

MDC03

Transistor, array, 3 × NPN,
3 × PNP

Features

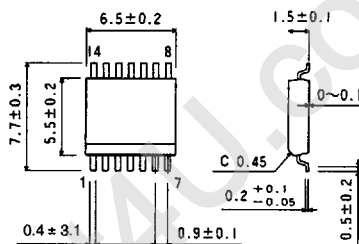
- available in MFW14 package
- package marking: MDC03
- three NPN transistors with common emitter and three PNP transistors with common emitter are mounted in single package
- each device has a base resistor (10 kΩ)
- protection diode connected between each collector and emitter
- each transistor has very low collector-to-emitter saturation voltage ($V_{CE(sat)}$)

Applications

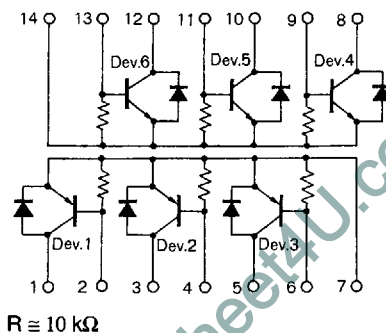
- motor driver

Dimensions (Units : mm)

MDC03 (MFW14)



Equivalent circuit



Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

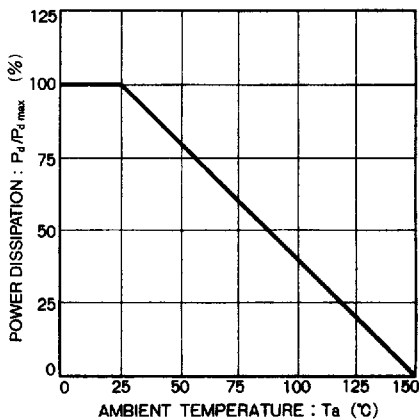
Parameter	Symbol	Limits		Unit	Conditions
		PNP device	NPN device		
Collector-to-base voltage	V_{CBO}	-10	10	V	
Collector-to-emitter voltage	V_{CEO}	-10	10	V	
Emitter-to-base voltage	V_{EBO}	-6	6	V	
Collector current	I_C	-3	3	A	Single pulse, $P_W = 10$ ms
	I_{CP}	-4	4		
Collector dissipation	P_C	500		mW	
Junction temperature	T_j	150		$^\circ\text{C}$	
Storage temperature	T_{stg}	-55 ~ +150		$^\circ\text{C}$	

PNP transistor electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	-10			V	$I_C = -50 \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	-10			V	$I_C = -1$ mA
Collector cutoff current	I_{CBO}			-1.0	μA	$V_{CB} = -10$ V
DC current gain	h_{FE}	200				$V_{CE} = -1$ V, $I_C = -0.5$ A
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		-0.3	-0.4	V	$I_C/I_B = -2.0$ A/-50 mA
Forward voltage	V_F		-1.0	-1.5	V	$I_F = -1.0$ A
Emitter-to-base resistance	R	7	10	13	k Ω	
Transition frequency	f_T		150		MHz	$V_{CE} = -6$ V, $I_E = 50$ mA, $f = 100$ MHz
Output capacitance	C_{ob}		70		pF	$V_{CB} = -10$ V, $I_E = 0$ mA, $f = 1$ MHz

NPN transistor electrical characteristics (unless otherwise noted, $T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	10			V	$I_C = 50 \mu\text{A}$
Collector-to-emitter breakdown voltage	BV_{CEO}	10			V	$I_C = 1 \text{ mA}$
Collector cutoff current	I_{CBO}			1.0	μA	$V_{CB} = 10 \text{ V}$
DC current gain	h_{FE}	200				$V_{CE} = 1 \text{ V}, I_C = 0.5 \text{ A}$
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		0.2	0.3	V	$I_C/I_B = 2.0 \text{ A}/50 \text{ mA}$
Forward voltage	V_F		1.0	1.5	V	$I_F = 1.0 \text{ A}$
Emitter-to-base resistance	R	7	10	13	$\text{k}\Omega$	
Transition frequency	f_T		150		MHz	$V_{CE} = 6 \text{ V}, I_E = -50 \text{ mA}, f = 100 \text{ MHz}$
Output capacitance	C_{ob}		70		pF	$V_{CB} = 10 \text{ V}, I_E = 0 \text{ mA}, f = 1 \text{ MHz}$

Electrical characteristic curves**Figure 1**

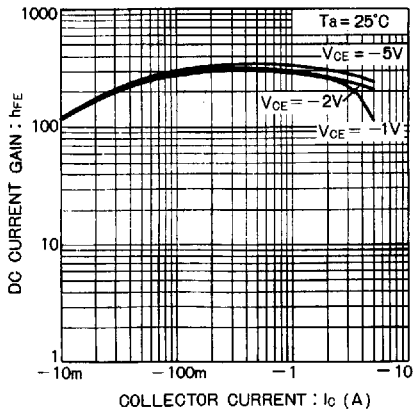


Figure 2 (PNP)

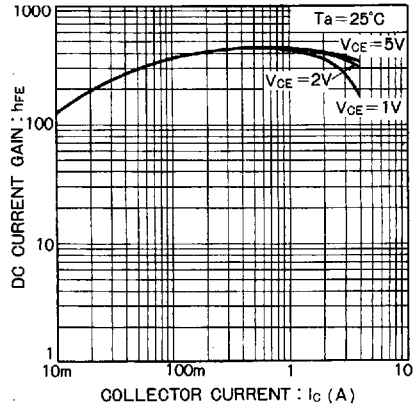


Figure 3 (NPN)

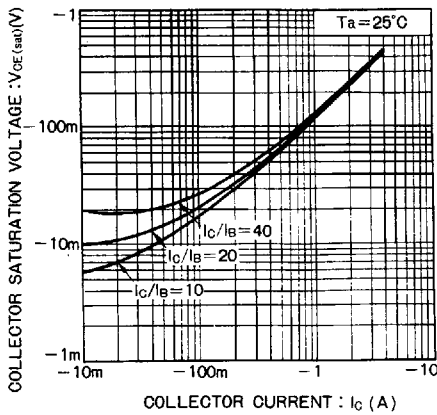


Figure 4 (PNP)

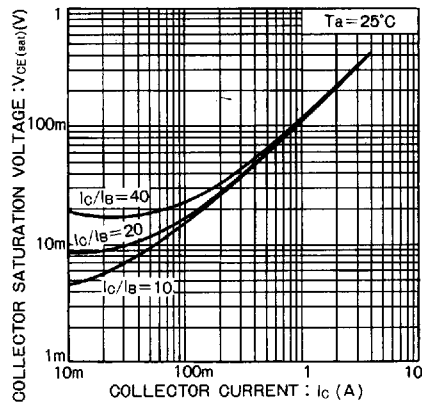


Figure 5 (NPN)

Ordering information

Package	Tape
Code	TR
Basic order quantity	2500
MDC03	☆
★ = Standard, ☆ = Semi-standard, * = Special order	