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MOTOROLA

CA3146

General Purpose Transistor Array

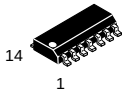
One Differentially Connected Pair and Three Isolated Transistor Arrays

The CA3146 is designed for general purpose, low power applications in the dc through VHF range.

- Guaranteed Base–Emitter Voltage Matching
- Operating Current Range Specified: 10 μA to 10 mA
- Five General Purpose Transistors in One Package

GENERAL PURPOSE TRANSISTOR ARRAY

SEMICONDUCTOR TECHNICAL DATA



D SUFFIX
PLASTIC PACKAGE
CASE 751A
(SO–14)

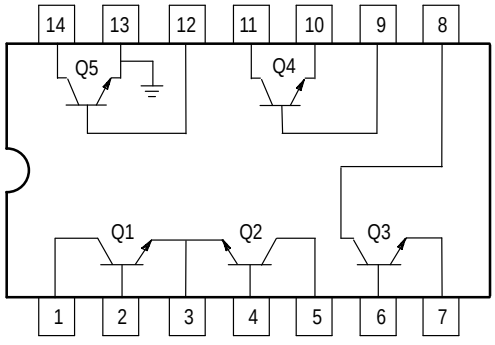
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	130	Vdc
Collector–Base Voltage	V_{CBO}	20	Vdc
Collector–Substrate Voltage	V_{CIO}	20	Vdc
Emitter–Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	50	mAdc
Operating Temperature Range	T_A	–40 to +85	°C
Storage Temperature Range	T_{stg}	–65 to +150	°C

ORDERING INFORMATION

Device	Operating Temperature Range	Package
CA3146D	T_A = – 40° to +85°C	SO–14

PIN CONNECTIONS



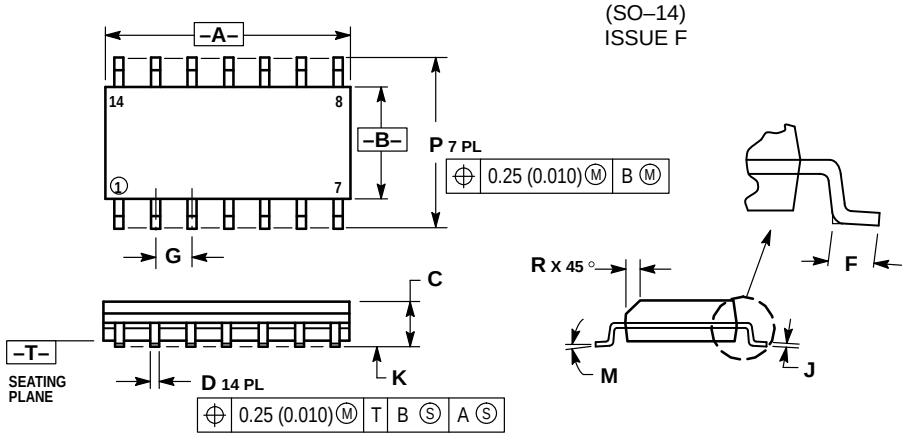
Pin 13 is connected to substrate and must remain at the lowest circuit potential.

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
STATIC CHARACTERISTICS					
Collector–Base Breakdown Voltage (I_C = 10 μAdc)	$V_{(BR)CBO}$	40	89	–	Vdc
Collector–Emitter Breakdown Voltage (I_C = 1.0 mAdc)	$V_{(BR)CEO}$	35	45	–	Vdc
Collector–Substrate Breakdown Voltage (I_{CI} = 10 μA)	$V_{(BR)CIO}$	40	85	–	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 μA)	$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector–Base Cutoff Current (V_{CB} = 10 Vdc, I_E = 0)	I_{CBO}	–	0.68	40	nAdc
DC Current Gain (I_C = 10 mAdc, V_{CE} = 5.0 Vdc) (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	 – –	 171 188	 – –	–
Base–Emitter Voltage (V_{CE} = 5.0 Vdc, I_E = 1.0 mAdc)	V_{BE}	–	0.7	–	Vdc
Collector–Emitter Saturation Voltage (I_C = 10 mA, I_B = 0.4 mA)	$V_{CE(sat)}$	–	0.28	0.5	Vdc
Magnitude of Input Offset Current $\lvert I_{IO1} - I_{IO2} \rvert$ (V_{CE} = 5.0 Vdc, $I_{C1} = I_{C2}$ = 1.0 mAdc)	I_{IO}	–	0.03	2.0	μAdc
Magnitude of Input Offset Voltage $\lvert V_{BE1} = V_{BE2} \rvert$ (V_{CE} = 5.0 Vdc, I_E = 1.0 mAdc)	$\lvert V_{IO} \rvert$	–	0.13	2.0	mVdc
DYNAMIC CHARACTERISTICS					
Low Frequency Noise Figure (V_{CE} = 5.0 Vdc, I_C = 100 μAdc, R_S = 1.0 kΩ, f = 1.0 kHz)	NF	–	3.25	–	dB
Forward Current Transfer Ratio (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{fe}	–	201.5	–	–
Short Circuit Input Impedance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{ie}	–	6.7	–	kΩ
Open Circuit Output Impedance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{oe}	–	15.6	–	μmho
Reverse Voltage Transfer Ratio (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{re}	–	3.5	–	$X10^{-4}$
Input Admittance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	Y_{ie}	–	0.14 + j0.16	–	mmho
Forward Transfer Admittance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	Y_{fe}	–	34.6 – j0.63	–	mmho
Reverse Transfer Admittance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	Y_{re}	–	62.0 – j59.4	–	μmho
Output Admittance (V_{CE} = 5.0 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	Y_{oe}	–	0.16 + j0.14	–	mmho
Current–Gain – Bandwidth Product (V_{CE} = 5.0 Vdc, I_C = 3.0 mAdc)	f_T	300	500	–	MHz
Emitter–Base Capacitance (V_{EB} = 5.0 Vdc, I_E = 0 mAdc)	C_{EB}	–	1.17	–	pF
Collector–Base Capacitance (V_{CB} = 5.0 Vdc, I_E = 0 mAdc)	C_{CB}	–	0.68	–	pF
Collector–Substrate Capacitance (V_{CS} = 5.0 Vdc, I_C = 0 mAdc)	C_{CI}	–	1.92	–	pF

OUTLINE DIMENSIONS

D SUFFIX
PLASTIC PACKAGE
CASE 751A–03
(SO–14)
ISSUE F



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0 °	7 °	0 °	7 °
P	5.80	6.20	0.228	0.244
R	0.25	0.50	0.010	0.019

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