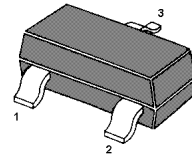


# MMBT4403

## PNP Silicon General Purpose Transistor



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

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

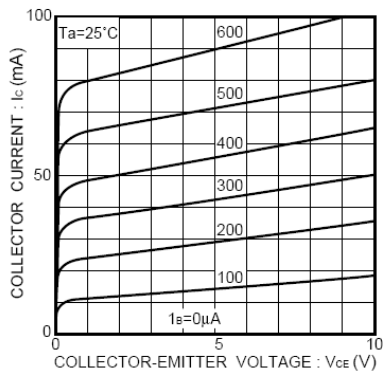
Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current Continuous	$-I_C$	600	mA
Total Device Dissipation FR-5 Board <sup>1)</sup> Derate above 25 °C	$P_{tot}$	200 1.8	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	- 55 to + 150	°C

<sup>1)</sup> FR-5 = 1 X 0.75 X 0.062 in.

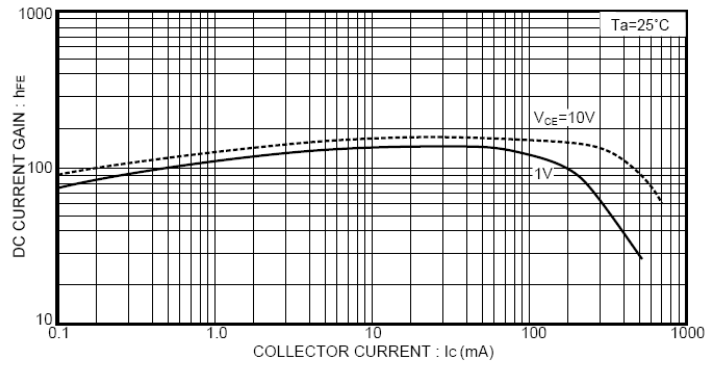
# MMBT4403

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

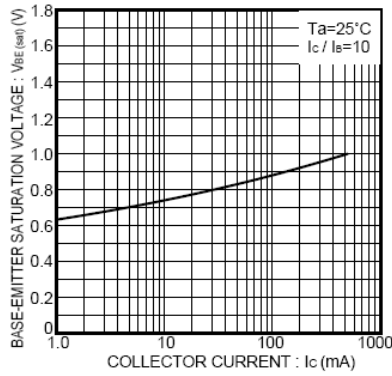
Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $-V_{CE} = 1\text{ V}$ , $-I_C = 0.1\text{ mA}$	$h_{FE}$	30	-	-
at $-V_{CE} = 1\text{ V}$ , $-I_C = 1\text{ mA}$	$h_{FE}$	60	-	-
at $-V_{CE} = 1\text{ V}$ , $-I_C = 10\text{ mA}$	$h_{FE}$	100	-	-
at $-V_{CE} = 2\text{ V}$ , $-I_C = 150\text{ mA}$	$h_{FE}$	100	300	-
at $-V_{CE} = 2\text{ V}$ , $-I_C = 500\text{ mA}$	$h_{FE}$	20	-	-
Collector Base Cutoff Current at $-V_{CB} = 35\text{ V}$	$-I_{CBO}$	-	0.1	$\mu\text{A}$
Emitter Base Cutoff Current at $-V_{EB} = 5\text{ V}$	$-I_{EBO}$	-	0.1	$\mu\text{A}$
Collector Base Breakdown Voltage at $-I_C = 0.1\text{ mA}$	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $-I_E = 0.1\text{ mA}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{CE(sat)}$	-	0.4	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{CE(sat)}$	-	0.75	V
Base Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{BE(sat)}$	0.75	0.95	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{BE(sat)}$	-	1.3	V
Current Gain Bandwidth Product at $-V_{CE} = 10\text{ V}$ , $-I_C = 20\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	200	-	MHz
Collector Base Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	8.5	pF
Delay Time $-V_{CC} = 30\text{ V}$ , $-V_{EB} = 2\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_d$	-	15	ns
Rise Time $-V_{CC} = 30\text{ V}$ , $-V_{EB} = 2\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_r$	-	20	ns
Storage Time $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = -I_{B2} = 15\text{ mA}$	$t_s$	-	225	ns
Fall Time $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = -I_{B2} = 15\text{ mA}$	$t_f$	-	30	ns



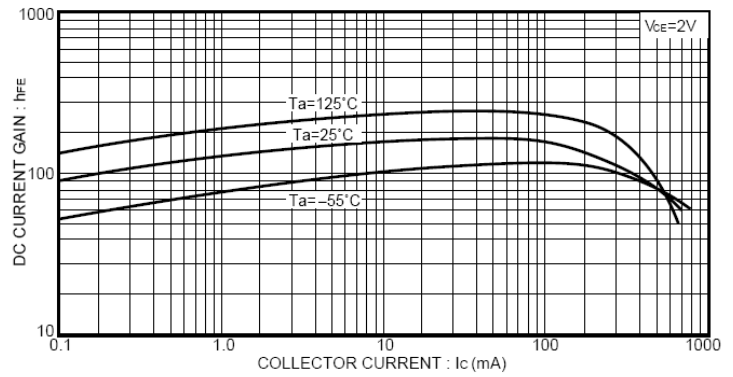
Grounded emitter output characteristics



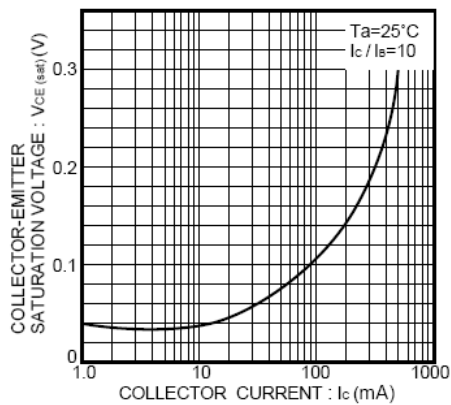
DC current gain vs. collector current (I)



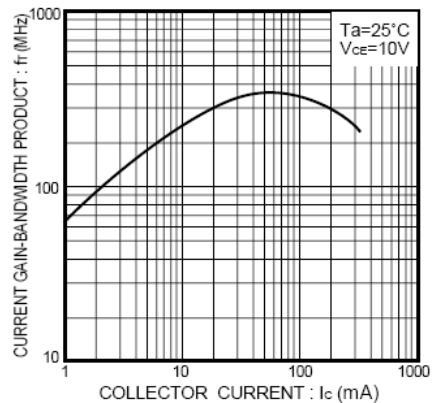
Base-emitter saturation voltage vs. collector current



DC current gain vs. collector current (II)



Collector-emitter saturation voltage vs. collector current



Gain bandwidth product vs. collector current