

FMBTSC3875O/Y/G/L**List**

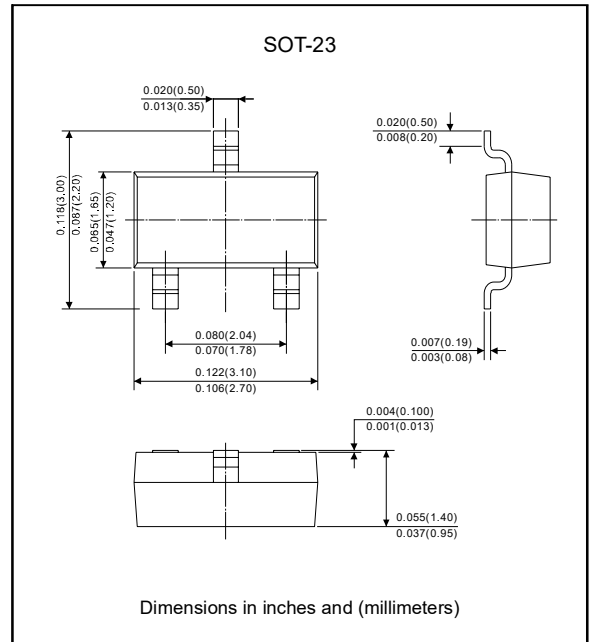
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FMBTSC3875O/Y/G/L**NPN Plastic-Encapsulate Transistor****Features**

- Switching transistor.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMBTSC3875O-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}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	150	mA
Base current	I_B	30	mA
Total power dissipation	P_D	200	mW
Junction temperature	T_j	+150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

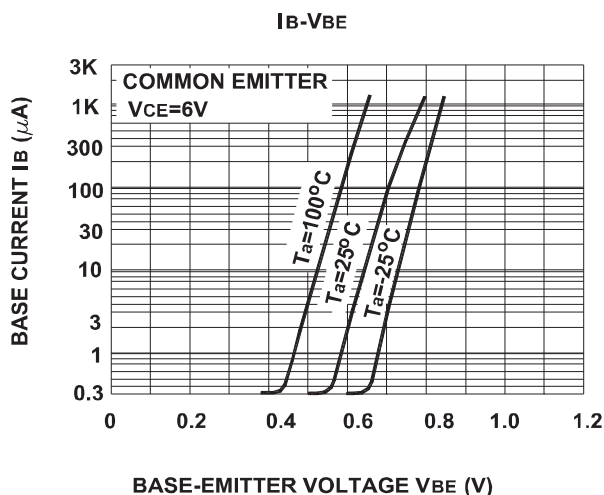
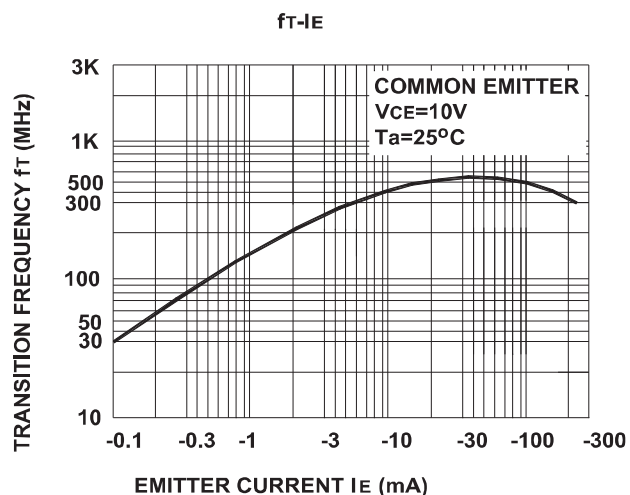
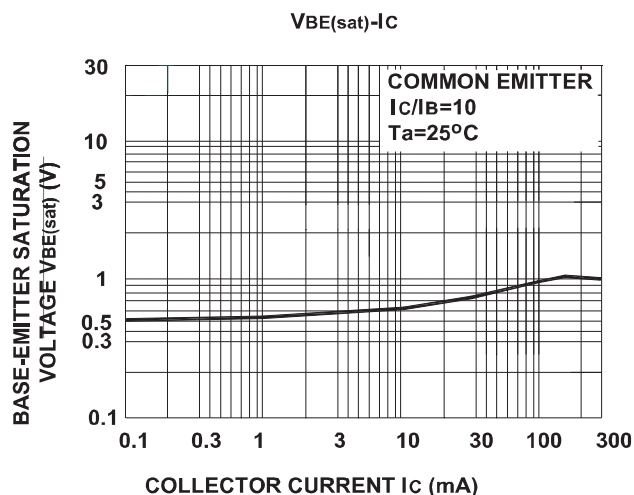
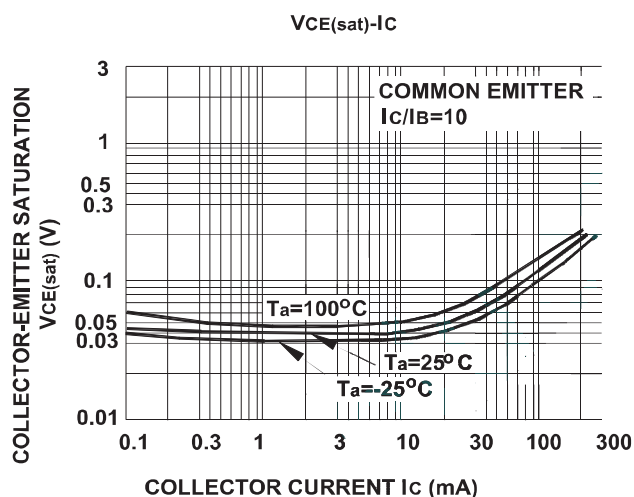
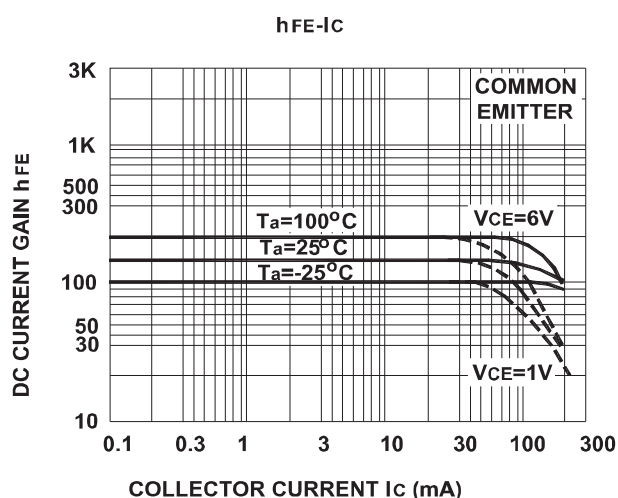
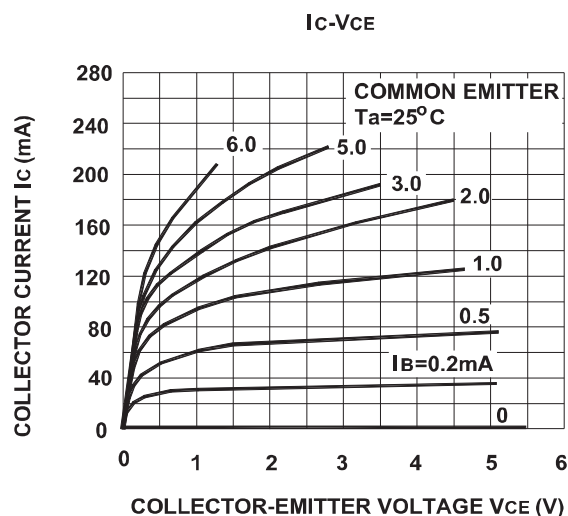
Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector emitter saturation voltage	$I_C=100\text{mA}$, $I_B=10\text{mA}$	$V_{CE(sat)}$			0.25	V
Collector-base cut-off current	$V_{CB}=60\text{V}$, $I_E=0$	I_{CBO}			0.1	μA
Emitter-base cut-off current	$V_{EB}=5\text{V}$, $I_C=0$	I_{EBO}			0.1	μA
DC current gain	$V_{CE}=6\text{V}$, $I_C=2\text{mA}$ Current gain group	h_{FE}	70		700	
Collector output capacitance	$V_{CB}=10\text{V}$, $f=1\text{MHz}$	C_{OB}		2	3.5	pF
Noise figure	$V_{CE}=6\text{V}$, $I_C=0.1\text{mA}$, $f=1\text{KHz}$, $R_G=10\text{K}\Omega$	NF		1	10	dB
Transition frequency	$V_{CE}=10\text{V}$, $I_C=1\text{mA}$	f_T	80			MHZ

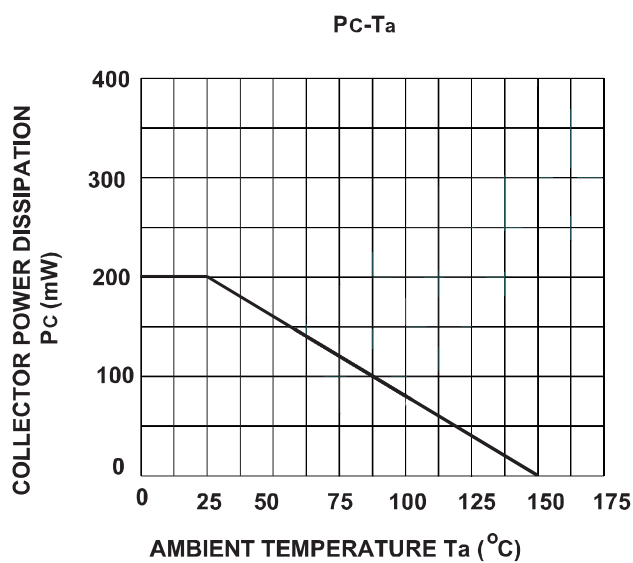
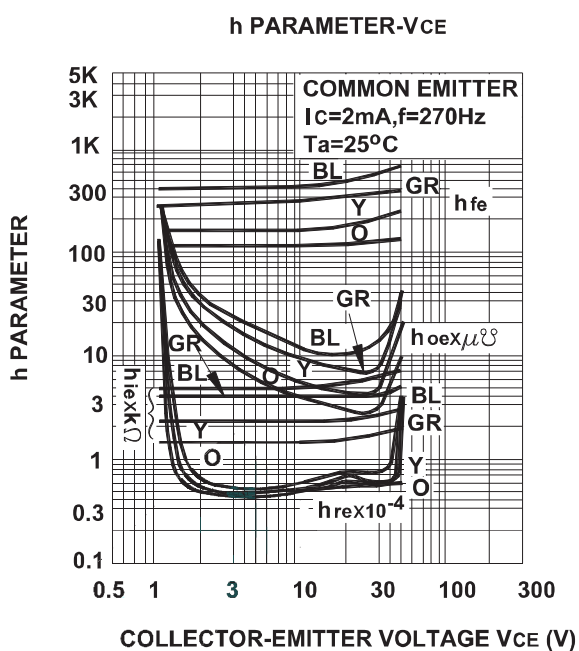
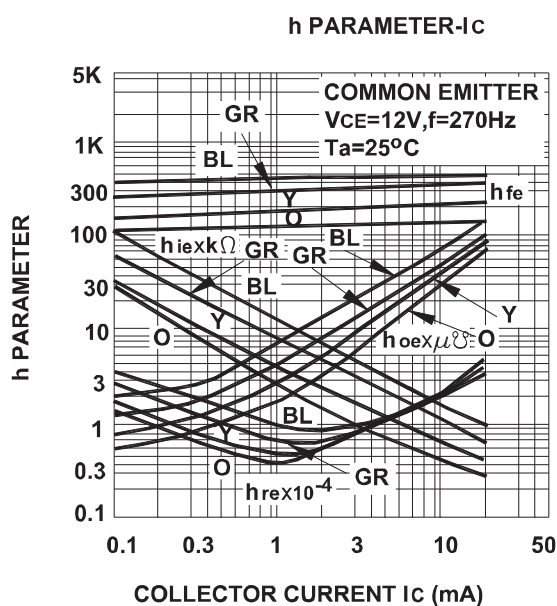
Classification of h_{FE}

Rank	FMBTSC3875O	FMBTSC3875Y	FMBTSC3875G	FMBTSC3875L
Range	70 ~ 140	120 ~ 240	200 ~ 400	300 ~ 700

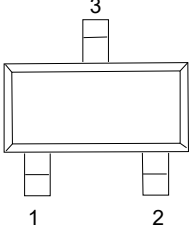
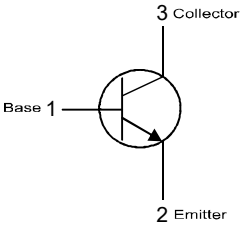
Rating and characteristic curves (FMBTSC38750/Y/G/L)



Rating and characteristic curves (FMBTSC3875O/Y/G/L)

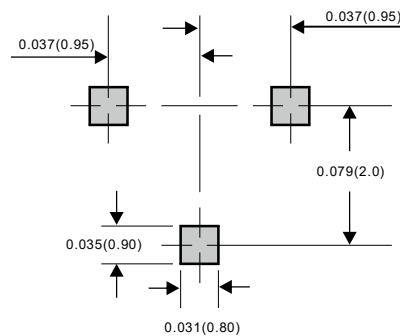


FMBTSC3875O/Y/G/L**Pinning information**

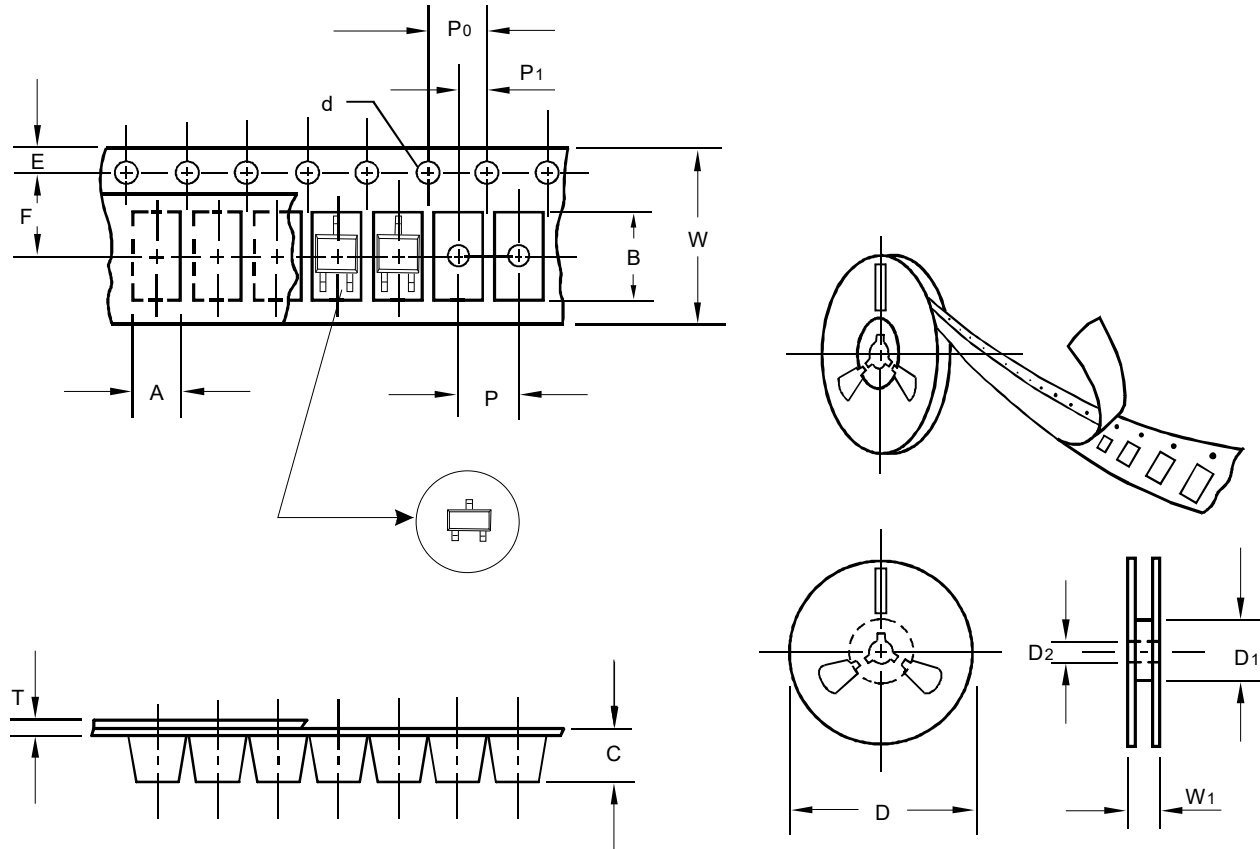
Pin	Simplified outline	Symbol
Pin1 BASE Pin2 EMITTER Pin3 COLLECTOR		

Marking

Type Number	Marking Code
FMBTSC3875O	ALO
FMBTSC3875Y	ALY
FMBTSC3875G	ALG
FMBTSC3875L	ALL

Suggested solder pad layout**SOT-23**

Dimensions in inches and (millimeters)

FMBTSC3875O/Y/G/L**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.

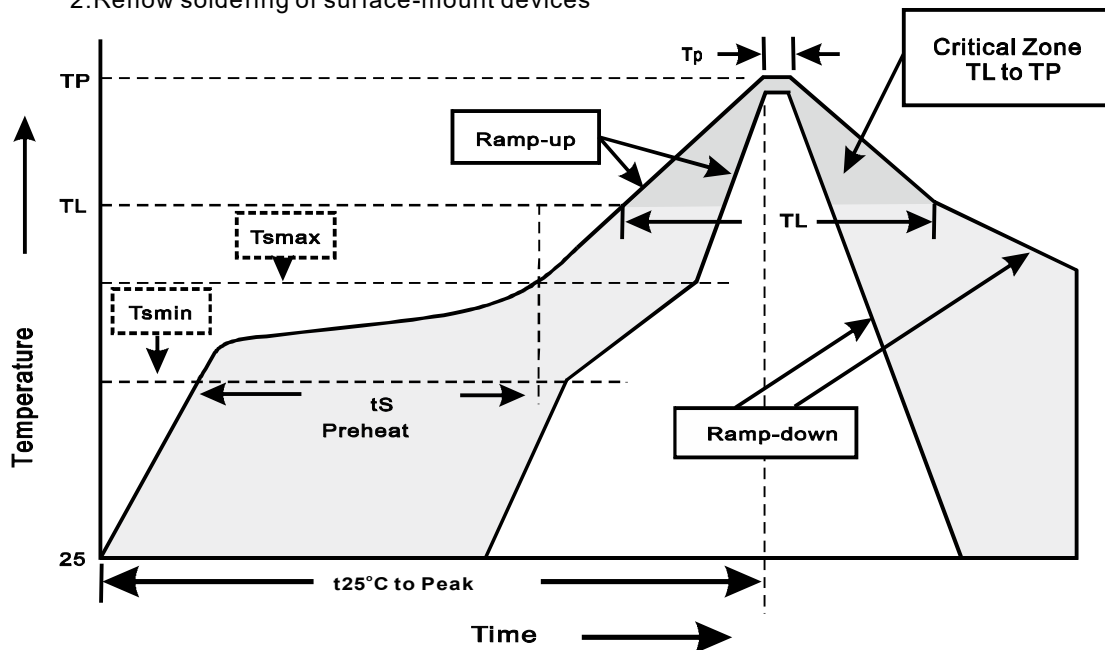
FMBTSC38750/Y/G/L

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