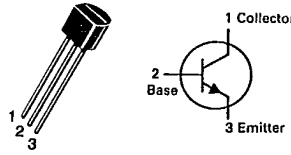


T-29-19
BC413, B, C
BC414, B, C

CASE 29-04, STYLE 17
 TO-92 (TO-226AA)



LOW NOISE TRANSISTORS
 NPN SILICON

Refer to BC549 for graphs.

MAXIMUM RATINGS

Rating	Symbol	BC 413	BC 414	Unit
Collector-Emitter Voltage	V _{CEO}	30	45	V _{dc}
Collector-Base Voltage	V _{CBO}	45	50	V _{dc}
Emitter-Base Voltage	V _{EBO}	5.0		V _{dc}
Collector Current - Continuous	I _C	100		mAdc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	350	2.8	mW mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	1.0	8.0	Watt mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	125	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	357	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 10 mAdc, I _B = 0) BC413 BC414	V _{(BR)CEO}	30 45			V _{dc}
Collector-Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0) BC413 BC414	V _{(BR)CBO}	45 50			V _{dc}
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	5			V _{dc}
Collector Cutoff Current (V _{CB} = 30 Vdc, I _E = 0) (V _{CB} = 30 Vdc, I _E = 0, T _A = +125°C)	I _{CBO}			15 5	nAdc μAdc
Emitter Cutoff Current (V _{EB} = 4 Vdc, I _C = 0)	I _{EBO}			15	nAdc
ON CHARACTERISTICS					
DC Current Gain (I _C = 10 μAdc, V _{CE} = 5 Vdc) BC413B/BC414B BC413C/BC414C (I _C = 2 mAdc, V _{CE} = 5 Vdc) BC413B/BC414B BC413C/BC414C BC413/BC414	h _{FE}	100 100 180 380 180	150 270 290 500 350	460 800 800	
Collector-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 0.5 mAdc) (I _C = 10 mAdc, I _B = see note 1) (I _C = 100 mAdc, I _B = 5 mAdc, see note 2)	V _{CE(sat)}		0.075 0.3 0.25	0.25 0.6 0.6	V _{dc}
Base-Emitter Saturation Voltage (I _C = 100 mAdc, I _B = 5 mAdc)	V _{BE(sat)}		1.1		V _{dc}
Base-Emitter On Voltage (I _C = 10 μAdc, V _{CE} = 5 Vdc) (I _C = 100 μAdc, V _{CE} = 5 Vdc) (I _C = 2 mAdc, V _{CE} = 5 Vdc)	V _{BE(on)}	0.55	0.52 0.55 0.62	0.75	V _{dc}
SMALL SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product (I _C = 10 mAdc, V _{CE} = 5 Vdc, f = 100 MHz)	f _T		250		MHz
Collector-Base Capacitance (V _{CE} = 10 Vdc, I _E = 0, f = 1 MHz)	C _{cb0}		2.5		pF
Noise Figure (I _C = 200 μAdc, V _{CE} = 5 Vdc, R _S = 2 KΩ, f = 30 Hz - 15 KHz)	NF		0.6	2.5	dB

Note 1: I_B is value for which I_C = 11 mA at V_{CE} = 1 V

Note 2: Pulse test = 300 μs - Duty cycle = 2%