

NPN General Purpose Amplifier

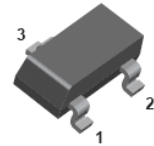
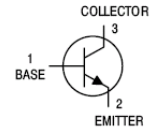


Features:

- Epitaxial planar die construction.
- Complementary PNP type available MMBT2907A.
- Ultra-small surface mount package.

Applications:

- Use as a medium power amplifier.
- Switching requiring collector currents up to 500mA.



SOT-23

Maximum Rating @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	75	V
Collector-Emitter Voltage	V_{CE0}	40	
Emitter-Base Voltage	V_{EB0}	6	
Collector Current -Continuous	I_C	600	mA
Collector Dissipation	P_C	300	mW
Thermal resistance junction to ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_j, T_{stg}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$V_{(BR)CB0}$	$I_C = 10\mu\text{A}, I_E = 0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CE0}$	$I_C = 10\text{mA}, I_B = 0$	40			
Emitter-base breakdown voltage	$V_{(BR)EB0}$	$I_E = 10\mu\text{A}, I_C = 0$	6			
Collector cut-off current	I_{CB0}	$V_{CB} = 60\text{V}, I_E = 0$			0.01	μA
Collector cut-off current	I_{CEX}	$V_{CE} = 60\text{V}, V_{EB(off)} = 3\text{V}$				
Emitter cut-off current	I_{EB0}	$V_{EB} = 3\text{V}, I_C = 0$				
DC current gain	h_{FE}	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100		300	
		$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	35			
		$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	50			
		$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	75			
		$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	40			
		$V_{CE} = 1\text{V}, I_C = 150\text{mA}$	50			

NPN General Purpose Amplifier **multicomp**

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500mA, I_B = 50mA$ $I_C = 150mA, I_B = 15mA$			1 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 500mA, I_B = 50mA$ $I_C = 150mA, I_B = 15mA$		0.6	2 1.2	
Transition frequency	f_T	$V_{CE} = 20V, I_C = 20mA$ $f = 100MHz$	300			MHz
Output capacitance	C_{obo}	$V_{CB} = 10V, I_E = 0, f = 1MHz$		8		pF
Input capacitance	C_{ibo}	$V_{EB} = 0.5V, I_C = 0, f = 1MHz$		25		
Delay time	t_d	$V_{CC} = 30V, V_{BE(off)} = -0.5V$ $I_C = 150mA, I_{B1} = 15mA$			10	ns
Rise time	t_r				25	
Storage time	t_s	$V_{CC} = 30V, I_C = 150mA$ $I_{B1} = -I_{B2} = 15mA$			225	
Fall time	t_f				60	

Typical Characteristics @ $T_A = 25^\circ C$ unless otherwise specified

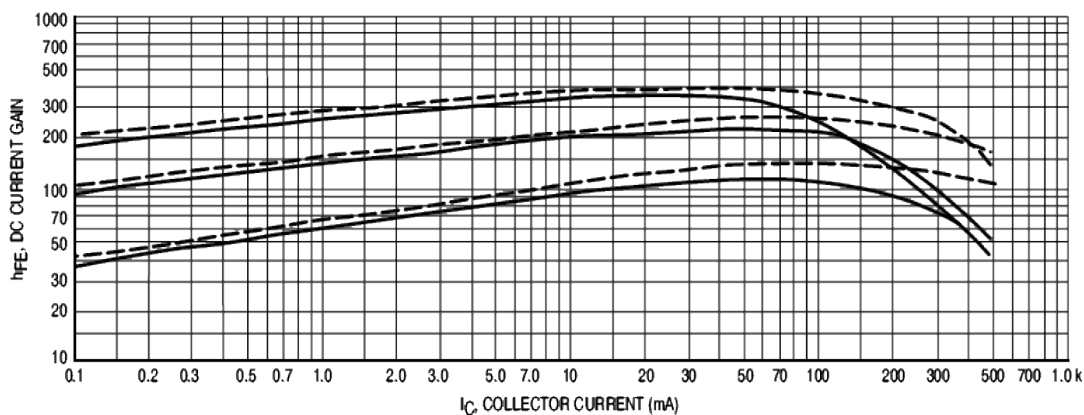


Figure 1. DC Current Gain

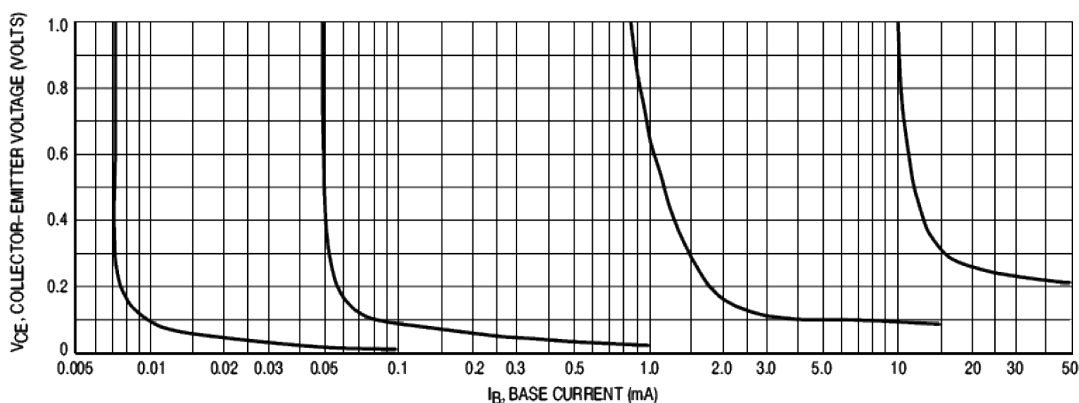
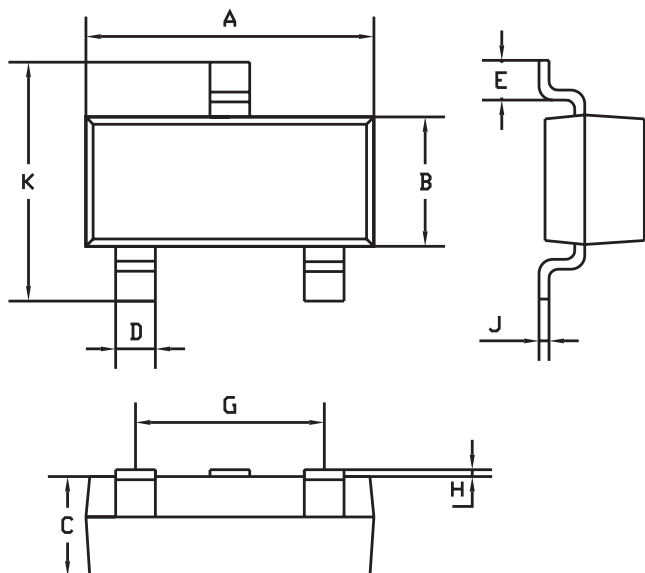


Figure 2. Collector Saturation Region

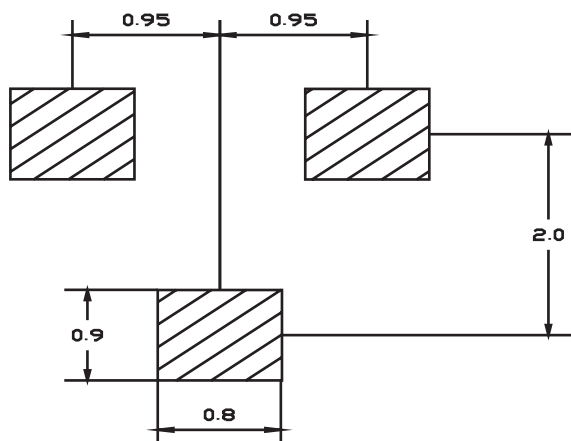
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Package Outline



SOT-23		
Dim	Min	Max
A	2.85	2.95
B	1.25	1.35
C	1Typical	
D	0.37	0.43
E	0.35	0.48
G	1.85	1.95
H	0.02	0.1
J	0.1Typical	
K	2.35	2.45
All Dimensions in mm		

Soldering Footprint



Dimensions : Millimetres

Part Number Table

Description	Part Number
Transistor, Bipolar, NPN, 40V, 600mA, SOT-23	MMBT2222A-7-F

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