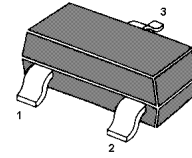


# MMBTSC3838

## NPN Silicon Epitaxial Planar Transistor

for high frequency amplifier application



1.BASE 2.EMITTER 3.COLLECTOR  
SOT-23 Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	20	V
Collector Emitter Voltage	$V_{CEO}$	11	V
Emitter Base Voltage	$V_{EBO}$	3	V
Collector Current	$I_C$	50	mA
Collector Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 10\text{ V}$ , $I_C = 5\text{ mA}$ Current Gain Group R S	$h_{FE}$	56	-	160	-
	$h_{FE}$	120	-	240	-
Collector Base Cutoff Current at $V_{CB} = 10\text{ V}$	$I_{CBO}$	-	-	500	nA
Emitter Base Cutoff Current at $V_{EB} = 2\text{ V}$	$I_{EBO}$	-	-	500	nA
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	20	-	-	V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	11	-	-	V
Emitter Base Breakdown Voltage at $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EBO}$	3	-	-	V
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$ , $I_B = 5\text{ mA}$	$V_{CE(sat)}$	-	-	0.5	V
Transition Frequency at $V_{CE} = 10\text{ V}$ , $I_E = 10\text{ mA}$ , $f = 500\text{ MHz}$	$f_T$	-	3.2	-	GHz
Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	-	1.5	pF

**TOP DYNAMIC**



ISO14001 : 2004 Certificate No. 121505007  
 ISO 9001 : 2008 Certificate No. 52114012  
 OHSAS 18001 : 2007 Certificate No. 09151506008  
 IECQ QC 080000 Certificate No. E24180007 H4M2

Dated: 11/08/2012 Rev: 01

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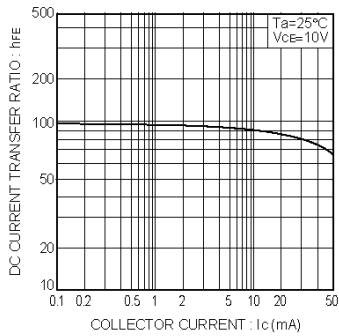


Fig.1 DC current gain vs. collector current

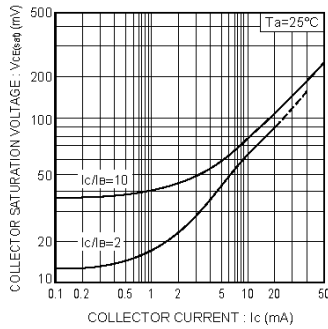


Fig.2 Collector-emitter saturation voltage vs. collector current

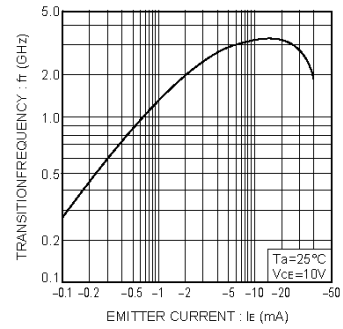


Fig.3 Gain bandwidth product vs. emitter current

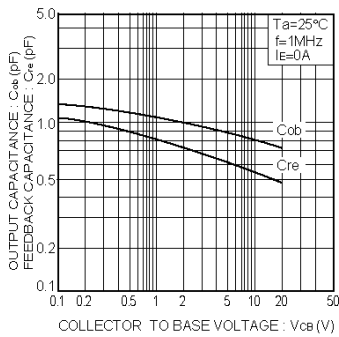


Fig.4 Capacitance vs. reverse bias voltage

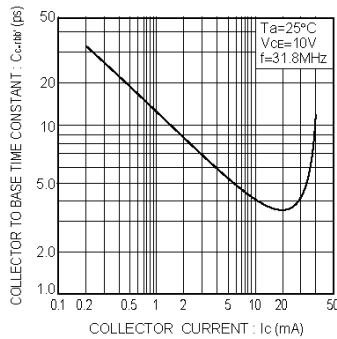


Fig.5 Collector to base time constant vs. collector current

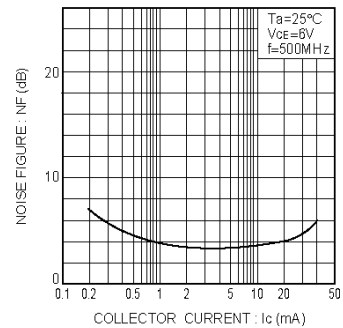


Fig.6 Noise factor vs. collector current characteristics

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