

Single Bipolar Transistor multicomp^{PRO}

RoHS
Compliant



Features

- Epitaxial planar die construction.

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	0.2	A
Collector Power Dissipation	P_C	0.2	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Operating and storage temperature range	T_{stg}	-55 to +150	

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\text{ }\mu\text{A}$, $I_E = 0$	60			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$	40			
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	6			
Collector cutoff current	I_{CBO}	$V_{CB}=60\text{V}$, $I_E=0$			0.1	μA
Collector cutoff current	I_{CEX}	$V_{CE}=30\text{V}$, $V_{BE(off)}=3\text{V}$			50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}$, $I_C=0$			0.1	μA
DC current gain	h_{FE}	$V_{CE}=1\text{V}$, $I_C = 10\text{mA}$	100		400	
		$V_{CE}=1\text{V}$, $I_C = 50\text{mA}$	60			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{ mA}$, $I_B=5\text{mA}$			0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 50\text{ mA}$, $I_B = 5\text{mA}$			0.95	
Delay time	t_d	$V_{CC}=3\text{V}$, $V_{BE}=-0.5\text{V}$, $I_C=10\text{mA}$, $I_{B1}=-I_{B2}=1\text{mA}$			35	ns
Rise time	t_r				35	
Storage time	t_s	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $I_{B1}=-I_{B2}=1\text{mA}$			200	
Fall time	t_f				50	
Transition frequency	f_T	$V_{CE}=20\text{V}$, $I_C = 10\text{mA}$, $f=100\text{MHz}$	250			MHz

* pulse test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

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multicomp^{PRO}

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Typical Characteristics

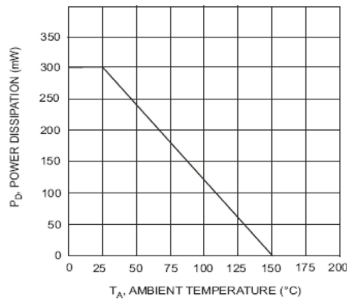


Fig.1 Max Power Dissipation vs Ambient Temperature

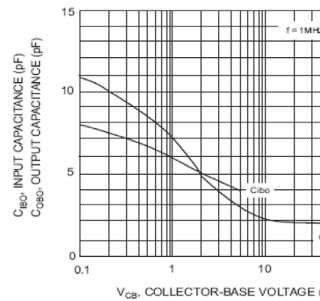


Fig.2 Input and Output Capacitance vs. Collector-Base Voltage

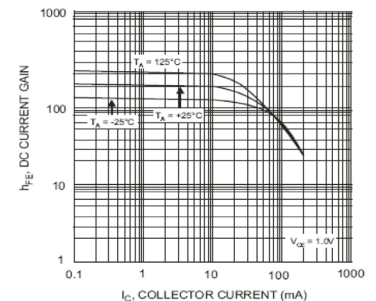


Fig.3 Typical DC Current Gain vs Collector Current

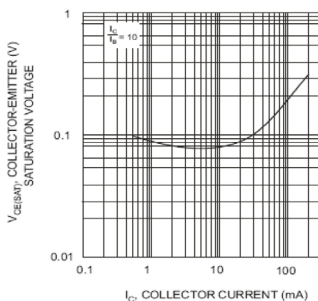


Fig.4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

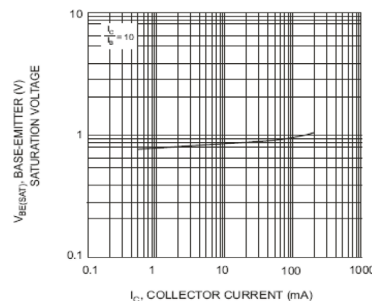
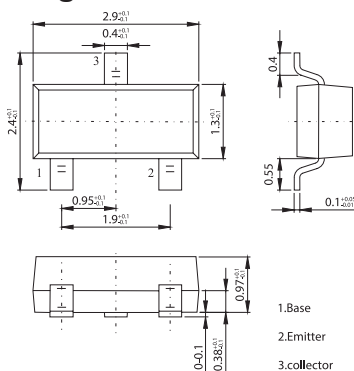


Fig.5 Typical Base-Emitter Saturation Voltage vs. Collector Current

Diagram



Dimensions : Millimetres

Part Number Table

Description	Part Number
Single Bipolar Transistor, NPN, 0.2A, 40V, SOT 23	MMBT3904

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