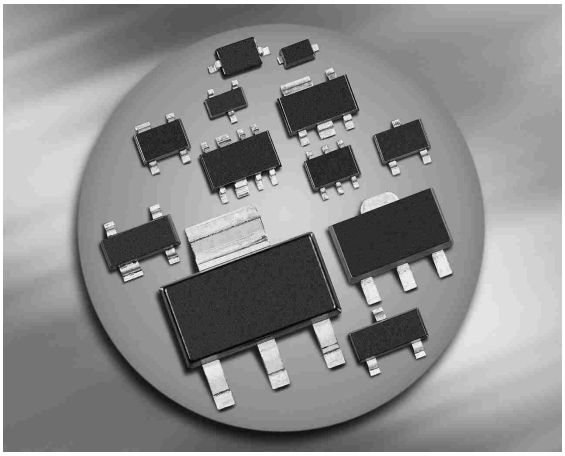
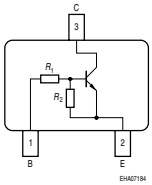
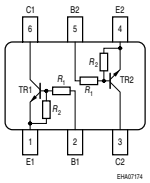
NPN Silicon Digital Transistor

- Switching circuit, inverter, interface circuit driver circuit
- Built in bias resistor (R_1=10kΩ, R_2=47kΩ)
- For 6-PIN packages: two (galvanic) internal isolated transistors with good matching in one package



BCR135/F/L3 **BCR135S**
BCR135T/W **SEMH9**





Type	Marking	Pin Configuration						Package
BCR135	WJs	1=B	2=E	3=C	-	-	-	SOT23
BCR135F	WJs	1=B	2=E	3=C	-	-	-	TSFP-3
BCR135L3	WJ	1=B	2=E	3=C	-	-	-	TSLP-3-4
BCR135S	WJs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BCR135T	WJs	1=B	2=E	3=C	-	-	-	SC75
BCR135W	WJs	1=B	2=E	3=C	-	-	-	SOT323
SEMH9	WJ	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT666

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	50	V
Collector-base voltage	V_{CBO}	50	
Emitter-base voltage	V_{EBO}	6	
Input on voltage	$V_{i(on)}$	20	
Collector current	I_C	100	mA
Total power dissipation	P_{tot}		mW
BCR135, $T_S \leq 102°C$		200	
BCR135F, $T_S \leq 128°C$		250	
BCR135L3, $T_S \leq 135°C$		250	
BCR135S, $T_S \leq 115°C$		250	
BCR135T, $T_S \leq 109°C$		250	
BCR135W, $T_S \leq 124°C$		250	
SEMH9, $T_S \leq 75°C$		250	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}		K/W
BCR135		≤ 240	
BCR135F		≤ 90	
BCR135L3		≤ 60	
BCR135S		≤ 140	
BCR135T		≤ 165	
BCR135W		≤ 105	
SEMH9		≤ 300	

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

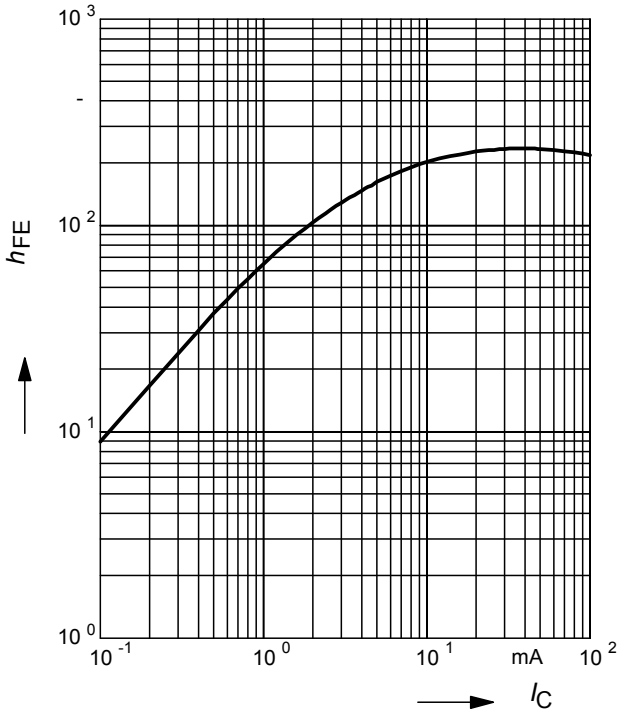
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 10 µA, I_E = 0	$V_{(BR)CBO}$	50	-	-	
Collector-base cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 6 V, I_C = 0	I_{EBO}	-	-	167	µA
DC current gain[1)] I_C = 5 mA, V_{CE} = 5 V	h_{FE}	70	-	-	-
Collector-emitter saturation voltage[1)] I_C = 10 mA, I_B = 0.5 mA	V_{CEsat}	-	-	0.3	V
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.5	-	1	
Input on voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	0.5	-	1.4	
Input resistor	R_1	7	10	13	kΩ
Resistor ratio	R_1/R_2	0.19	0.21	0.24	-
AC Characteristics					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	150	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

[1]Pulse test: t < 300µs; D < 2%

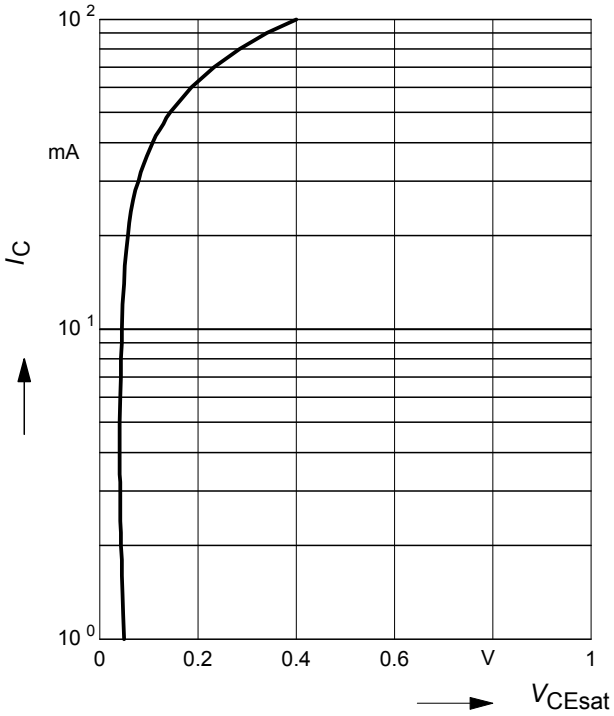
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 5V (common emitter configuration)



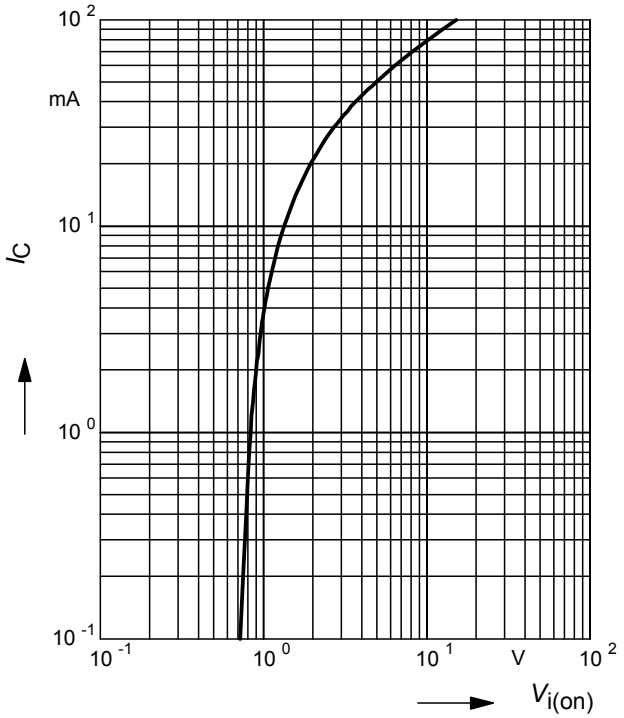
Collector-emitter saturation voltage

$V_{CEsat} = f(I_C)$, h_{FE} = 20



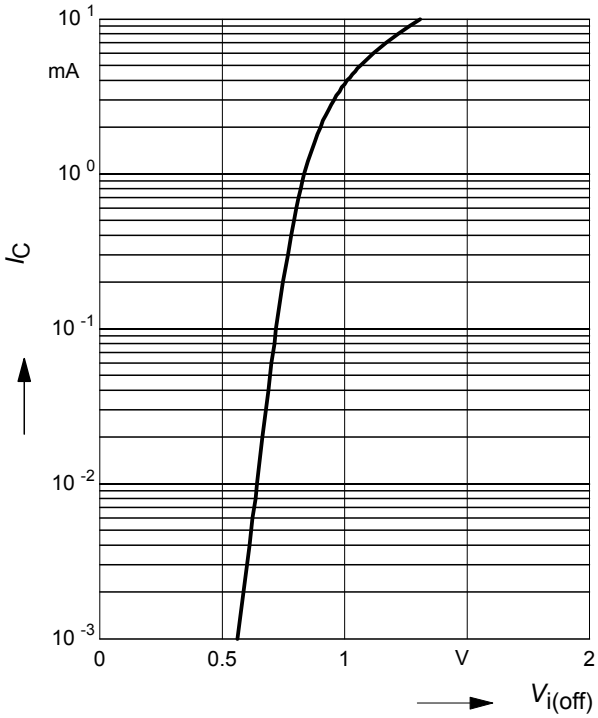
Input on Voltage $V_{i(on)} = f(I_C)$

V_{CE} = 0.3V (common emitter configuration)

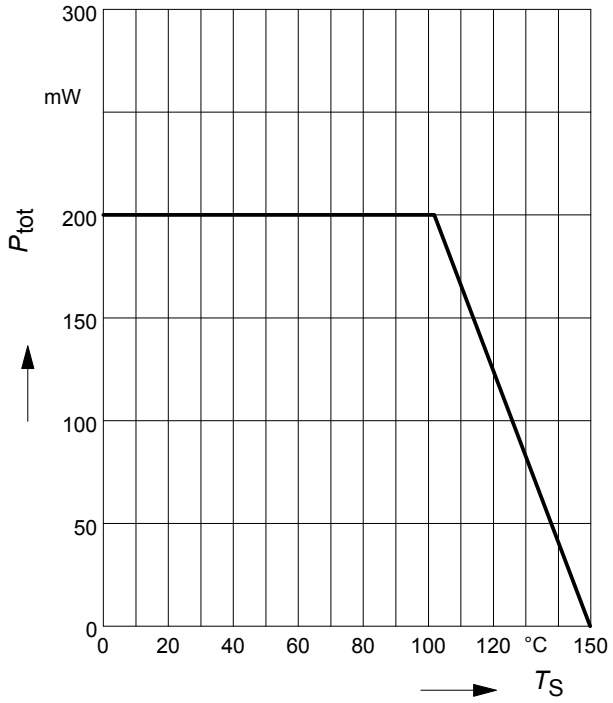


Input off voltage $V_{i(off)} = f(I_C)$

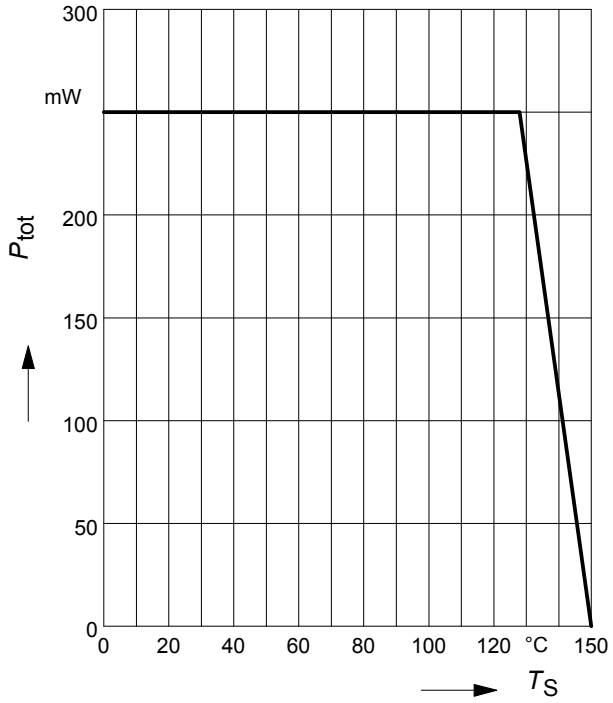
V_{CE} = 5V (common emitter configuration)



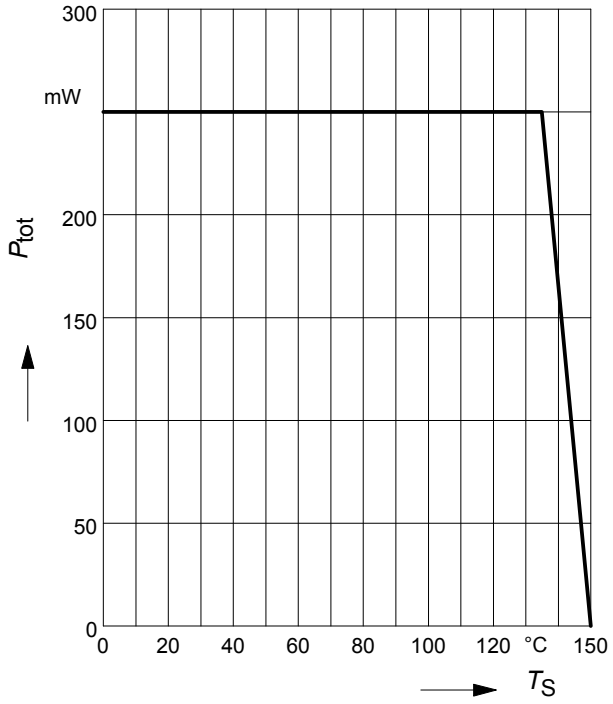
Total power dissipation $P_{tot} = f(T_S)$
BCR135



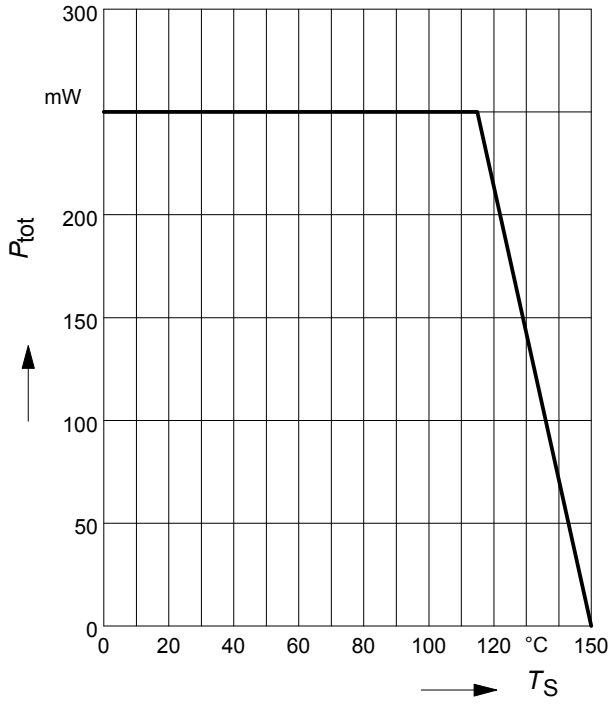
Total power dissipation $P_{tot} = f(T_S)$
BCR135F



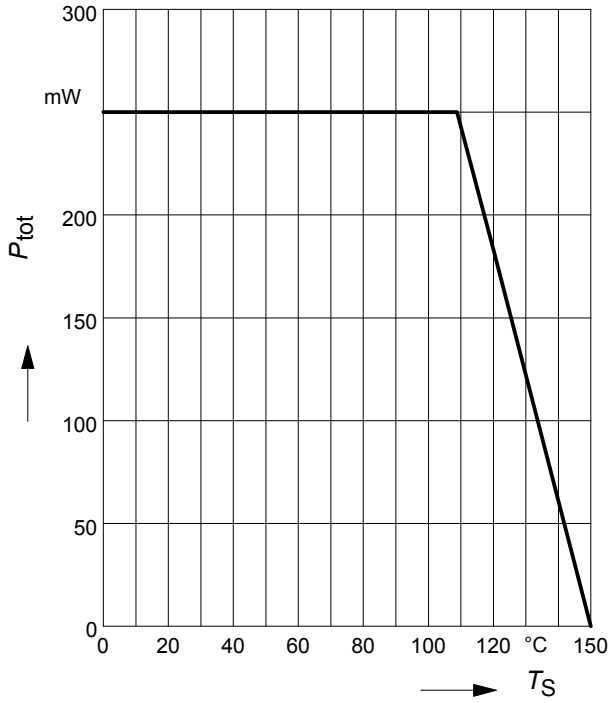
Total power dissipation $P_{tot} = f(T_S)$
BCR135L3



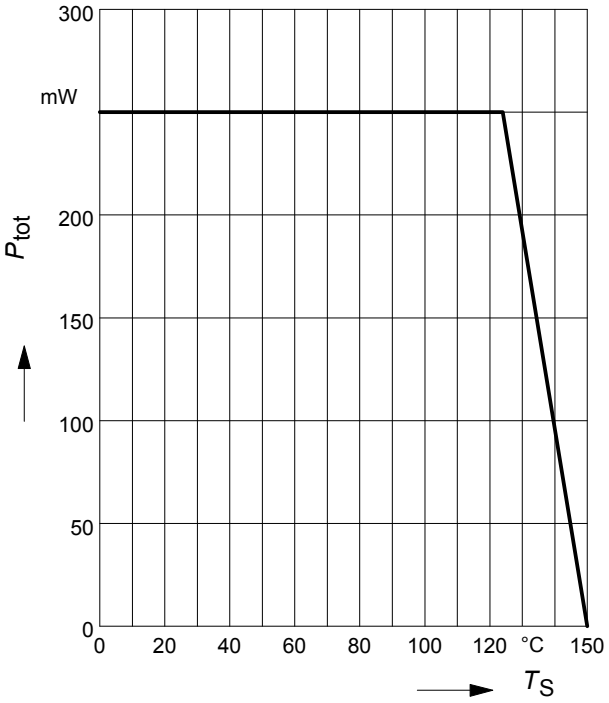
Total power dissipation $P_{tot} = f(T_S)$
BCR135S



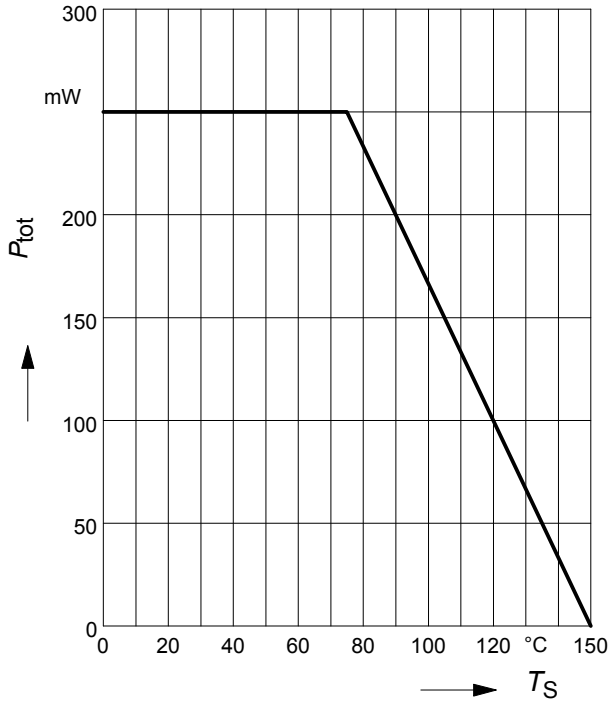
Total power dissipation $P_{tot} = f(T_S)$
BCR135T



Total power dissipation $P_{tot} = f(T_S)$
BCR135W

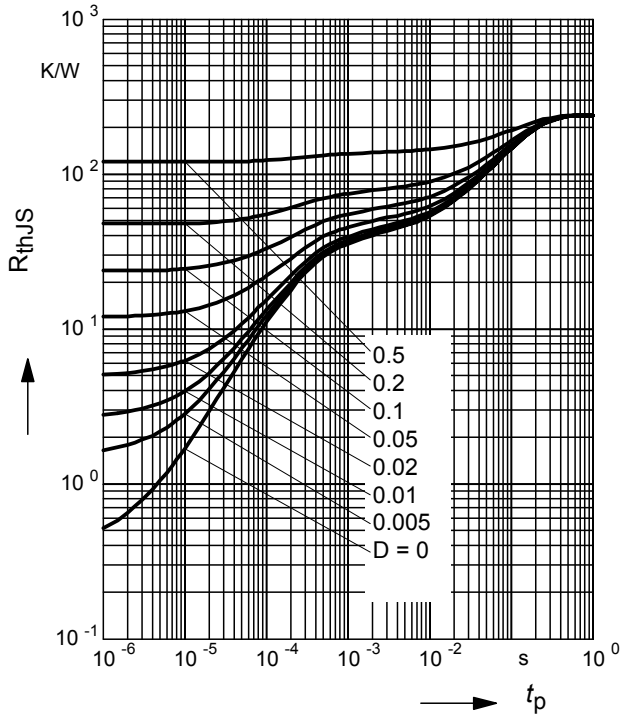


Total power dissipation $P_{tot} = f(T_S)$
SEMH9



Permissible Pulse Load $R_{thJS} = f(t_p)$

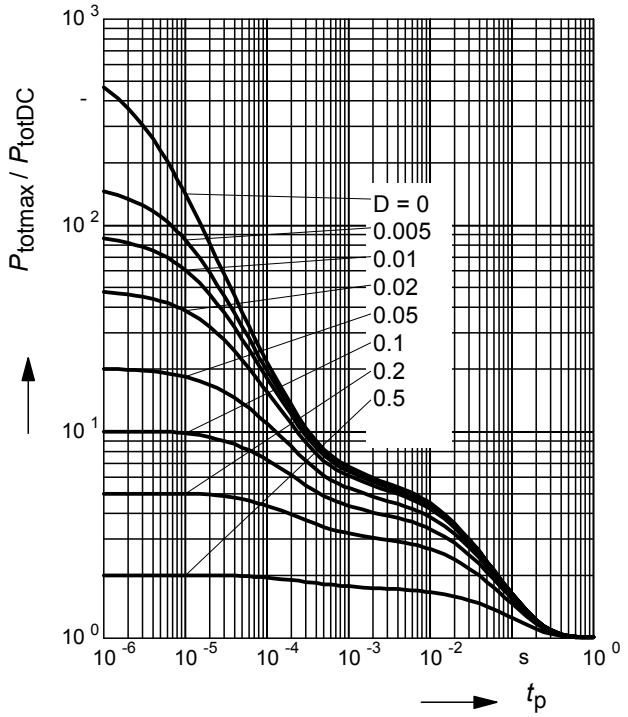
BCR135



Permissible Pulse Load

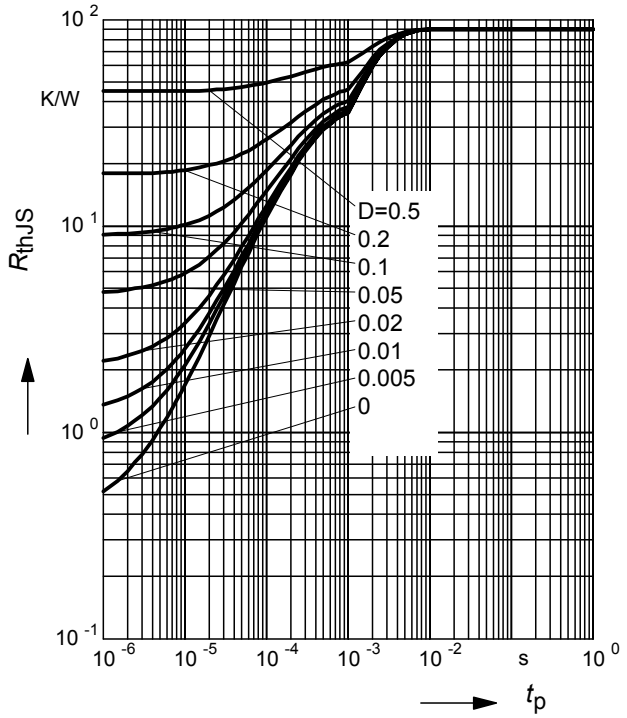
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135



Permissible Puls Load $R_{thJS} = f(t_p)$

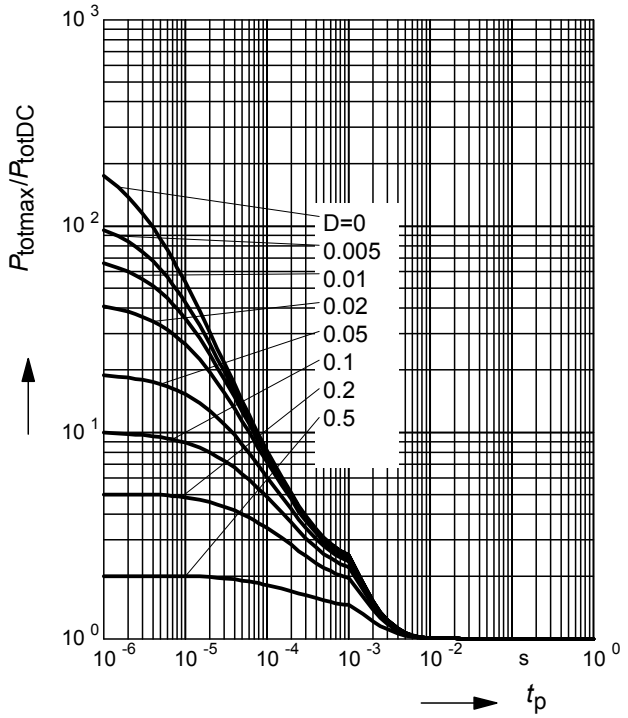
BCR135F



Permissible Pulse Load

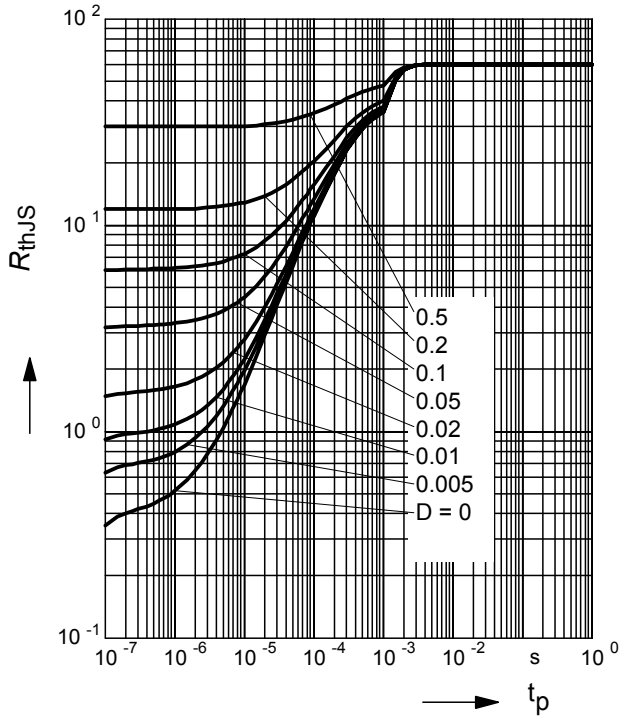
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135F



Permissible Puls Load $R_{thJS} = f(t_p)$

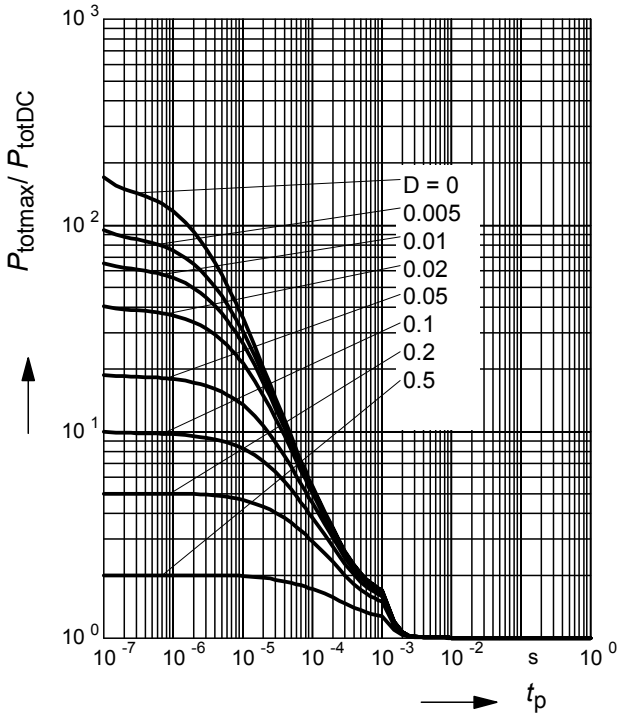
BCR135L3



Permissible Pulse Load

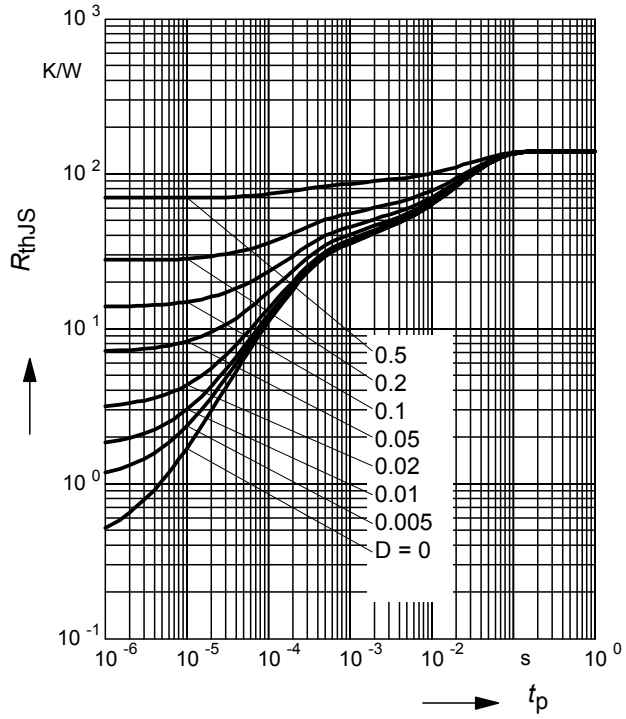
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135L3



Permissible Puls Load $R_{thJS} = f(t_p)$

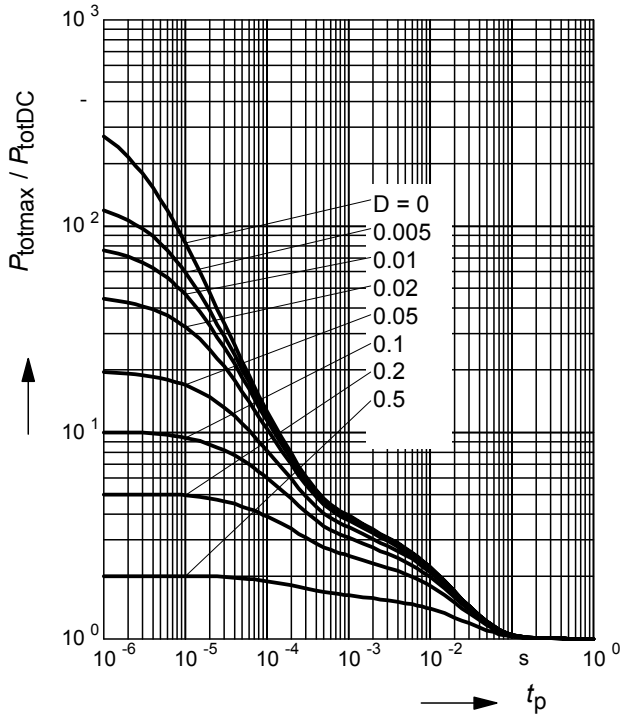
BCR135S



Permissible Pulse Load

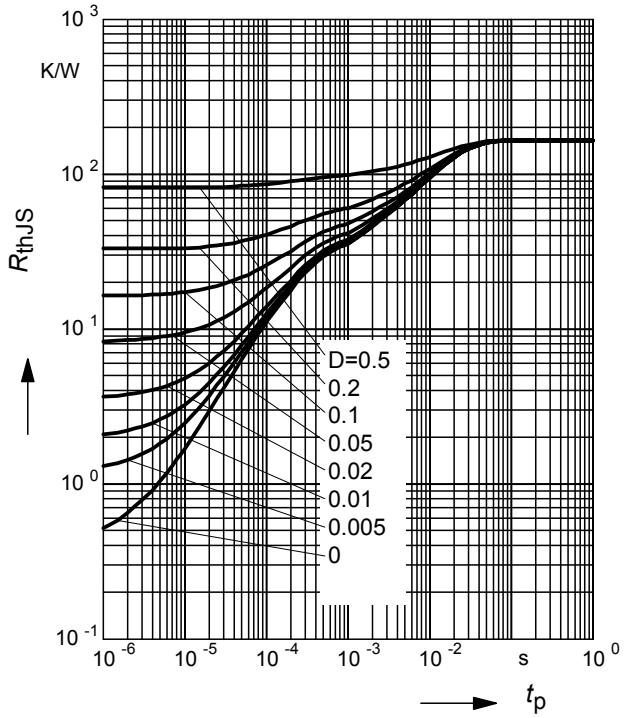
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135S



Permissible Puls Load $R_{thJS} = f(t_p)$

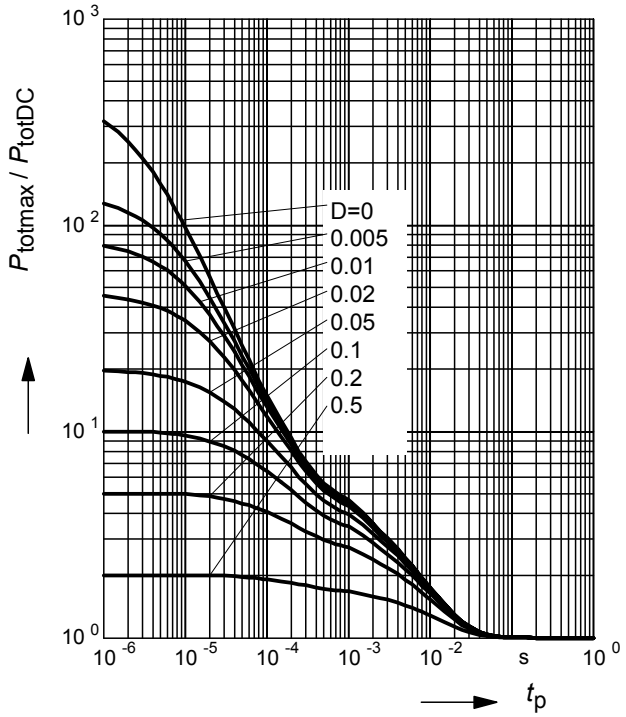
BCR135T



Permissible Pulse Load

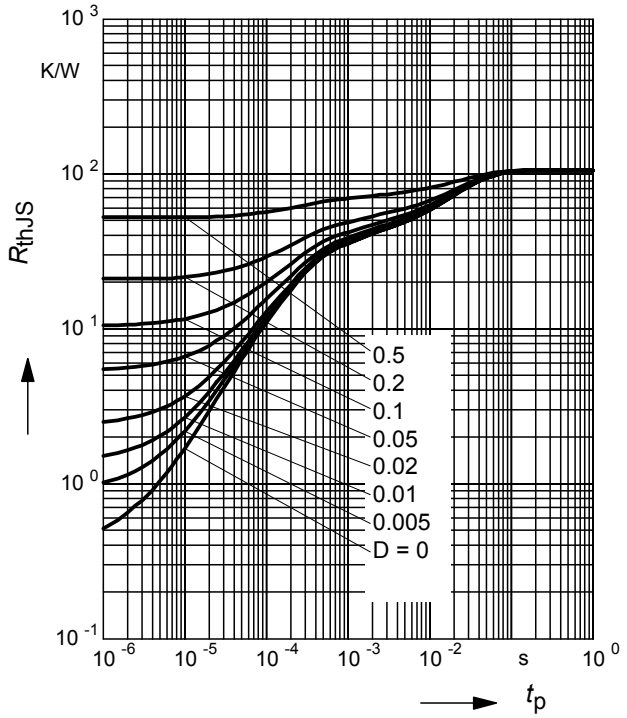
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135T



Permissible Puls Load $R_{thJS} = f(t_p)$

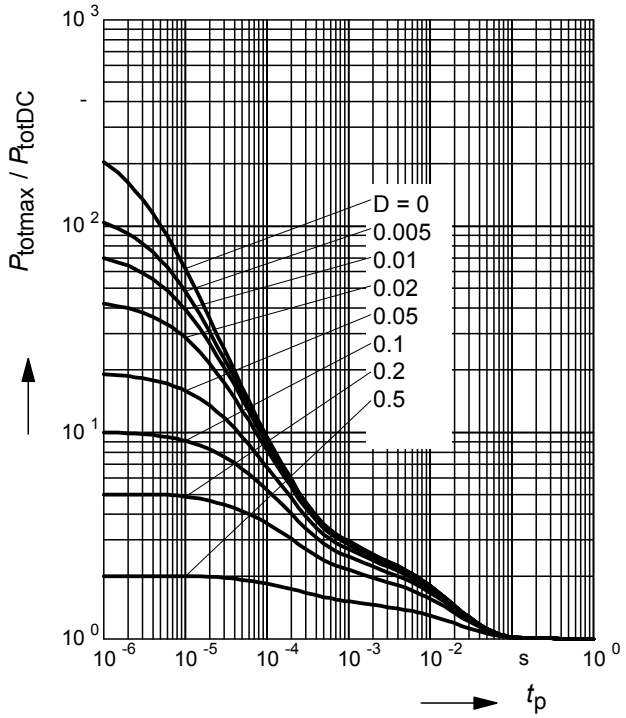
BCR135W



Permissible Pulse Load

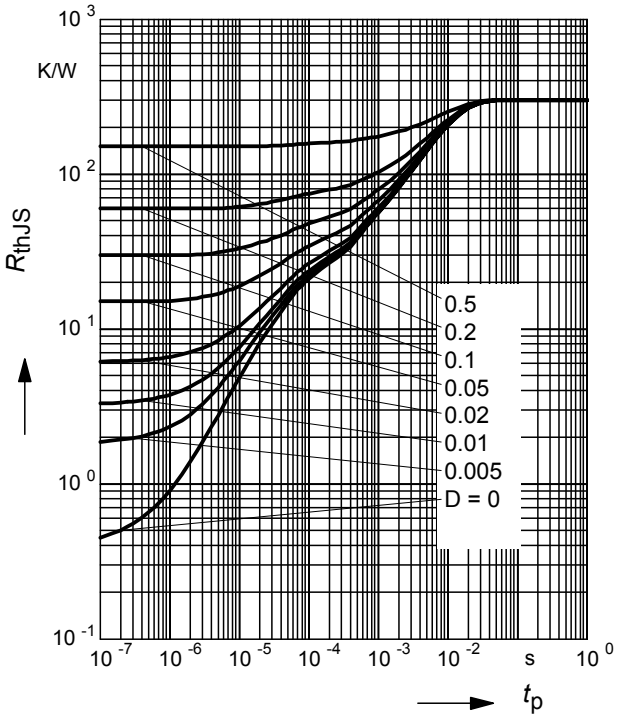
$P_{totmax}/P_{totDC} = f(t_p)$

BCR135W



Permissible Puls Load $R_{thJS} = f(t_p)$

SEMH9



Permissible Pulse Load

$P_{totmax}/P_{totDC} = f(t_p)$

SEMH9