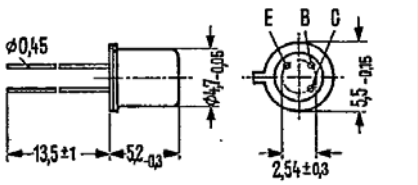
2N2220,2N2221,and 2N2222 are epitaxial NPN silicon planar transistors in TO 18 case (18 A 3 DIN 41876). The collector is electrically connected to the case. The transistors are particularly suitable for use as high-speed switches.

Type	Ordering code
2N2220	Q68000-A4573
2N2221	Q62702-F134
2N2222	Q62702-F135



Approx. weight 0.33 g Dimensions in mm

Maximum ratings		2N2220 2N2221 2N2222	
Collector-emitter Voltage	V_{CEO}	30	V
Collector-base voltage	V_{CBO}	60	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	Ic	0.8	A
Junction temperature	Tj	175	°C
Storage temperature range	Tstg	-65 to +200	°C
Total power dissipation (Tamb =25°C)	Ptot	0.5	W
Total Power dissipation (Tcase=25°C)	Ptot	1.8	W
Thermal resistance			
Junction to ambient air	R_{thJA}	≤300	K/W
Junction to case	R_{thJC}	≤83	K/W

Static characteristics (Tamb=25℃)		2N2220	2N2221	2N2222	
Collector-base breakdown voltage (Ic=10μA)	$V_{(BR)CBO}$	>60	>60	>60	V
Collector-emitter Breakdown voltage (Ic=10mA)	$V_{(BR)CEO}$	>30	>30	>30	V
Emitter-base breakdown voltage (I_E=10μA)	$V_{(BR)EBO}$	>5	>5	>5	V
Collector-emitter saturation voltage (I_B=15mA; I_C=150mA)	V_{CEsat}	<0.4	<0.4	<0.4	V
(I_B=50mA ; Ic=500mA)	V_{CEsat}	-	<1.6	<1.6	V
Base-emitter saturation voltage (Ic=150mA; I_B=15mA)	V_{BEsat}	<1.3	<1.3	<1.3	V
(Ic=500mA; I_B=50mA)	V_{BEsat}	-	<2.6	<2.6	V
Emitter Cutoff Current (V_{EB}=3V)	I_{EBO}	<10	<10	<10	nA
Collector cutoff current (V_{CB}=50V)	I_{CBO}	<10	<10	<10	nA
(V_{CB}=50V; Tamb=150℃)	I_{CBO}	<10	<10	<10	μA
DC current gain (V_{CE}=10V; I_C=0.1mA)	h_{FE}	-	>20	>35	-
(V_{CE}=10V; Ic=1mA)	h_{FE}	>12	>25	>50	-
(V_{CE}=10V; Ic=10mA)	h_{FE}	>17	>35	>75	-
(V_{CE}=10V;I_C=150mA)	h_{FE}	20 to 60	40 to 120	100 to 300	-
(V_{CE}=10V; I_C=500mA)	h_{FE}	-	>20	>30	-
(V_{CE}=10V; I_C=150mA)	h_{FE}	>10	>20	>50	-
Dynamic characteristics (Tamb=25℃)					
Collector base capacitance (V_{CB}=10V; f=1MHz)	C_{CBO}	<8	<8	<8	pF
Transition frequency (V_{CE}=20V; Ic=20mA; f=100MHz)	f_T	>250	>250	>250	MHz
Switching times: (Vcc=20V; Ic=150mA; I_{B1} approx. I_{B2} approx. 150mA					
Delay time	td	5	5	5	ns
Rise time	tr	15	15	15	ns
Storage time	ts	190	190	190	ns
Fall time	tf	23	23	23	ns