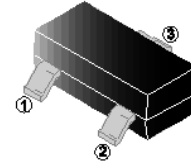


RoHS Compliant Product  
A suffix of "-C" specifies halogen and lead free

## FEATURES

- Complementary NPN Type Available (MMBT4401-C)
- Epoxy Meets UL 94 V-0 Flammability Rating

**SOT-23**



## MARKING

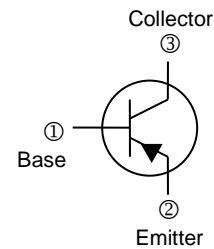
2T

## PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

## ORDER INFORMATION

Part Number	Type
MMBT4403-C	Lead (Pb)-free and Halogen-free



## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

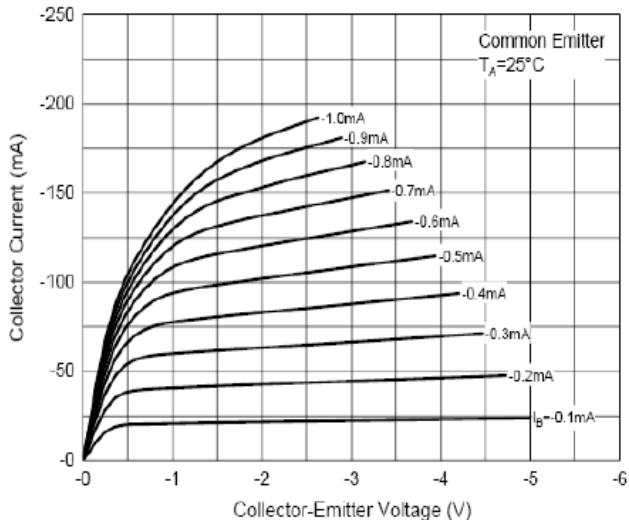
Parameter	Symbol	Ratings	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	-40	V
Collector-Base Voltage	V <sub>CBO</sub>	-40	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current-Continuous	I <sub>C</sub>	-600	mA
Collector Power Dissipation	P <sub>D</sub>	300	mW
Thermal Resistance, Junction-Ambient	R <sub>θJA</sub>	417	°C/W
Junction, Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	150, -55~150	°C

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

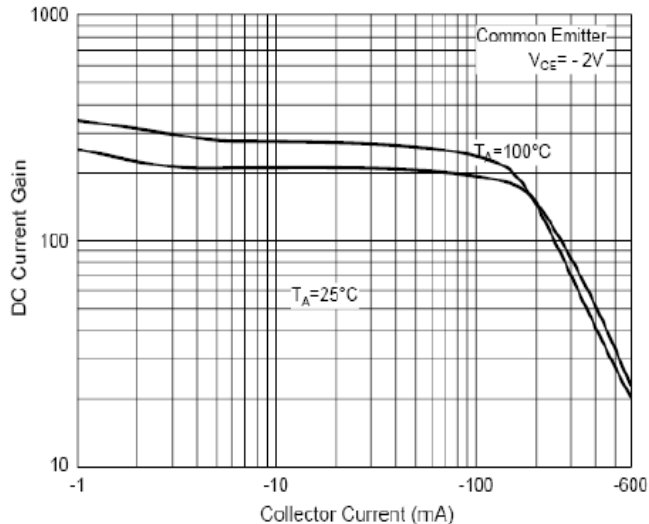
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40	-	-	V	$I_C = -1\text{mA}, I_B = 0$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	-	-	V	$I_C = -100\mu\text{A}, I_E = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-	-	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector-Base Cut-off Current	$I_{CBO}$	-	-	-0.1	$\mu\text{A}$	$V_{CB} = -35\text{V}, I_E = 0$
Collector Cut-off Current	$I_{CEX}$	-	-	-0.1		$V_{CE} = -35\text{V}, V_{BE} = 0.4\text{V}$
Emitter-Base Cut-off Current	$I_{EBO}$	-	-	-0.1		$V_{EB} = -4\text{V}, I_C = 0$
DC Current Gain	$h_{FE}$	30	-	-		$I_C = -0.1\text{mA}, V_{CE} = -1\text{V}$
		60	-	-		$I_C = -1\text{mA}, V_{CE} = -1\text{V}$
		100	-	-		$I_C = -10\text{mA}, V_{CE} = -1\text{V}$
		100	-	300		$I_C = -150\text{mA}, V_{CE} = -2\text{V}$
		20	-	-		$I_C = -500\text{mA}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	-0.4	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		-	-	-0.75		$I_C = -500\text{mA}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	-0.95	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		-	-	-1.3		$I_C = -500\text{mA}, I_B = -50\text{mA}$
Transition Frequency	$f_T$	-	200	-	MHz	$I_C = -20\text{mA}, V_{CE} = -10\text{V}, f = 100\text{MHz}$
Collector-Base Capacitance	$C_{cb}$	-	8.5	-	$\text{pF}$	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$
Emitter-Base Capacitance	$C_{eb}$	-	30	-		$V_{EB} = -0.5\text{V}, I_C = 0, f = 1\text{MHz}$
Delay Time	$t_d$	-	15	-	$\text{nS}$	$V_{CC} = -3\text{V}, V_{BE} = -0.5\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$
Rise Time	$t_r$	-	20	-		
Storage Time	$t_s$	-	225	-		
Fall Time	$t_f$	-	30	-		

**TYPICAL CHARACTERISTICS**

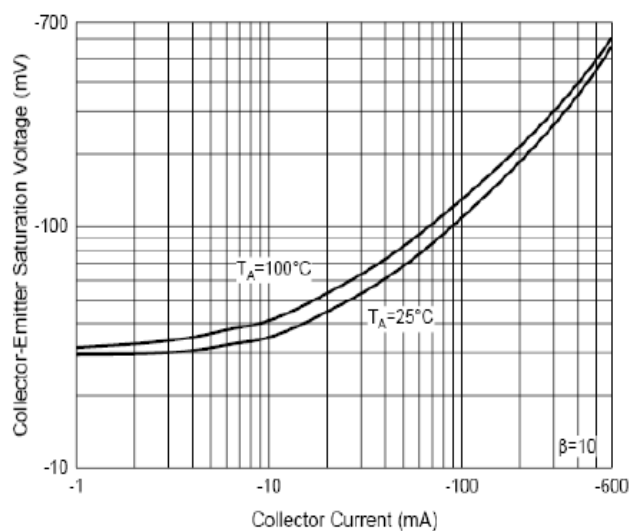
**Static Characteristics**



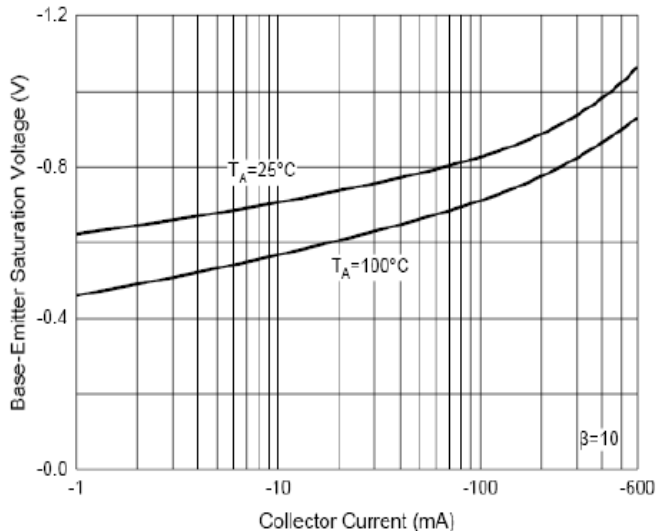
**DC Current Gain Characteristics**



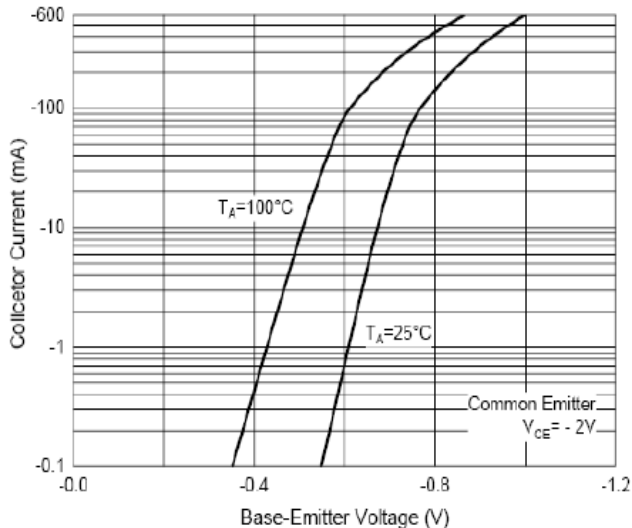
**Collector-Emitter Saturation Voltage Characteristics**



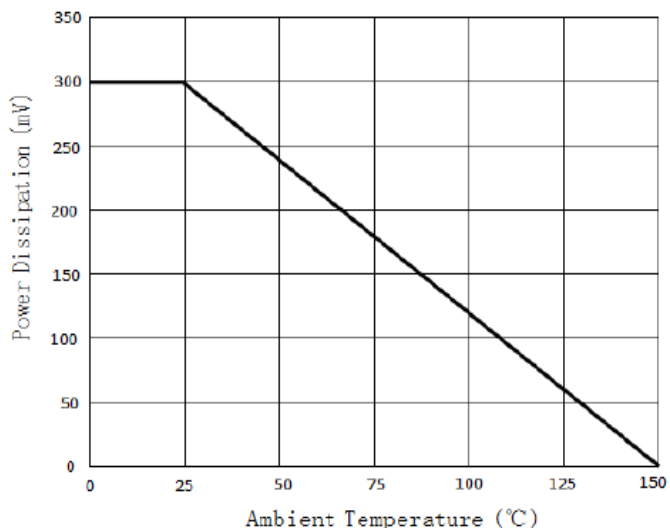
**Base-Emitter Saturation Voltage Characteristics**



**Base-Emitter Voltage Characteristics**

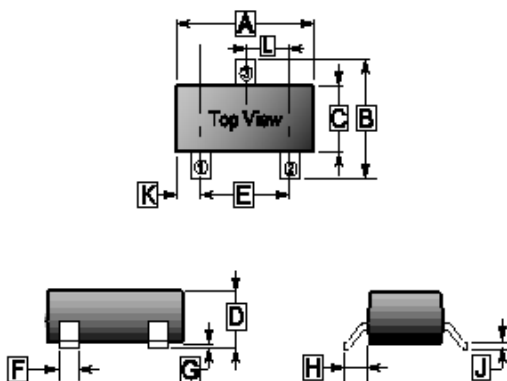


**Collector Power Derating Curve**



**PACKAGE OUTLINE DIMENSIONS**

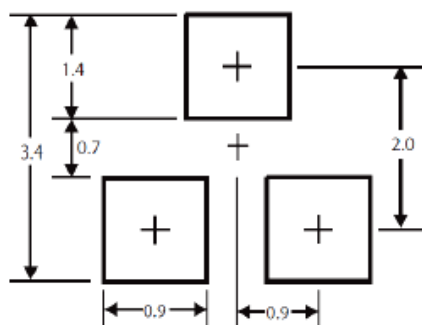
**SOT-23**



REF.	Millimeter	
	Min.	Max.
A	2.65	3.10
B	2.10	3.00
C	1.10	1.80
D	0.89	1.40
E	1.70	2.30
F	0.28	0.55
G	-	0.18
H	0.55 REF.	
J	0.05	0.26
K	0.60 REF.	
L	0.95 TYP.	

**MOUNTING PAD LAYOUT**

**SOT-23**



\*Dimensions in millimeters