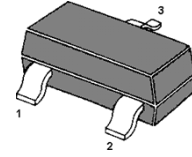


**MMBTSC2787 NPN Silicon Epitaxial Planar Transistor**

for FM RF amp, mixer, osc, converter and IF amplifier.

**Features**

- 1) Small output capacitance
- 2) Low noise figure



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

**Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )**

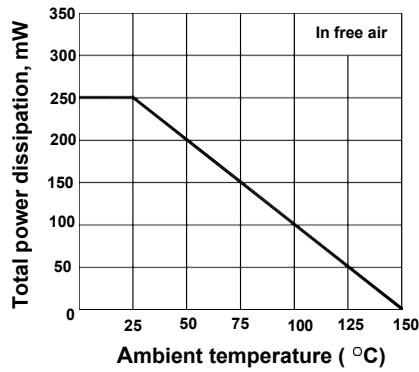
|                           | Symbol    | Value       | Unit             |
|---------------------------|-----------|-------------|------------------|
| Collector Base Voltage    | $V_{CBO}$ | 50          | V                |
| Collector Emitter Voltage | $V_{CEO}$ | 30          | V                |
| Emitter Base Voltage      | $V_{EBO}$ | 5           | V                |
| Collector Current         | $I_C$     | 30          | mA               |
| Power Dissipation         | $P_{tot}$ | 200         | mW               |
| Junction Temperature      | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage Temperature Range | $T_s$     | -55 to +150 | $^\circ\text{C}$ |

**Characteristics at  $T_{amb}=25^\circ\text{C}$** 

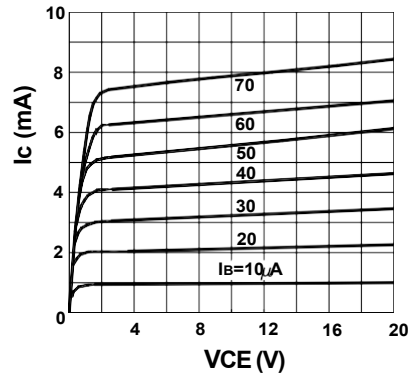
|                                                                                                 | Symbol        | Min. | Typ. | Max. | Unit          |
|-------------------------------------------------------------------------------------------------|---------------|------|------|------|---------------|
| DC Current Gain<br>at $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$                                     |               |      |      |      |               |
| Current Gain Group M                                                                            | $h_{FE}$      | 40   | -    | 80   | -             |
| L                                                                                               | $h_{FE}$      | 60   | -    | 120  | -             |
| K                                                                                               | $h_{FE}$      | 90   | -    | 300  | -             |
| Collector Cutoff Current<br>at $V_{CB}=50\text{V}$                                              | $I_{CBO}$     | -    | -    | 0.1  | $\mu\text{A}$ |
| Emitter Cutoff Current<br>at $V_{EB}=5\text{V}$                                                 | $I_{EBO}$     | -    | -    | 0.1  | $\mu\text{A}$ |
| Base Emitter Voltage<br>at $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$                                | $V_{BE}$      | 0.65 | -    | 0.75 | V             |
| Collector Saturation Voltage<br>at $I_C=10\text{mA}$ , $I_B=1\text{mA}$                         | $V_{CE(sat)}$ | -    | -    | 0.3  | V             |
| Gain Bandwidth Product<br>at $V_{CE}=6\text{V}$ , $I_E=-1\text{mA}$                             | $f_T$         | 150  | 250  | -    | MHz           |
| Collector Base Time Constant<br>at $V_{CB}=6\text{V}$ , $I_E=-10\text{mA}$ , $f=31.9\text{MHz}$ | $C_C.r'b$     | -    | 10   | 15   | ps            |
| Output Capacitance<br>at $V_{CB}=6\text{V}$ , $f=1\text{MHz}$                                   | $C_{OB}$      | -    | 1.9  | 2.2  | pF            |
| Noise Figure<br>at $V_{CE}=6\text{V}$ , $I_E=-1\text{mA}$ , $f=1\text{MHz}$ , $R_G=500\Omega$   | NF            | -    | 2    | 4    | dB            |

## Typical Characteristics

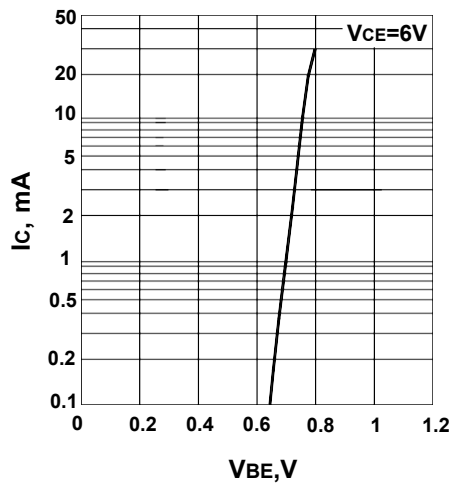
Total power dissipation vs.  
ambient temperature



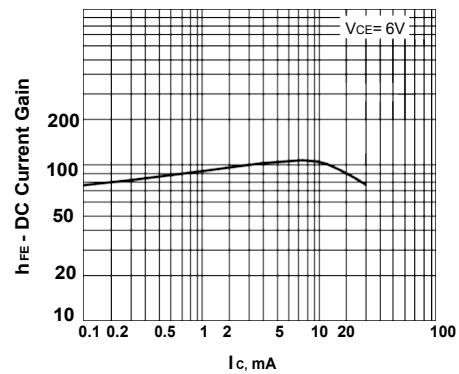
Collector current vs.  
collector emitter voltage



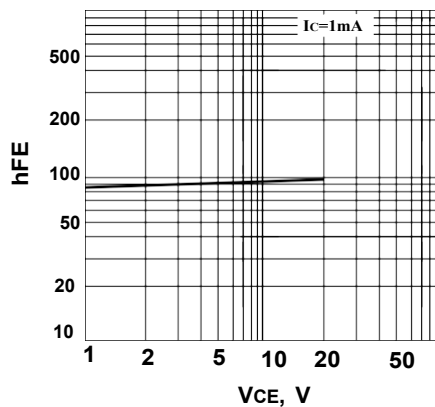
Collector current vs.  
base emitter voltage



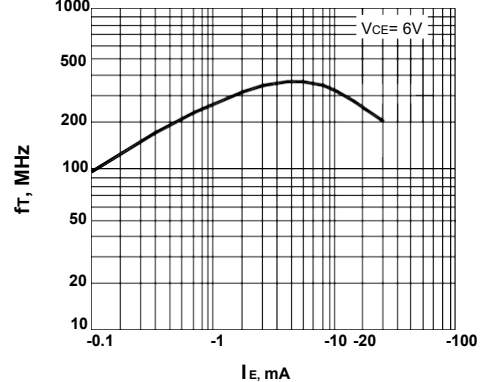
DC CURRENT GAIN vs.  
COLLECTOR CURRENT



DC current gain vs.  
collector emitter voltage

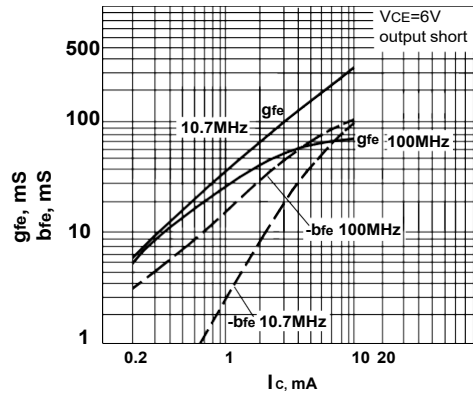


Gain bandwidth product  
vs. emitter current

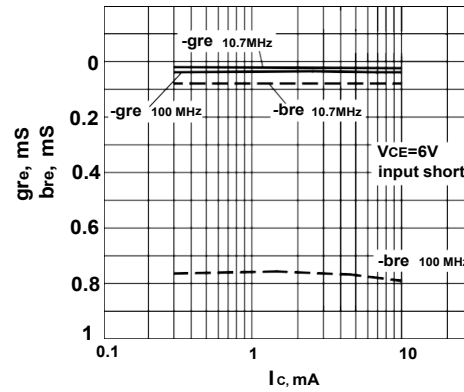


## Typical Characteristics

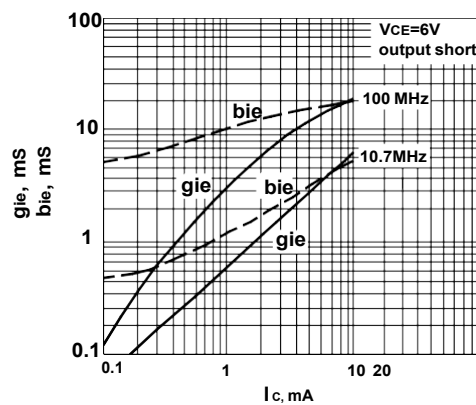
Forward transfer admittance  
vs. collector current



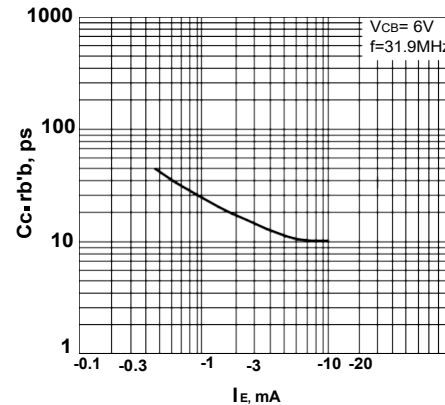
Reverse transfer admittance  
vs. collector current



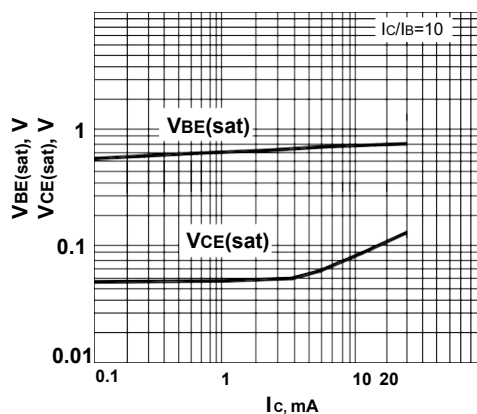
Input admittance vs. collector current



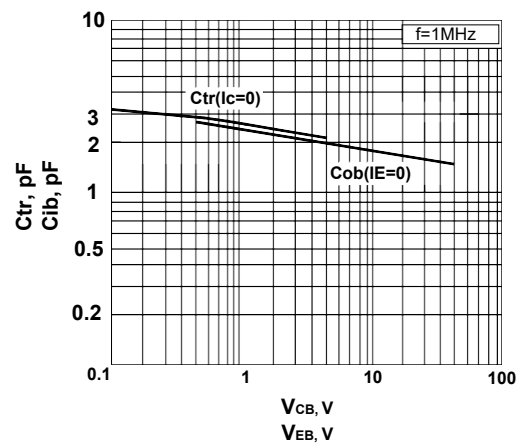
Collector base time constant  
vs. emitter current



Base collector saturation voltage  
vs. collector current

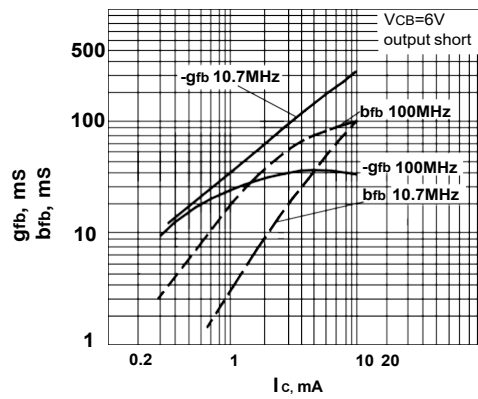


Input & output capacitance  
vs. reverse voltage

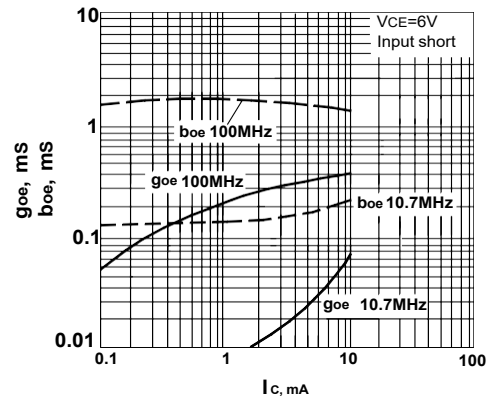


## Typical Characteristics

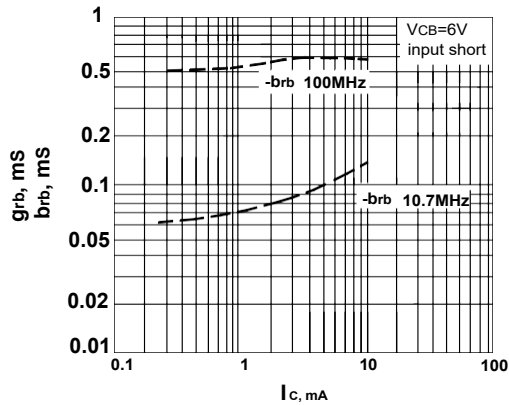
Forward transfer amittance  
vs. collector current



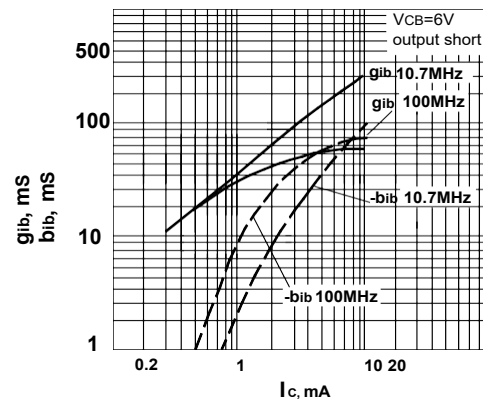
Output amittance vs. collector current



Reverse transfer amittance  
vs. collector current



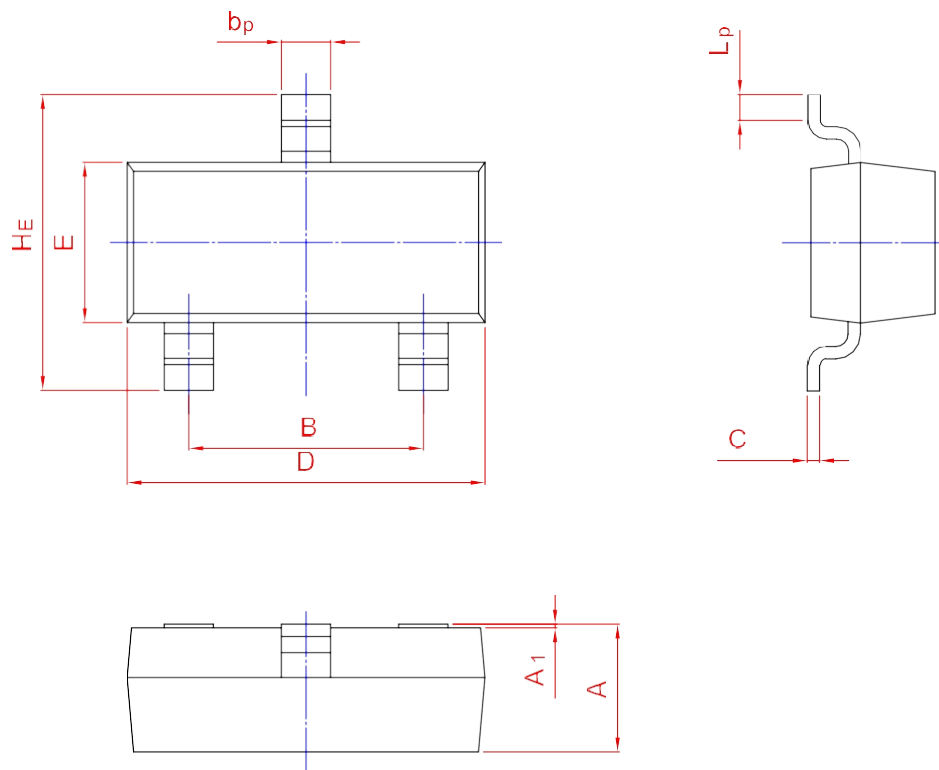
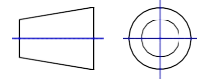
Input amittance vs. collector current



# PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| UNIT | A            | B            | bp           | C            | D            | E            | HE           | A1             | Lp           |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------|
| mm   | 1.40<br>0.95 | 2.04<br>1.78 | 0.50<br>0.35 | 0.19<br>0.08 | 3.10<br>2.70 | 1.65<br>1.20 | 3.00<br>2.20 | 0.100<br>0.013 | 0.50<br>0.20 |