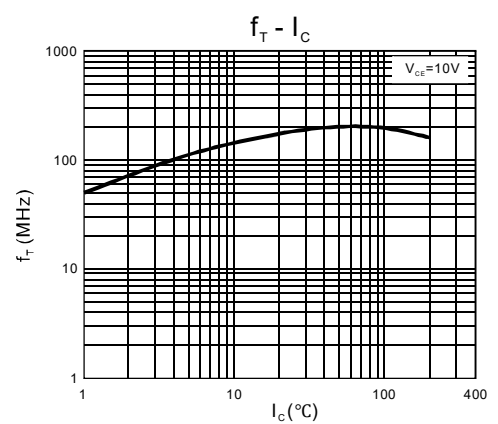
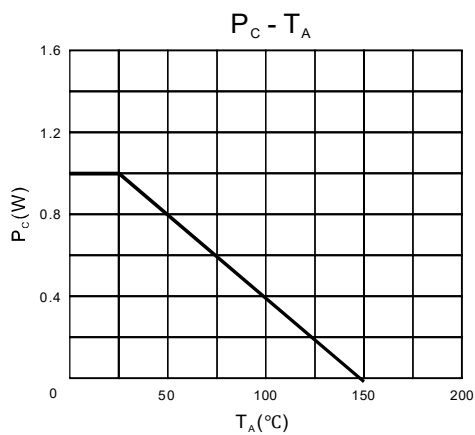
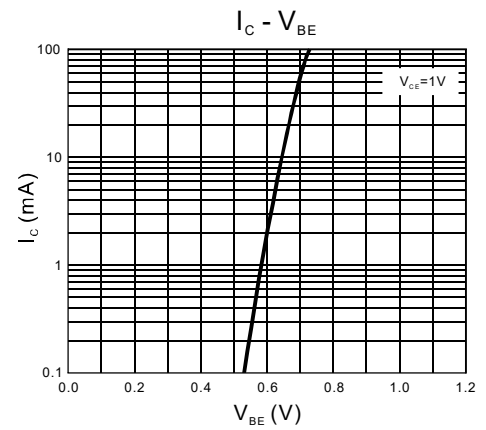
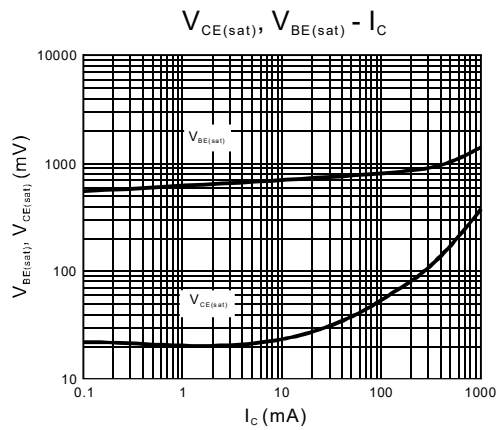
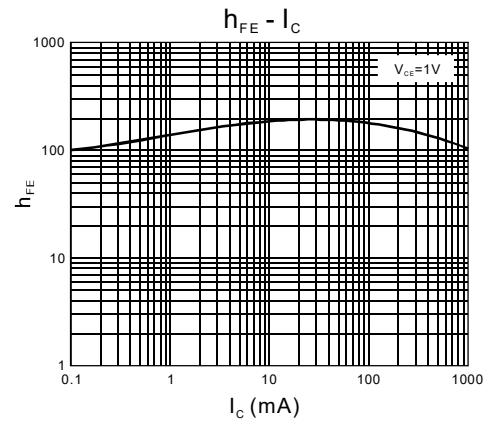
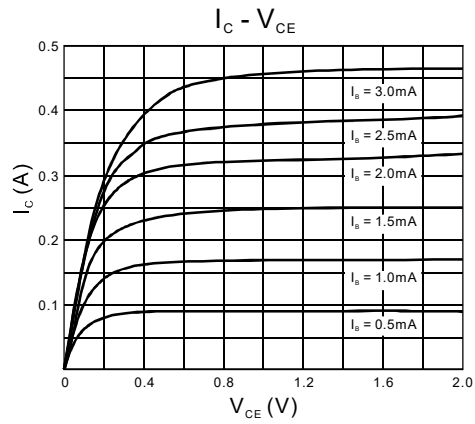
Maximum ratings (At $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to base voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	25	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	1.5	A
Total power dissipation	P_C	300	mW
Junction temperature	T_j	+150	$^{\circ}\text{C}$
Storage temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Thermal resistance form junction to ambient	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$

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

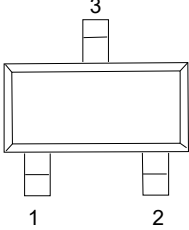
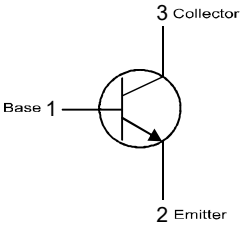
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector to base breakdown voltage	$I_C=100\mu\text{A}$, $I_E=0$	BV_{CBO}	40			V
Collector to emitter breakdown voltage	$I_C=0.1\text{mA}$, $I_E=0$	BV_{CEO}	25			V
Emitter to base breakdown voltage	$I_E=100\mu\text{A}$, $I_C=0\text{V}$	BV_{EBO}	5			V
Collector-base cut-off current	$V_{CB}=40\text{V}$, $I_E=0$	I_{CBO}			0.1	μA
Collector-emitter cut-off current	$V_{CE}=20\text{V}$, $I_B=0$	I_{CEO}			0.1	μA
Emitter-base cut-off current	$V_{EB}=5\text{V}$, $I_C=0$	I_{EBO}			0.1	μA
DC current gain	$V_{CE}=1\text{V}$, $I_C=100\text{mA}$	$h_{FE(1)}$	200		350	
	$V_{CE}=1\text{V}$, $I_C=800\text{mA}$	$h_{FE(2)}$	40			
Collector-Emitter saturation voltage	$I_C=800\text{mA}$, $I_B=15\text{mA}$	$V_{CE(sat)}$			0.5	V
Base-emitter saturation voltage	$I_C=800\text{mA}$, $I_B=15\text{mA}$	$V_{BE(sat)}$			1.2	V
Current gain bandwidth product	$V_{CE}=10\text{V}$, $I_C=50\text{mA}$, $f=30\text{MHz}$	f_T	100			MHz

Rating and characteristic curves (FS8050)



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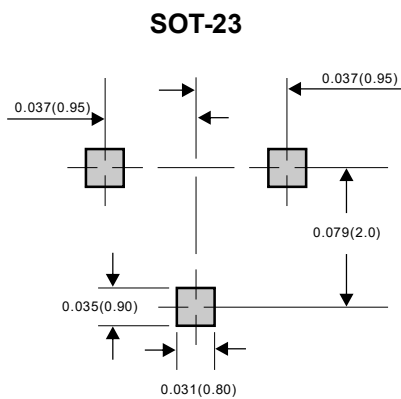
Pinning information

Pin	Simplified outline	Symbol
Pin1 BASE Pin2 EMITTER Pin3 COLLECTOR		

Marking and resistor values

Type Number	Marking Code
FS8050	Y1

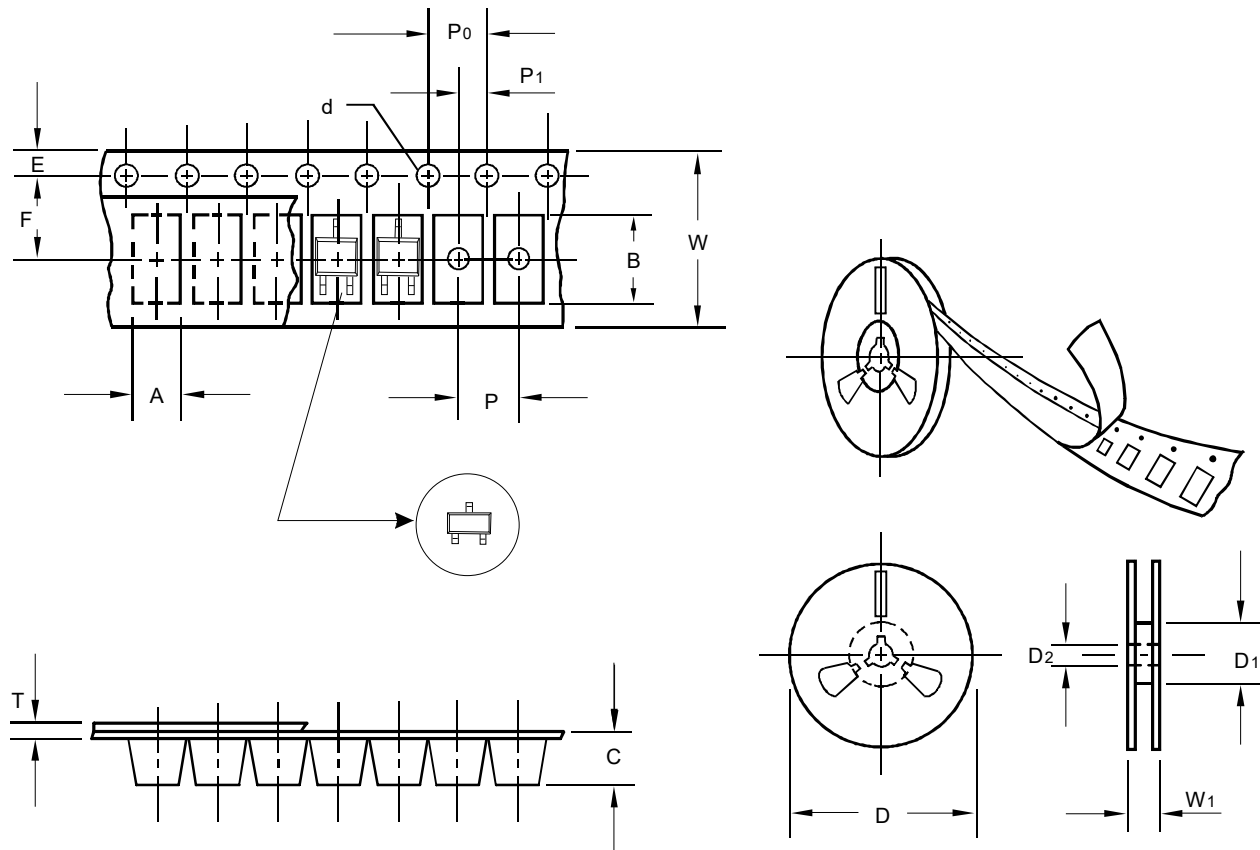
Suggested solder pad layout



Dimensions in inches and (millimeters)

FS8050

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	11.40

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

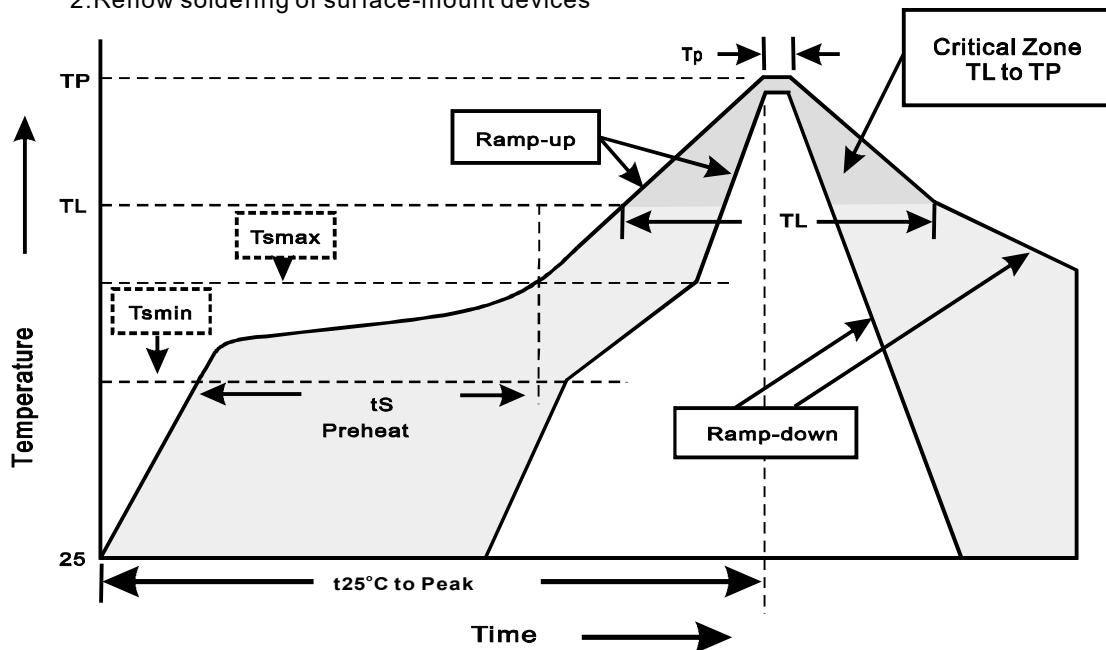
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Reel packing

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)	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(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} 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