

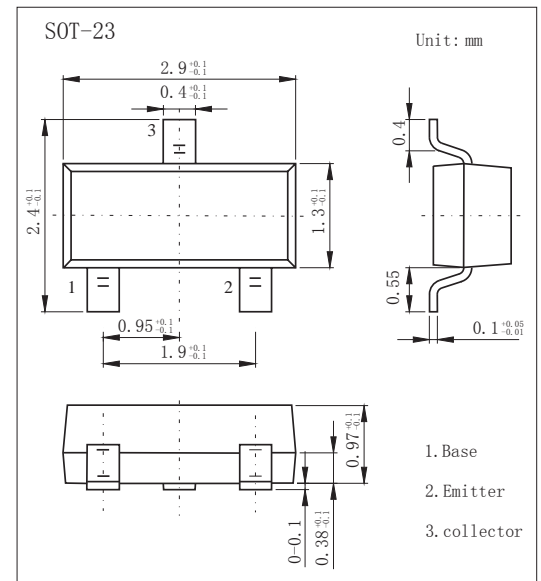
SOT-23 Plastic-Encapsulate Transistors

FEATURES

- Epitaxial planar die construction.
- Also available in lead free version.
- High current surface mount PNP silicon switching transistor for load management in portable applications.

MECHANICAL DATA

- Case style: SOT-23 molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Symbol	Parameter	Value	UNIT
V_{CBO}	collector-base voltage	-50	V
V_{CEO}	collector-emitter voltage	-30	V
V_{EBO}	emitter-base voltage	-5	V
I_C	collector current (DC)	-1.0	A
I_{CM}	Collector Current-Peak	-2.0	A
P_C	Collector dissipation	0.31	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	403	°C/W
T_j, T_{stg}	junction and storage temperature	-55 to +150	°C

PACKAGE INFORMATION

Device	Pa	Shipping
MMBT589	SOT-23	3000/Tape&Reel

Symbol	Parameter	Test conditions	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C = -100\mu A, I_E = 0$	-50		V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C = -10mA, I_B = 0$	-30		V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E = -100\mu A, I_C = 0$	-5		V
I_{CBO}	Collector cut-off current	$I_E = 0; V_{CB} = -30V$	-	-0.1	μA
I_{CES}	Collector-emitter cutoff current	$V_{CES} = -30V$	-	-0.1	μA
I_{EBO}	Emitter cut-off current	$I_C = 0; V_{EB} = -4V$	-	-0.1	μA
h_{FE}	DC current gain	$V_{CE} = -2V; I_C = -1mA$ $V_{CE} = -2V; I_C = -500mA$ $V_{CE} = -2V; I_C = -1.0A$ $V_{CE} = -2V; I_C = -2.0A$	100 100 80 40	- 300 - -	
$V_{CE(sat)}$	collector-emitter saturation voltage	$I_C = -0.5A; I_B = -0.05A$ $I_C = -1.0A; I_B = -0.1A$ $I_C = -2.0A; I_B = -0.2A$	-	-0.25 -0.30 -0.65	V
$V_{BE(sat)}$	base-emitter saturation voltage	$I_C = -1.0A; I_B = -0.1A$	-	-1.2	V
$V_{BE(on)}$	Base-emitter Turn-on voltage	$I_C = -1.0A, V_{CE} = -2.0V$	-	-1.1	V
f_T	transition frequency	$I_C = -100mA; V_{CE} = -5V;$ $f = 100MHz$	100	-	MHz
C_{obo}	Output capacitance	$f = 1.0MHz$	-	15	pF

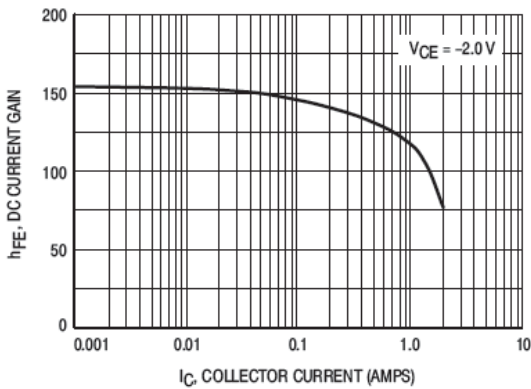


Figure 1. DC Current Gain versus Collector Current

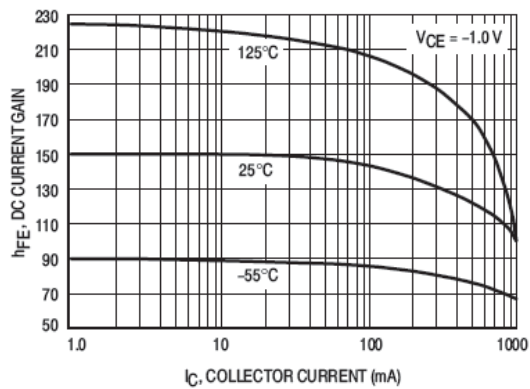


Figure 2. DC Current Gain versus Collector Current

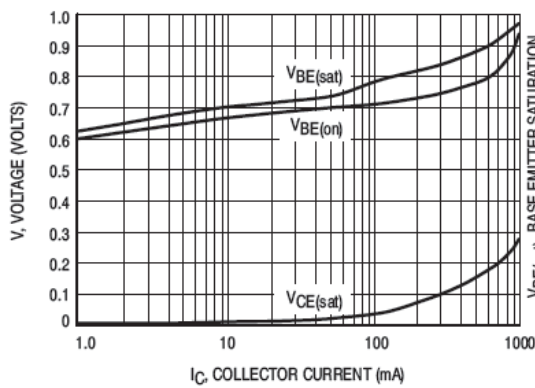


Figure 3. "On" Voltages

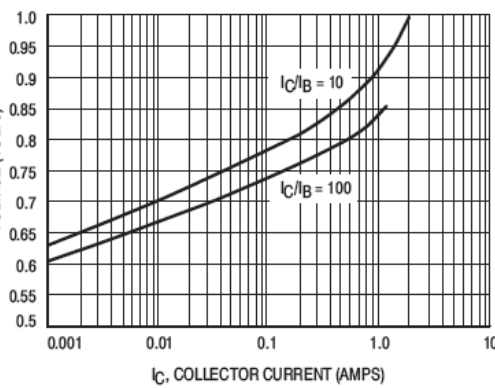


Figure 4. Base Emitter Saturation Voltage versus Collector Current

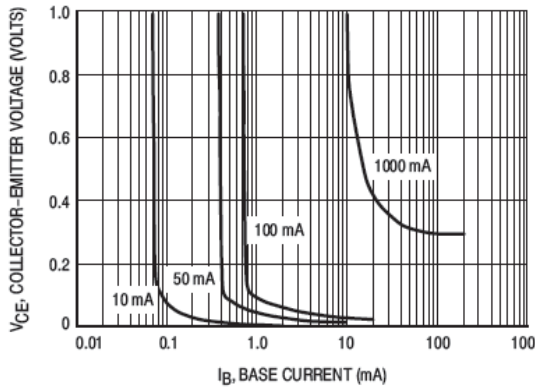


Figure 5. Collector Emitter Saturation Voltage versus Collector Current

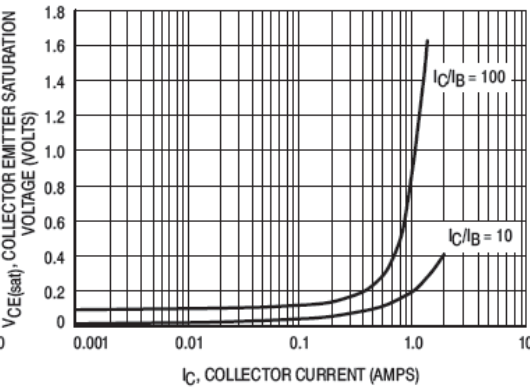


Figure 6. Collector Emitter Saturation Voltage versus Collector Current

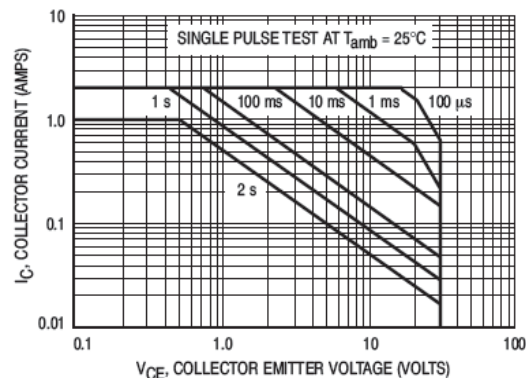


Figure 7. Safe Operating Area