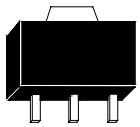
HM772

PNP EPITAXIAL PLANAR TRANSISTOR



SOT-89

Description

The HM772 is designed for use in output stage of amplifier, voltage regulator, DC-DC converter and driver.

Absolute Maximum Ratings

- Maximum Temperatures
  - Storage Temperature ..... -55 ~ +150 °C
  - Junction Temperature ..... +150 °C Maximum
- Maximum Power Dissipation
  - Total Power Dissipation (Ta=25°C) ..... 0.5 W (Note1)
  - Total Power Dissipation (Ta=25°C) ..... 2 W (Note2)
  - Total Power Dissipation (Tc=25°C) ..... 1 W (Note1)
  - Total Power Dissipation (Tc=25°C) ..... 4 W (Note2)
- Maximum Voltages and Currents (Ta=25°C)
  - V_{CBO} Collector to Base Voltage ..... -40 V
  - V_{CEO} Collector to Emitter Voltage ..... -30 V
  - V_{EBO} Emitter to Base Voltage ..... -5 V
  - I_C Collector Current (continuous) ..... -3 A
  - I_C Collector Current (pulse) ..... -7 A (Note3)

Thermal Characteristic

Characteristic	Symbol	Max.	Unit
Thermal Resistance, junction to ambient (Note1)	$R_{\theta ja}$	250	°C/W
Thermal Resistance, junction to ambient (Note2)	$R_{\theta ja}$	62.5	°C/W
Thermal Resistance, junction to case (Note1)	$R_{\theta jc}$	125	°C/W
Thermal Resistance, junction to case (Note2)	$R_{\theta jc}$	31.25	°C/W

Note1: When tested in free air condition, without heat sinking.
Note2: When mounted on a 40X40X1mm ceramic board.
Note3: Single pulse PW=1ms

Electrical Characteristics (Ta=25°C)

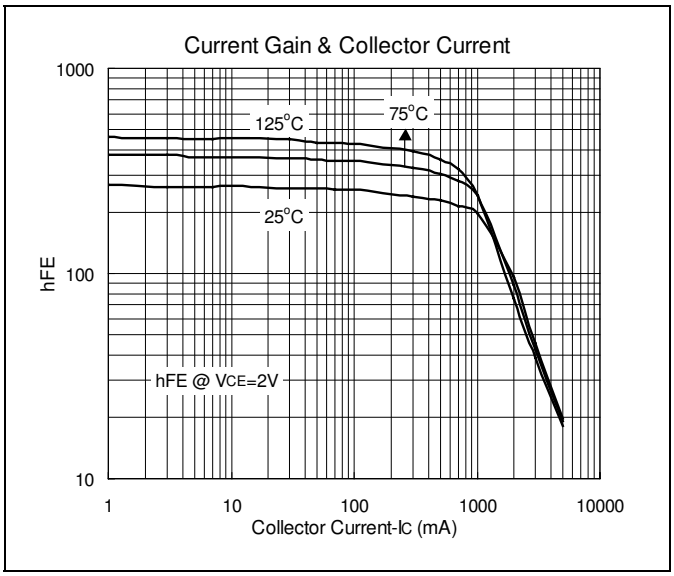
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-40	-	-	V	I_C=-100uA
BV_{CEO}	-30	-	-	V	I_C=-1mA
BV_{EBO}	-5	-	-	V	I_E=-10uA
I_{CBO}	-	-	-1	uA	V_{CB}=-30V
I_{EBO}	-	-	-1	uA	V_{EB}=-3V
*$V_{CE(sat)}$	-	-	-0.5	V	I_C=-2A, I_B=-0.2A
*$V_{BE(sat)}$	-	-1	-2	V	I_C=-2A, I_B=-0.2A
*h_{FE1}	30	-	-		V_{CE}=-2V, I_C=-20mA
*h_{FE2}	100	160	500		V_{CE}=-2V, I_C=-1A
f_T	-	80	-	MHz	V_{CE}=-5V, I_C=-100mA, f=100MHz
Cob	-	55	-	pF	V_{CB}=-10V, f=1MHz

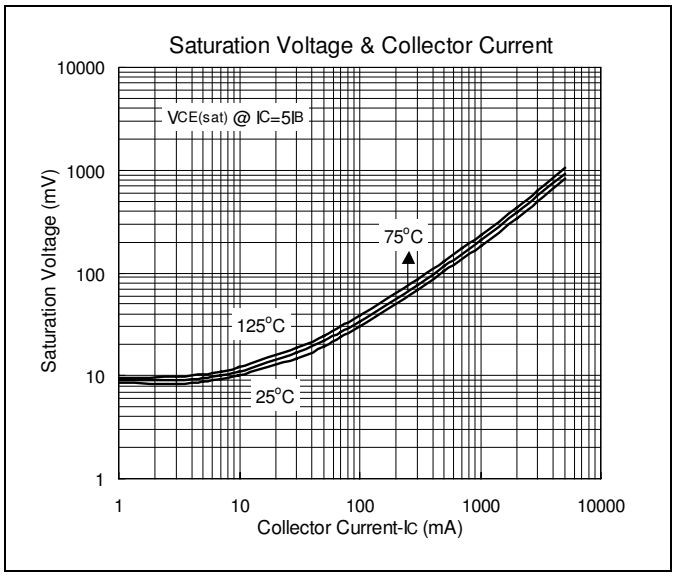
*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

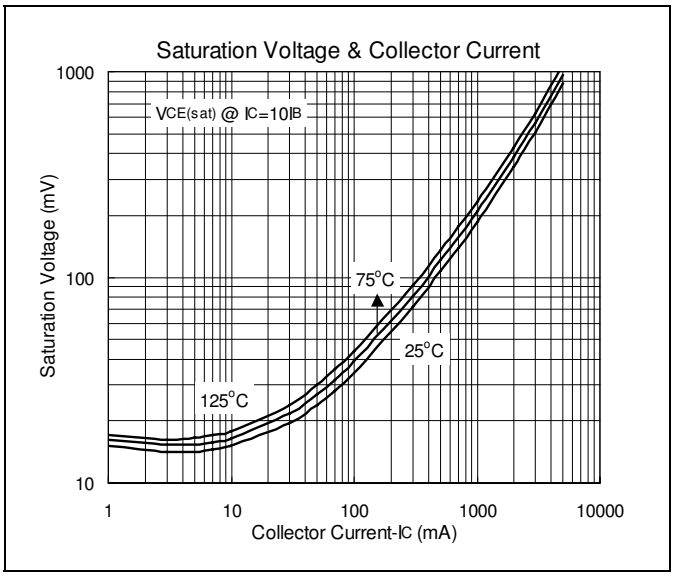
Classification Of hFE2

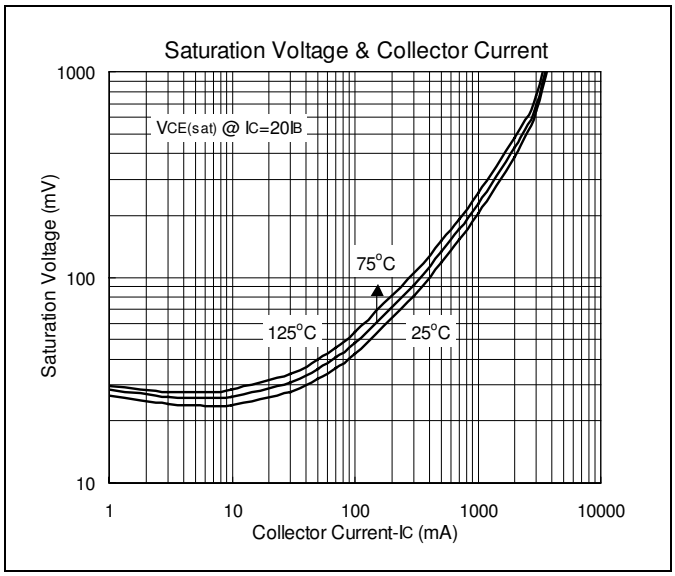
Rank	Q	P	E
Range	100-200	160-320	250-500

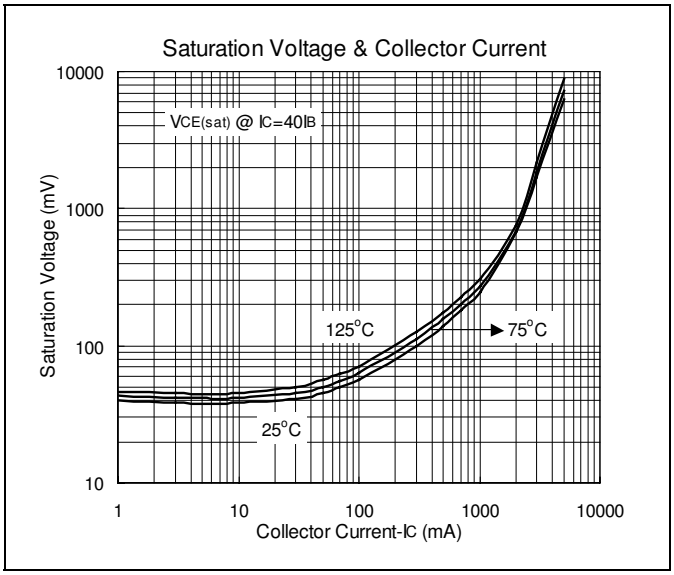
Characteristics Curve

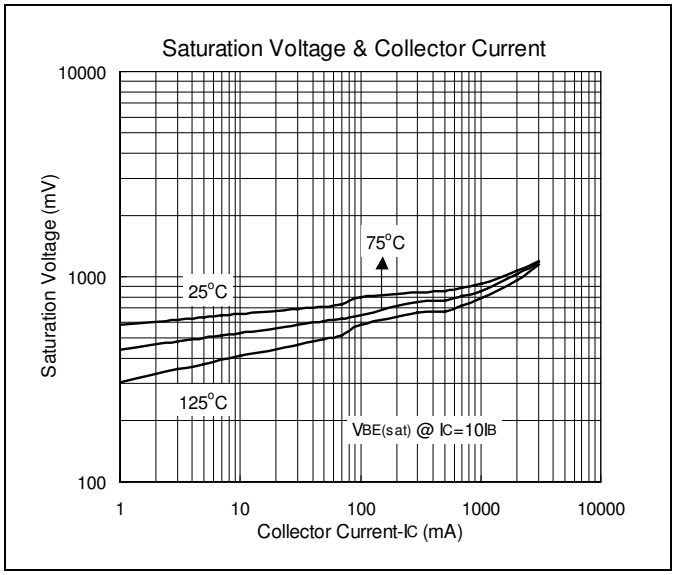


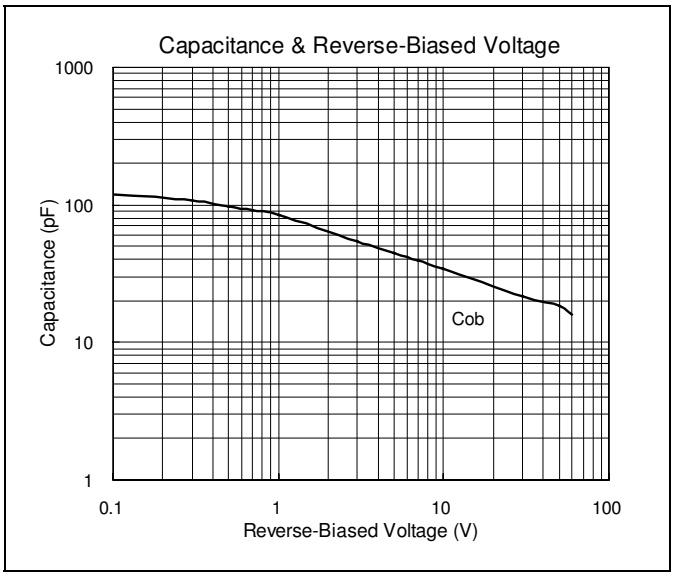


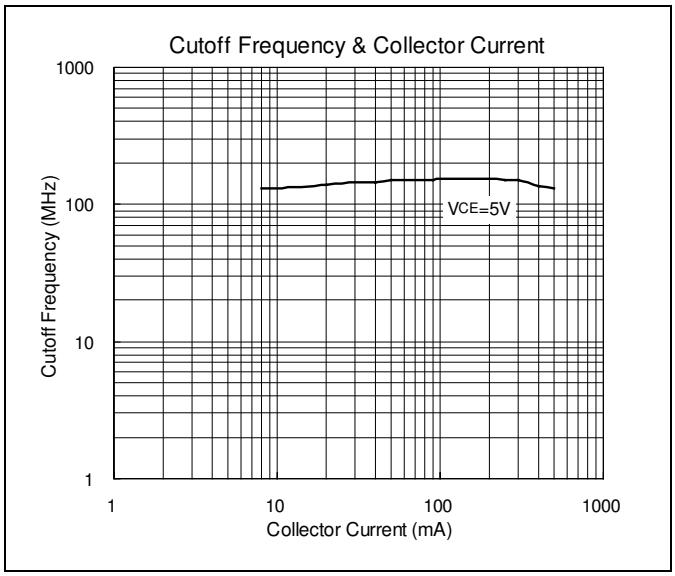


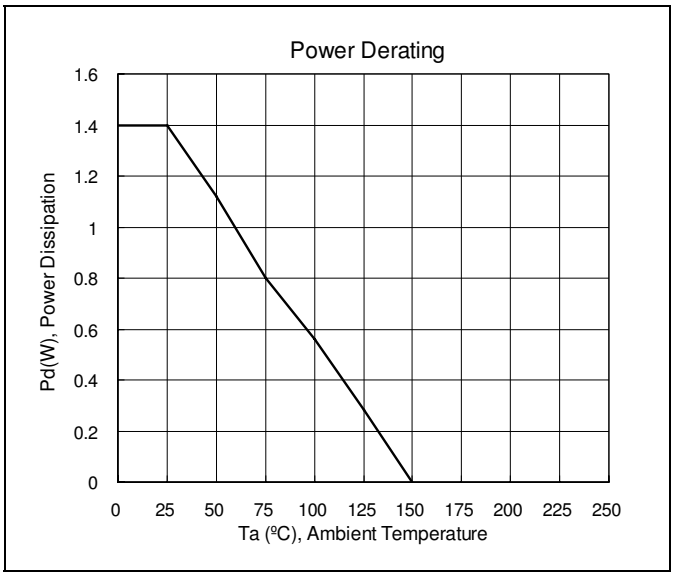


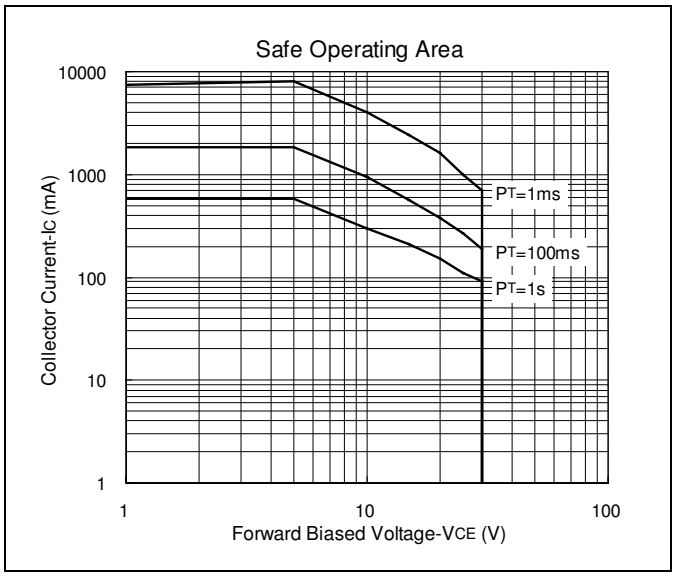




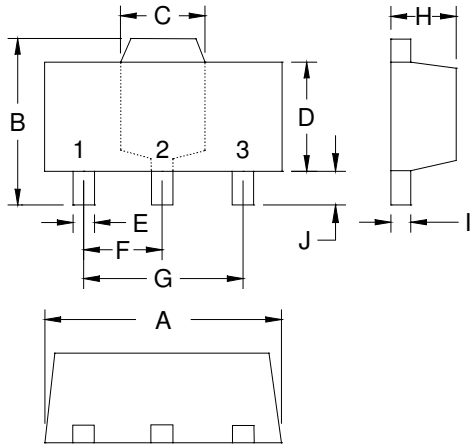

Capacitance & Reverse-Biased Voltage
Capacitance (pF)
1000
100
10
1
0.1
1
10
100
Reverse-Biased Voltage (V)
Cob


Cutoff Frequency & Collector Current
Cutoff Frequency (MHz)
1000
100
10
1
1
10
100
1000
Collector Current (mA)
VCE=5V


Power Derating
Pd(W), Power Dissipation
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
25
50
75
100
125
150
175
200
225
250
Ta (ºC), Ambient Temperature

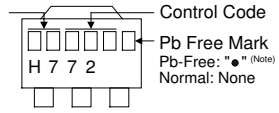

Safe Operating Area
Collector Current-IC (mA)
10000
1000
100
10
1
1
10
100
Forward Biased Voltage-VCE (V)
PT=1ms
PT=100ms
PT=1s

SOT-89 Dimension



3-Lead SOT-89 Plastic
Surface Mounted Package
HSMC Package Code: M

Marking:



Note: Green label is used for pb-free packing

Pin Style: 1.Base 2.Collector 3.Emitter

Material:
- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	4.40	4.60
B	4.05	4.25
C	1.50	1.70
D	2.40	2.60
E	0.36	0.51
F	*1.50	-
G	*3.00	-
H	1.40	1.60
I	0.35	0.41

*: Typical, Unit: mm

Head Office And Factory:

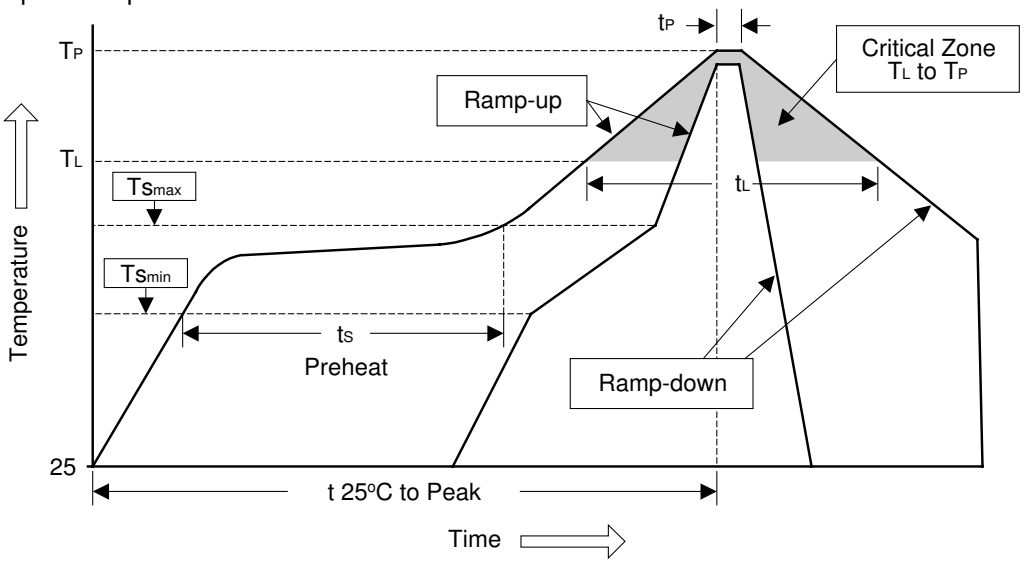
- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.
  Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C
  Tel: 886-3-5983621~5 Fax: 886-3-5982931

Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%

2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat - Temperature Min (Ts_{min}) - Temperature Max (Ts_{max}) - Time (min to max) (ts)	 100°C 150°C 60~120 sec	 150°C 200°C 60~180 sec
Tsmax to T_L - Ramp-up Rate	 <3°C/sec	 <3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	 183°C 60~150 sec	 217°C 60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec