Ausgabe 2008-04

Transistoren

Datensammlung für den praktischen Einsatz

NF-Transistoren bis 30 kHz
NF-Leistungstransistoren

Darlingtontransistoren
Darlingtonleistungstransistoren

HF-Transistoren bis 10 MHz
HF-Transistoren bis 100 MHz
HF-Transistoren bis 300 MHz
HF-Transistoren über 300 MHz
HF-Leistungstransistoren

Schalttransistoren, langsam - über 1 µs
Schalttransistoren, mittelschnell - über 100 ns
Schalttransistoren, schnell - unter 100 ns
Leistungsschalttransistoren

Vergleichstypen für Transistoren aus der Produktion der ehem. DDR

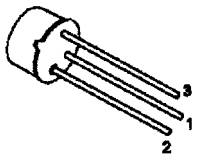
Feldeffekttransistoren

NF-Transistor I_c = 100 mA

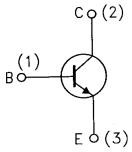
rauscharme Audio-Verstärker

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)
BC 107	TO-18	npn	45	100
BC 108			20	
BC 109			20	

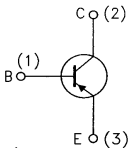
BC 177	TO-18	pnp	-45	-100
BC 178			-20	
BC 179			-20	



TO-18



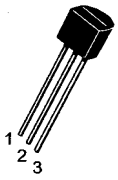
npn



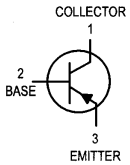
pnp

BC 239 rauscharm

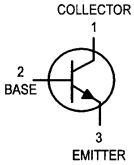
Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	f_T (MHz)	h_{FE}
BC 237	TO-92	npn	45	100	250	Klasse A: 120...220
BC 238			25			Klasse B: 180...460
BC 239			25			Klasse C: 380...800



TO-92



pnp



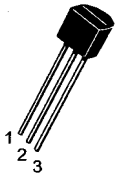
npn

Typ	Gehäuse	Ausführung	U_{CBO} (V)	I_c (mA)	f_T (MHz)	
BC 307		pnp	-50	-100	150	
BC 308			-30			
BC 309			-25			

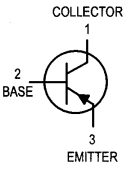
NF-Transistoren Ic = 100 mA Dauerstrom

Typ	Gehäuse	Ausführung	I_c (mA)	U_{CEO} (V)
BC 546 A / B	TO-92	npn	100	65
BC 547 A / B / C				45
BC 548 A / B / C				30
BC 549 B / C				30

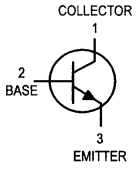
BC 556 A / B	TO-92	pnp	-100	-65
BC 557 A / B / C				-45
BC 558 A / B / C				-30
BC 559 B / C				-30



TO-92



pnp



npn

NF-Transistoren I_c = 200 mA

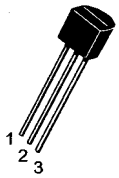
Typ	Gehäuse	Ausführung	I_c (mA)	U_{CEO} (V)	U_{CBO} (V)
BCY 58	TO-18	npn	200	32	
BCY 59				45	

BCY 72	TO-18	pnp	-200		-25

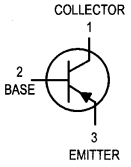
BCY 78	TO-18	pnp	-200	-32	
BCY 79				-45	

Emitter
Basis
Kollektor

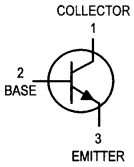
TO-18



TO-92 (BC 4xx)



pnp



npn

Typ	Gehäuse	Ausführung	I_c (mA)	U_{CBO} (V)
BC 445	TO-92	npn	200	60
BC 447				80
BC 449				100

BC 446	TO-92	pnp	-200	-60
BC 448				-80
BC 450				-100

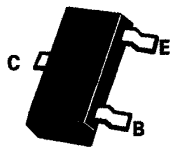
NF-Transistor I_c = 800 mA Dauerstrom

Typ	Gehäuse	Ausführung	I_c (mA)	U_{CEO} (V)	h_{FE}
BC 327, BC 327-16 / -25 / -40	TO-92	pnp	-800	-45	16:100-250 25:160-400
BC 328, BC 328-16 / -25 / -40	TO-92	pnp	-800	-25	40: 250-630

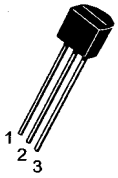
BC 337, BC 337-16 / -25 / -40	TO-92	npn	800	45	16:100-250 25:160-400
BC 338, BC 338-16 / -25 / -40	TO-92	npn	800	25	40: 250-630

Typ	Gehäuse	Ausführung	I_c (mA)	U_{CEO} (V)	h_{FE}
BC 807, BC 807-16 / -25 / -40	SOT-23	pnp	-800	-45	16:100-250 25:160-400
BC 808, BC 808-16 / -25 / -40	SOT-23	pnp	-800	-25	40: 250-630

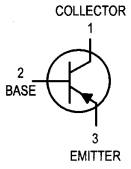
BC 817, BC 817-16 / -25 / -40	SOT-23	npn	800	45	16:100-250 25:160-400
BC 818, BC 817-16 / -25 / -40	SOT-23	npn	800	25	40: 250-630



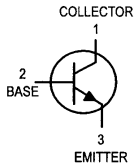
SOT-23



TO-92



pnp

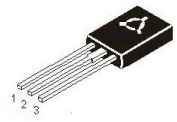


npn

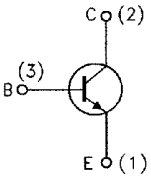
NF-Transistoren I_C = 1 A

Typ	Gehäuse	Ausführung	I_c (mA)	U_{CEO} (V)
2 N 4918	TO-126	pnp	-1000	-40
2 N 4919				-60
2 N 4920				-80

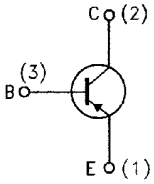
2 N 4921	TO-126	npn	1000	40
2 N 4922				60
2 N 4923				80



TO-126



npn



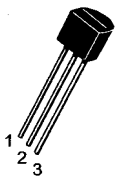
pnp

Typ	Gehäuse	Ausführung	U_{CEO} (V)	$I_{c\,max}$ (mA)
BC 140	TO-39	npn	40	1000
BC 141			60	

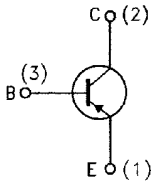
BC 160	TO-39	pnp	-40	-1000
BC 161			-60	

Typ	Gehäuse	Ausführung	U_{CEO} (V)	$I_{c\,max}$ (mA)
BC 635	TO-92	npn	45	1000
BC 637			60	
BC 639			80	

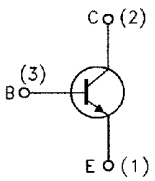
BC 636	TO-92	pnp	-45	-1000
BC 638			-60	
BC 640			-80	



TO-92



pnp



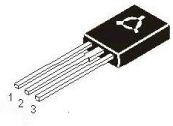
npn

E
B
C

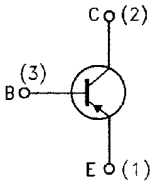
TO-39

NF-Hochspannungstransistoren

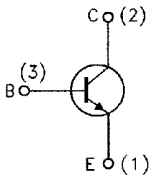
Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	f_T (MHz)
2 N 5655	TO-126	npn	250	500	10
2 N 5656			300		
2 N 5657			350		



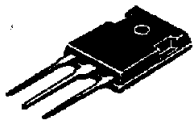
TO-126



pnp



npn

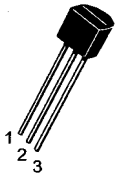


TO-247

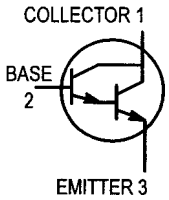
Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	f_T (MHz)
BU 508	TO-247	npn	700	5000	4

Darlington-Transistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	
BC 516	TO-92	pnp	-30	-500	
BC 517	TO-92	npn	30	500	



TO-92



npn

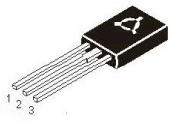
Darlington-Leistungstransistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	$I_{c\,max}$ (mA)	h_{FE}
2 N 6034	TO-126	pnp	-40	-4000	750 ... 15 000
2 N 6035			-60		
2 N 6036			-80		

2 N 6037	TO-126	npn	40	4000	750 ... 15 000
2 N 6038			60		
2 N 6039			80		

Typ	Gehäuse	Ausführung	U_{CEO} (V)	$I_{c\,max}$ (mA)	h_{FE}
BD 675	TO-126	npn	45	4000	≥ 750
BD 677			60		
BD 679			80		
BD 681			100		
BD 683			120		

BD 676	TO-126	pnp	-45	-4000	≥ 750
BD 678			-60		
BD 680			-80		
BD 682			-100		
BD 684			-120		



1 Emitter
2 Collector
3 Base

TO-126

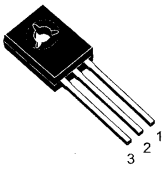
NF - Leistungstransistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)
BD 135	SOT-32	npn	45	1500
BD 137			60	
BD 139			80	

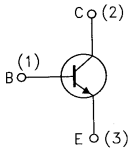
BD 136	SOT-32	pnp	-45	-1500
BD 138			-60	
BD 140			-80	

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)
BD 233	SOT-32	npn	45	2000
BD 235			60	
BD 237			80	

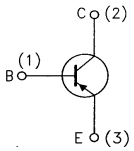
BD 234	SOT-32	pnp	-45	-2000
BD 236			-60	
BD 238			-80	



SOT-32



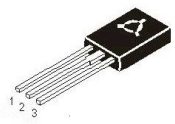
npn



pnp

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	
2 N 5190	TO-225	npn	40	4000	
2 N 5191			60		
2 N 5192			80		

2 N 5193	TO-225	pnp	-40	-4000	
2 N 5194			-60		
2 N 5195			-80		



1 E
2 C
3 B

TO-126, TO-225

NF-Leistungstransistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	
BD 239	TO-220	npn	45	2000	
BD 239 A			60		
BD 239 B			80		
BD 239 C			100		

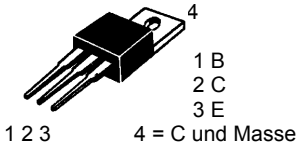
BD 240	TO-220	pnp	-45	-2000	
BD 240 A			-60		
BD 240 B			-80		
BD 240 C			-100		

BD 241	TO-220	npn	45	3000	
BD 241 A			60		
BD 241 B			80		
BD 241 C			100		

BD 242	TO-220	pnp	-45	-3000	
BD 242 A			-60		
BD 242 B			-80		
BD 242 C			-100		

BD 243	TO-220	npn	45	6000	
BD 243 A			60		
BD 243 B			80		
BD 243 C			100		

BD 244	TO-220	pnp	-45	-6000	
BD 244 A			-60		
BD 244 B			-80		
BD 244 C			-100		

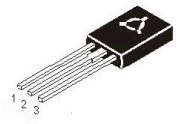


TO-220

NF-Leistungstransistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	h_{FE}
BD 175	TO-126	npn	45	3000	Klasse 6: 40...100
BD 177			60		Klasse 10: 63...160
BD 179			80		Klasse 16: 100...250

BD 176	TO-126	pnp	-45	-3000	Klasse 6: 40...100
BD 178			-60		Klasse 10: 63...160
BD 180			-80		Klasse 16: 100...250

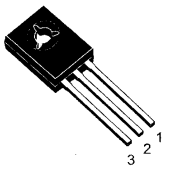


1 Emitter
2 Collector
3 Base

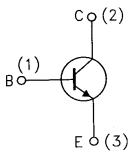
TO-126

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	h_{FE}
BD 433	SOT-32	npn	22	4000	Klasse 6: 40...100
BD 435			32		Klasse 10: 63...160
BD 437			45		Klasse 16: 100...250

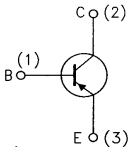
BD 434	SOT-32	pnp	-22	-4000	Klasse 6: 40...100
BD 436			-32		Klasse 10: 63...160
BD 438			-45		Klasse 16: 100...250



SOT-32



npn



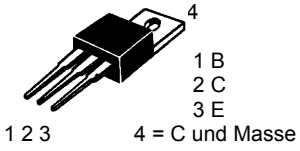
pnp

Typ	Gehäuse	Ausführung	U_{CBO} (V)	I_c (A)	P_V (W)
2 N 3055	TO-3	npn	+100	+15	115

NF-Leistungstransistoren

Typ	Gehäuse	Ausführung	U_{CBO} (V)	I_c (A)	
BD 643			45		
BD 645		npn	60	10,0	
BD 647			80		
BD 649			100	8,0	

BD 644			-45		
BD 646		pnp	-60	10,0	
BD 648			-80		
BD 650			-100	8,0	

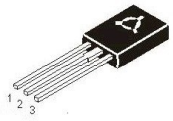


TO-220

HF - Transistoren

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	f_T (MHz)
BF 469	TO-126	npn	250	50	60
BF 471			300		

BF 470	TO-126	pnp	-250	-50	60
BF 472			-300		

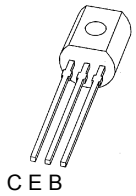


1 Emitter
2 Collector
3 Base

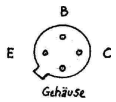
Metallfläche der Rückseite mit Kollektor verbunden.

TO-126

Typ	Gehäuse	Ausführung	U_{CEO} (V)	I_c (mA)	f_T (MHz)
BF 199	TO-92	npn	25	<25	550
BF 240	TO-92	npn	40	25	



TO-92



TO-72

Typ	Gehäuse	Ausführung	U_{CBO} (V)	U_{CEO} (V)	I_c (mA)	f_T (MHz)
BFX 89	TO-72	npn	30	15	25	1100
BFY 90	TO-72	npn	30	15	25	1300

Vergleichstypen Transistoren älterer Bauart und neuerer Bauart

ältere Typen		neuere Typen
Gehäuse TO-18	Gehäuse TO-92	Gehäuse TO-92
BC 107	BC 237; BC 171; BC 182	BC 547
BC 108	BC 238; BC 170; BC 172; BC 183	BC 548
BC 109	BC 239; BC 173	BC 549
BC 177; BC 251	BC 212; BC 307	BC 557
BC 250; BC 252	BC 213; BC 308	BC 558
	BC 184; BC 413; BC 414	BC 550
	BC 174	BC 546
BC 253	BC 309	BC 559
BC 256		BC 556
	BC 214; BC 415; BC 416	BC 560

Vergleichstypen für Transistoren aus der Produktion der ehem. DDR

(Minuswerte = pnp-Typ; Pluswerte = npn-Typ)

Typ	U_{CBO} (V)	U_{CEO} (V)	I_c (mA)	f_T (MHz)	Vergleichstypen
SC 116	-20	-20	-100	90	
SC 117	-30	-30	-100	90	
SC 118	-60	-60	-100	90	
SC 119	-80	-80	-100	90	
SC 206	+20		+100	300	
SC 207	+20		+100	300	
SC 236	+30	+20	+100	250	
SC 237	+50	+45	+100	250	BC 237
SC 238	+30	+20	+100	250	BC 238
SC 239	+30	+20	+100	250	BC 239
SC 307	-50	-45	-100	350	BC 307
SC 308	-30	-25	-100	350	BC 308
SC 309	-30	-25	-100	350	BC 309
SD 168		+300	+3000		
SD 335	+45	+45	+1500		BD 135
SD 336	-45	-45	-1500		BD 136
SD 337	+60	+60	+1500		BD 137
SD 338	-60	-60	-1500		BD 138
SD 339	+80	+80	+1500		BD 139
SD 340	-80	-80	-1500		BD 140
SD 600		+80	+3000	3	
SD 601		+50	+3000	3	
SD 602		+80	+3000	3	
SD 802		+100	+5000	2	
SD 812		+200	+4000		
SF 116	-20	-20	-500	130	
SF 117	-30	-30	-500	130	
SF 118	-60	-60	-500	130	
SF 119	-80	-80	-500	130	
SF 121	+20		+100	130	
SF 122	+33		+100	130	
SF 123	+66		+100	130	
SF 126	+33	+20	+500	130	BSY51, BSY 33
SF 127	+66	+30	+500	130	BSY 53, BF 177
SF 128	+100	+60	+500	130	BSY87, BSY 55
SF 129	+120	+80	+500	130	BSY 55

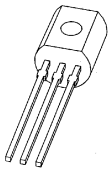
Typ	U_{CBO} (V)	U_{CEO} (V)	I_c (mA)	f_T (MHz)	Vergleichstypen
SF 136	+20	+12	+200	300	2 N 708
SF 137	+40	+20	+200	300	BFY 39, BSX 25
SF 138	+40		+200	200	
SF 215	+20		+100	350	
SF 216	+40		+100	350	
SF 225	+40	+25	+25	500	BF 241
SF 235	+40	+25	+25	430	BF 255, BF 310
SF 240	+40	+30	+25	600	BF 198, BF 240
SF 245	+40	+25	+25	800	BF 199, BF 241
SF 357	+160	+160	100	30	BF 457
SF 358	+250	+250	100	60	BF 458
SF 359	+300	+300	100	60	BF 459
SF 369	+250	+250	30	60	BF 469
SS 200	+70		30		
SS 201	+100		30		
SS 202	+120		30		
SS 216	+20	+15	+100	350	
SS 218	+20	+15	+100	350	
SS 219	+20	+15	+100	350	
SSY 20	+60	+40	+600		BSY 34
SU 160		+700	+5000		BU 208
SU 161		+350	+2500	7,5	BU 205
SU 165		+350	+2500		BU 126
SU 167	+800	+325	+10 A		BU526, BUY69 B
SU 169	+1000	+400	+ 10 A		BUY69A, BU626A
SU 177					BUX 46
SU 178		+400	+5000		BUX 82
SU 179		+450	+5000		BUX 83
SU 180		+400	+3500		BUX 85, BU 204
SU 187					BUX 41
SU 188					BUX 42
SU 189					BUX 48
SU 190					BUX 48 A
SU 380					BUT 11

Feldeffekttransistoren

N-Kanal-MOSFET

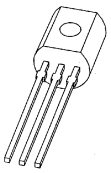
Typ	Gehäuse	U_{GS} (V)	U_{DS} (V)	U_{DG} (V)	I_D (mA)	I_{GF} (mA)	$R_{DS(ON)}$ (Ω)
BF 245 A	TO-92	-30		30		10	
BF 245 B							
BF 245 C							
BS 107	TO-92	± 20	200		250		14
BS 107 A							6,4
BS 170	TO-92	± 20	60	60	500		1,2

TO-92
(BF 245)



GSD

TO-92
(BS 107, BS 170)

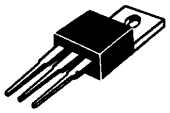


DGS

N-Kanal-Leistungs-MOSFET

Typ	Gehäuse	U_{GS} (V)	U_{DS} (V)	U_{DG} (V)	I_D (A)	I_{GF} (mA)	$R_{DS(ON)}$ (Ω)
BUZ 10	TO-220	± 20	50	50	23		0,06
IRF 510			100		5,6		0,54
IRF 520					9,2		0,27
IRF 530					14		0,16
IRF 540					22		0,055
IRF 540 N					33		0,044
IRF 630			200		9		0,40
IRF 640					18		0,18
IRF 634		± 30	250		8		0,45
IRF 644 B					14		0,28
IRF 710		± 20	400		2		3,6
IRF 720					3,3		1,8
IRF 730					5,5		1,0
IRF 740					10		0,55
IRF 820			500		2,5		2,5
IRF 830					4,5		1,35
IRF 840					8,0		0,85

TO-220

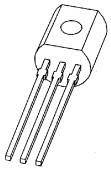


GDS

P-Kanal-MOSFET

Typ	Gehäuse	U_{GS} (V)	U_{DS} (V)	U_{DG} (V)	I_D (mA)	I_{GF} (mA)	$R_{DS(ON)}$ (Ω)
BS 250	TO-92	± 20	-45		-250		9

TO-92

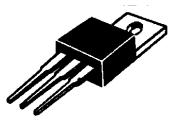


DGS

P-Kanal-Leistungs-MOSFET

Typ	Gehäuse	U_{GS} (V)	U_{DS} (V)	U_{DG} (V)	I_D (A)	I_{GF} (mA)	$R_{DS(ON)}$ (Ω)
IRF 9520	TO-220		-100		-6,0		0,6
IRF 9530					-12		0,3
IRF 9540					-19		0,2
IRF 9610			-200		-1,75		3,0
IRF 9620					-3,5		1,5
IRF 9630					-6,5		0,8
IRF 9640					-11		0,5

TO-220



GDS