


**SOT-23**


- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

**MARKING: 2A**
**Features**

- As complementary type the NPN transistor MMBT3904 is recommended
- Epitaxial planar die construction

**Maximum Ratings**

(Ratings at 25°C ambient temperature unless otherwise specified.)

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage	-40	V
$V_{CEO}$	Collector-Emitter Voltage	-40	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current -Continuous	-200	mA
$P_C$	Total Device Dissipation	200	mW
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	625	°C/W
$T_J$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55 to +150	°C

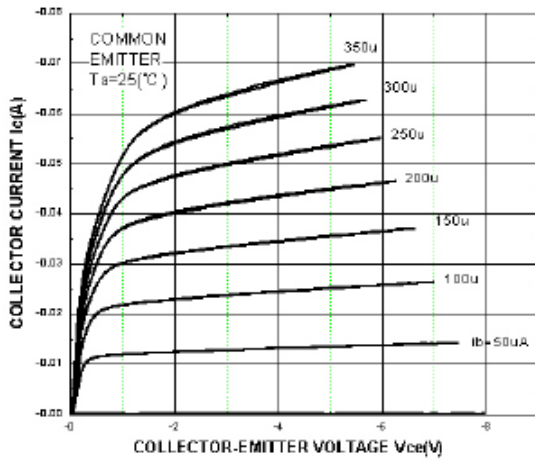
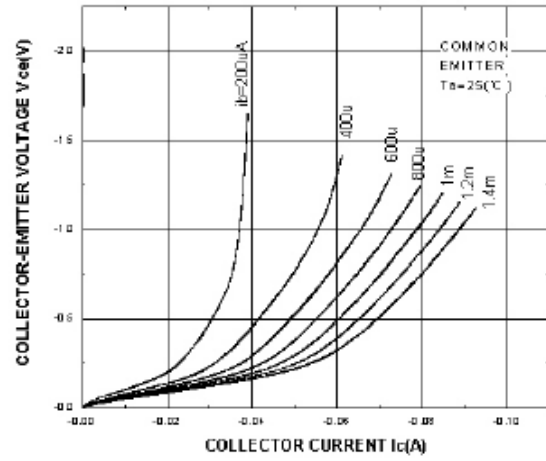
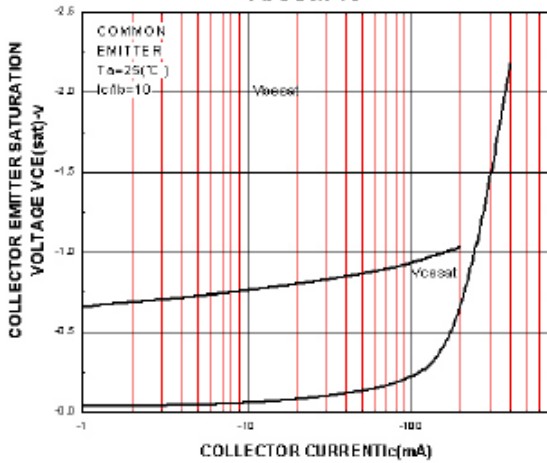
**Electrical Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{CB0}$	$I_C = -10\mu A, I_E = 0$	-40		V
Collector-emitter breakdown voltage	$V_{CEO}$	$I_C = -1mA, I_B = 0$	-40		V
Emitter-base breakdown voltage	$V_{EBO}$	$I_E = -10\mu A, I_C = 0$	-5		V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -40V, I_E = 0$		-0.1	$\mu A$
Collector cut-off current	$I_{CEX}$	$V_{CE} = -30V, V_{BE(off)} = -3V$		-50	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5V, I_C = 0$		-0.1	$\mu A$
DC current gain	$h_{FE(1)}$	$V_{CE} = -1V, I_C = -10mA$	100	300	
	$h_{FE(2)}$	$V_{CE} = -1V, I_C = -50mA$	60		
	$h_{FE(3)}$	$V_{CE} = -1V, I_C = -100mA$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -50mA, I_B = -5mA$		-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -50mA, I_B = -5mA$		-0.95	V
Transition frequency	$f_T$	$V_{CE} = -20V, I_C = -10mA, f = 100MHz$	300		MHz
Delay Time	$t_d$	$V_{CC} = -3V, V_{BE} = -0.5V$		35	nS
Rise Time	$t_r$	$I_C = -10mA, I_{B1} = -I_{B2} = -1mA$		35	nS
Storage Time	$t_s$	$V_{CC} = -3V, I_C = -10mA,$		225	nS
Fall Time	$t_f$	$I_{B1} = -I_{B2} = -1mA$		75	nS

**CLASSIFICATION OF  $h_{FE(1)}$** 

Rank	O	Y
Range	100-200	200-300


**Ic-Vce**

**Vce-Ic**

**Vcesat-Ic  
Vbesat-Ic**

**hFE-Ic**
