CHENMKO ENTERPRISE CO.,LTD

CH3904M1PT

SURFACE MOUNT
NPN Switching Transistor

VOLTAGE 40 Volts CURRENT 0.2 Ampere

Lead free devices

APPLICATION

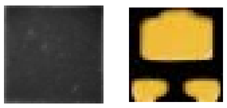
- * Telephony and proferssional communction equipment.
- * Other switching applications.

FEATURE

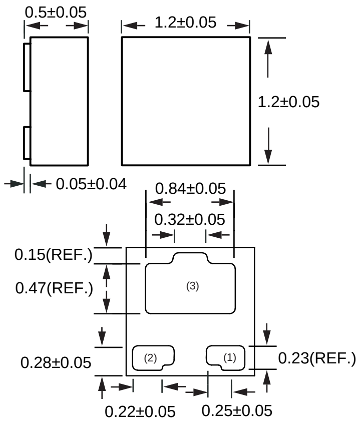
- * Small surface mounting type. (FBPT-723)
- * Low current (Max.=200mA).
- * Suitable for high packing density.
- * Low voltage (Max.=40V) .
- * High saturation current capability.
- * Voltage controlled small signal switch.

CONSTRUCTION

- * NPN Switching Transistor



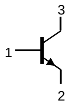
FBPT-723



Dimensions in millimeters

FBPT-723

CIRCUIT



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	60	V
V_{CEO}	collector-emitter voltage	open base	–	40	V
V_{EBO}	emitter-base voltage	open collector	–	6	V
I_C	collector current DC		–	200	mA
I_{CM}	peak collector current		–	200	mA
I_{BM}	peak base current		–	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	150	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

2006-07

Note

1. Transistor mounted on an FR4 printed-circuit board.

RATING CHARACTERISTIC CURVES (CH3904M1PT)

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0$; $V_{CB} = 30$ V	–	50	nA
I_{EBO}	emitter cut-off current	$I_C = 0$; $V_{EB} = 6$ V	–	50	nA
h_{FE}	DC current gain	$V_{CE} = 1$ V; note 1			
		$I_C = 0.1$ mA	60	–	
		$I_C = 1$ mA	80	–	
		$I_C = 10$ mA	100	300	
		$I_C = 50$ mA	60	–	
		$I_C = 100$ mA	30	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10$ mA; $I_B = 1$ mA	–	200	mV
		$I_C = 50$ mA; $I_B = 5$ mA	–	300	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10$ mA; $I_B = 1$ mA	650	850	mV
		$I_C = 50$ mA; $I_B = 5$ mA	–	950	mV
C_c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = 5$ V; f = 1 MHz	–	4	pF
C_e	emitter capacitance	$I_C = i_c = 0$; $V_{BE} = 500$ mV; f = 1 MHz	–	8	pF
f_T	transition frequency	$I_C = 10$ mA; $V_{CE} = 20$ V; f = 100 MHz	300	–	MHz
F	noise figure	$I_C = 100$ µA; $V_{CE} = 5$ V; $R_S = 1$ kΩ; f = 10 Hz to 15.7 kHz	–	5	dB
Switching times (between 10% and 90% levels);					
t_{on}	turn-on time	$I_{Con} = 10$ mA; $I_{Bon} = 1$ mA; $I_{Boff} = -1$ mA	–	65	ns
t_d	delay time		–	35	ns
t_r	rise time		–	35	ns
t_{off}	turn-off time		–	240	ns
t_s	storage time		–	200	ns
t_f	fall time		–	50	ns

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

RATING CHARACTERISTIC CURVES (CH3904M1PT)

Figure 1. Power Derating

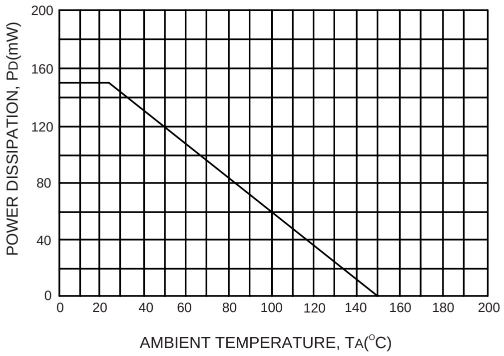


Figure 2. Collector-Emitter saturation voltage Characteristic

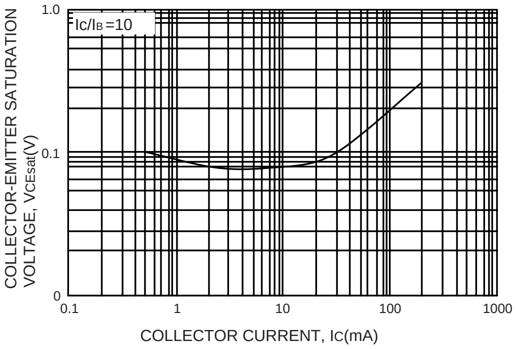


Figure 3. DC Current Gain