

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_{CB0}	75	V
Collector-Emitter Voltage	V_{CEO}	40	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	600	mA
Power Dissipation	P_D	250	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
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	$V_{(BR)CBO}$	$I_C = 100\ \mu\text{A}$, $I_E = 0$	75			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\ \text{mA}$, $I_B = 0$	40			
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\ \mu\text{A}$, $I_C = 0$	6			
Collector cutoff current	I_{CBO}	$V_{CB}=60\text{V}$, $I_E=0$			100	nA
Collector cutoff current	I_{CEX}	$V_{CE}=30\text{V}$, $V_{EB}(\text{off})=-3\text{V}$			10	
Emitter cut-off current	I_{EBO}	$V_{EB}=3\text{V}$, $I_C=0$			100	
DC current gain	h_{FE}	$V_{CE}=10\text{V}$, $I_C = 0.1\text{mA}$	40			
		$V_{CE}=10\text{V}$, $I_C = 150\text{mA}$	100		300	
		$V_{CE}=10\text{V}$, $I_C = 500\text{mA}$	42			
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C=150\ \text{mA}$, $I_B=15\text{mA}$			0.3	V
		$I_C=500\ \text{mA}$, $I_B=50\text{mA}$			1	
Base-emitter saturation voltage	$V_{BE(\text{sat})}$	$I_C = 150\ \text{mA}$; $I_B = 15\ \text{mA}$	0.6		1.2	
		$I_C = 500\ \text{mA}$; $I_B = 50\ \text{mA}$			2	
Transition frequency	f_T	$I_C = 20\ \text{mA}$; $V_{CE} = 20\ \text{V}$; $f = 100\ \text{MHz}$	300			MHz
Delay time	t_d	$V_{CC}=30\text{V}$, $V_{BE}(\text{off})=-0.5\text{V}$, $I_C=150\text{mA}$, $I_{B1}=15\text{mA}$			10	ns
Rise time	t_r				25	
Storage time	t_s	$V_{CC}=30\text{V}$, $I_C=150\text{mA}$, $I_{B1}=-I_{B2}=15\text{mA}$			225	
Fall time	t_f				60	

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

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Typical Characteristics

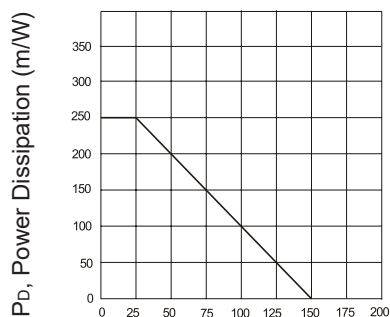


Fig 1, Max Power Dissipation vs Ambient temperature

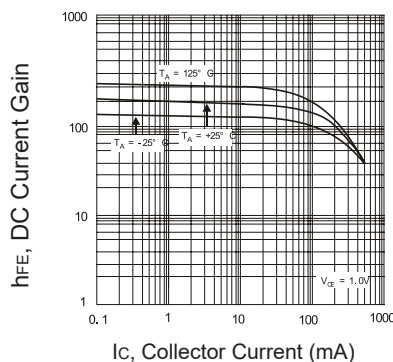


Fig 2, Typical DC Current Gain vs Collector Current

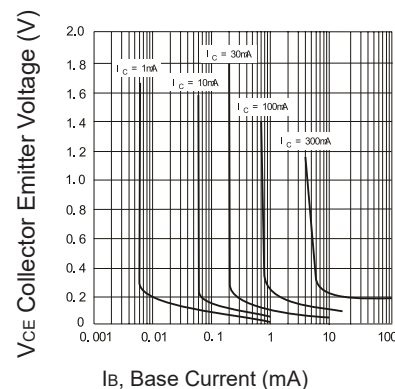


Fig. 4 Typical Collector Saturation Region

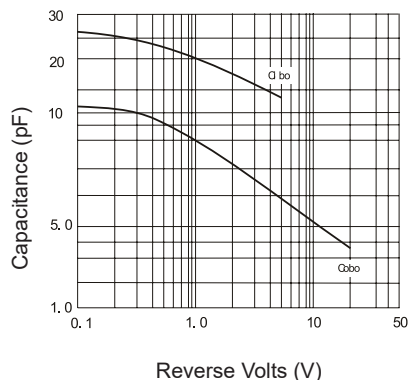
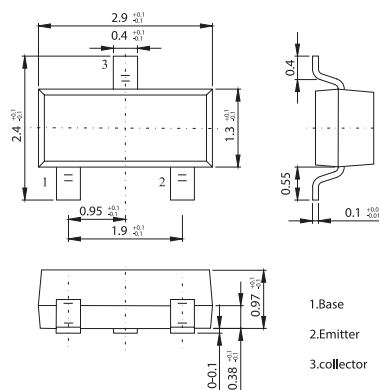


Fig. Typical Capacitance

Diagram



Part Number Table

Description	Part Number
Single Bipolar Transistor, NPN, 0.6A, 40V, SOT 23	MMBT2222A

Dimensions : Millimetres

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