MMBTA13

TRANSISTOR (NPN)

FEATURES

- This device is designed for applications requiring extremely high current gain at collector currents to 1.0 A.

MARKING: 1M

SOT-23

1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	30	V
Collector-Emitter Voltage	BV_{CES}	30	V
Emitter-Base Voltage	BV_{EBO}	10	V
Collector Current	I_C	1.0	A
Collector Power Dissipation	P_C	625	mW
Junction Temperature	Tj	150	℃
Storage Temperature	Tstg	-55～+150	℃

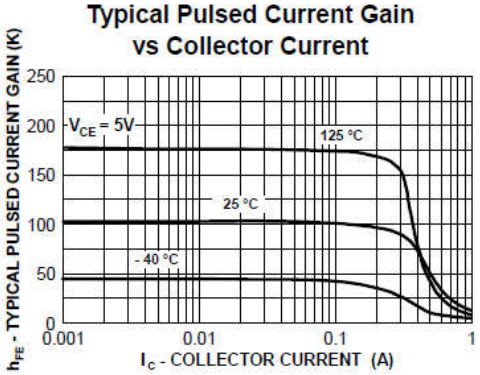
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	I_C = 100μA，I_E = 0	30			V
Collector cut-off current	I_{CBO}	V_{CB} = 30V，I_E = 0			100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 10V，I_C = 0			100	nA
DC current gain *	h_{FE}	V_{CE} = 5V，I_C= 10mA V_{CE} = 5V，I_C= 100mA	10000 20000			
Collector-emitter saturation voltage *	V_{CESAT}	I_C = 100mA，I_B = 0.1mA			1.5	V
base -emitter saturation voltage *	$V_{BE(ON)}$	V_{CE} = 5V，I_C= 100mA			2.0	V
Transition frequency	f_T	V_{CE} = 5V，I_B = 10mA	125			MH_Z

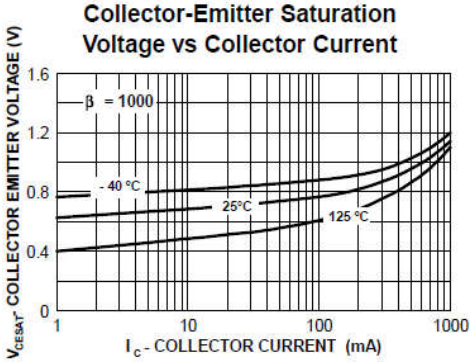
*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

Typical Characteristics

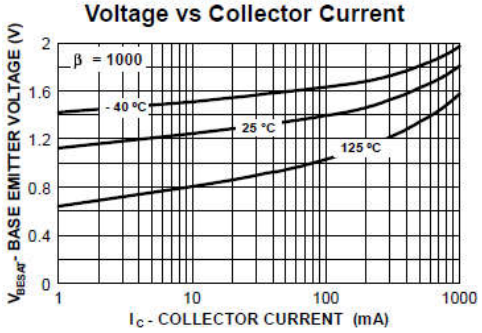
Typical Pulsed Current Gain vs Collector Current



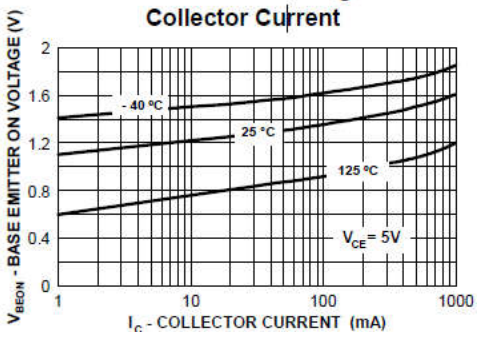
Collector-Emitter Saturation Voltage vs Collector Current



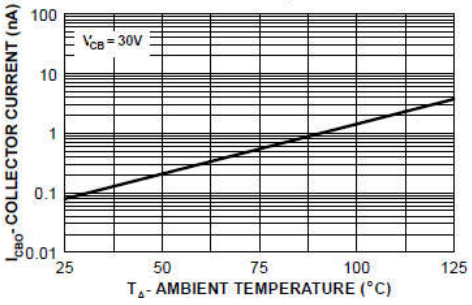
Base-Emitter Saturation Voltage vs Collector Current



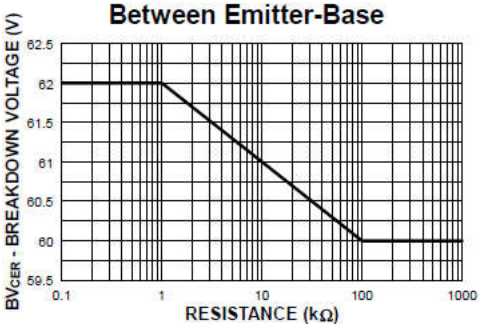
Base Emitter ON Voltage vs Collector Current



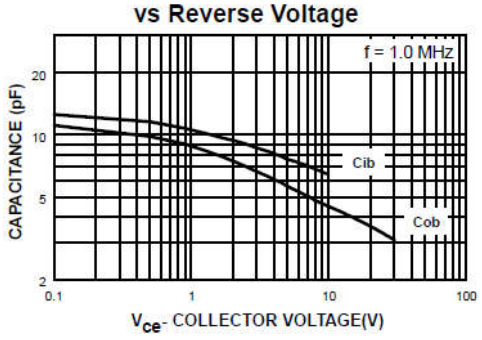
Collector-Cutoff Current vs Ambient Temperature



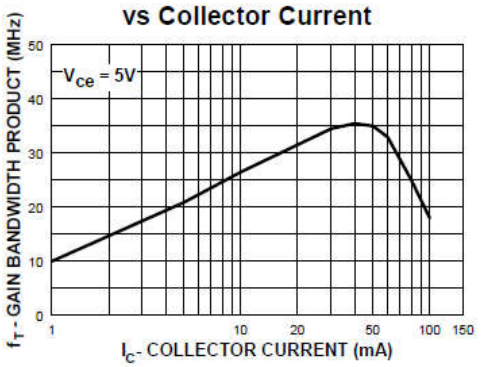
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



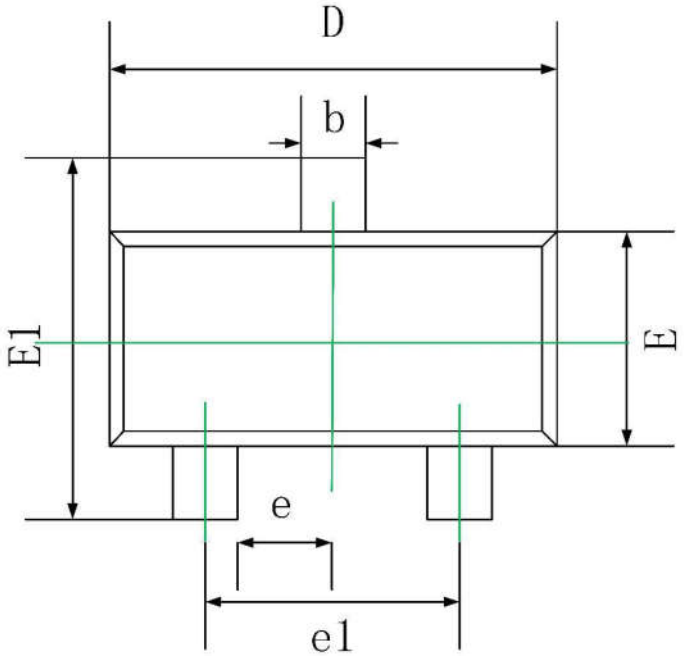
Input and Output Capacitance vs Reverse Voltage

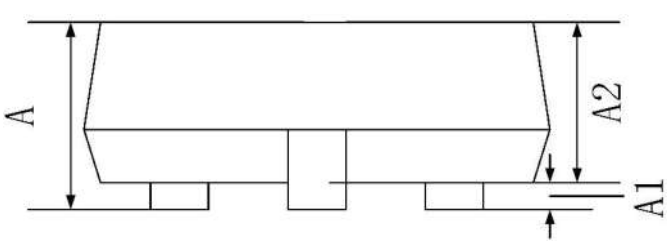


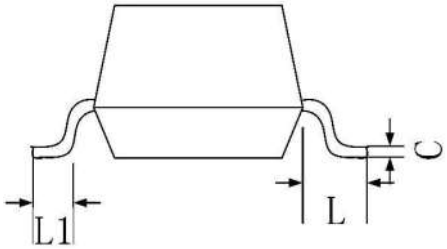
Gain Bandwidth Product vs Collector Current



SOT-23 Package Information







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020