

TRANSISTOR(NPN)

PRODUCT SUMMARY

TO-92 Plastic-Encapsulate Transistors

FEATURES

NPN silicon epitaxial planar transistor for switching and Amplifier applications

As complementary type, the PNP transistor 2N3906 is Recommended

This transistor is also available in the SOT-23 case with the type designation MMBT3904

TO-92 1. EMITTER 2. BASE 3. COLLECTOR 1 2 3

MAXIMUM RATINGS (T_A=25 °C unless otherwise noted)

Symbol	Parameter	Value	Units	
V _{CBO}	Collector-Base Voltage	60	V	
V _{CEO}	Collector-Emitter Voltage	40	V	
V _{EBO}	Emitter-Base Voltage	6	V	
Ic	Collector Current -Continuous	0.2	Α	
Pc	Collector Power Dissipation	0.625	W	
TJ	T _J Junction Temperature 150		°C	
T _{stg}	Storage Temperature	-55-150	°C	

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ELECTRICAL CHARACTERISTICS

(Tamb=25 °C unless otherwise specified)

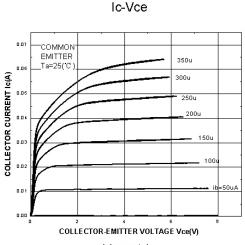
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =10μA, I _E =0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I _C = 1mA , I _B =0	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I _E = 10μA, I _C =0	6			V
Collector cut-off current	I _{CBO}	V _{CB} =60V, I _E =0			0.1	μΑ
Collector cut-off current	I _{CEO}	V _{CE} = 40V, I _B =0			0.1	μΑ
Emitter cut-off current	I _{EBO}	V _{EB} = 5V, I _C =0			0.1	μΑ
	h _{FE1}	V _{CE} =1V, I _C =10mA	100		400	
DC current gain	h _{FE2}	V _{CE} =1V, I _C =50mA	60			
	h _{FE3}	V _{CE} =1V, I _C =100mA	30			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =50mA, I _B =5mA			0.3	٧
Base-emitter saturation voltage	$V_{\text{BE}(\text{sat})}$	I _C =50mA, I _B =5mA			0.95	٧
Transition frequency	f⊤	V _{CE} =20V,I _C =10mA,f=100MHz	300			MH_Z
Delay Time	t _d	V _{CC} =3V,V _{BE} =0.5V,			35	ns
Rise Time	t _r	I _C =10mA,I _{B1} =1mA			35	ns
Storage Time	ts	V _{CC} =3V, I _C =10mA			200	ns
Fall Time	t _f	I _{B1} =I _{B2} =1mA			50	ns

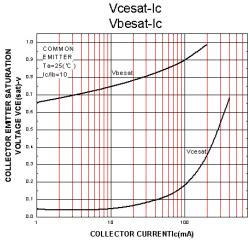
CLASSIFICATION OF h_{FE1}

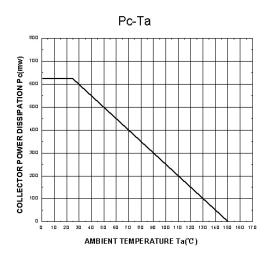
Rank	0	Y	G
Range	100-200	200-300	300-400

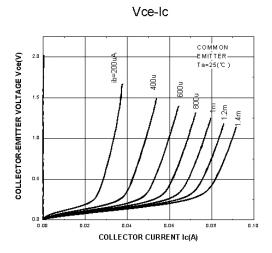


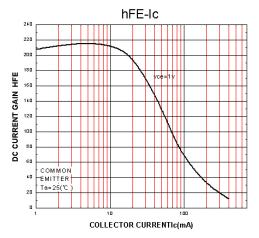
TYPICAL CHARACTERISTICS













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