NPN/PNP Silicon Digital Tansistor Array
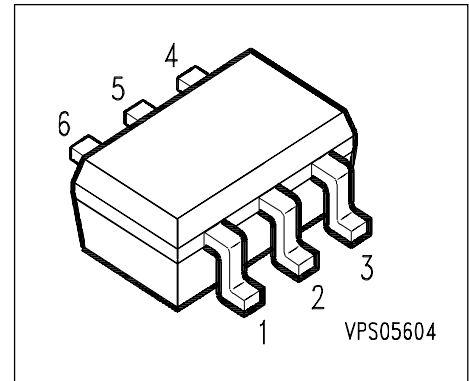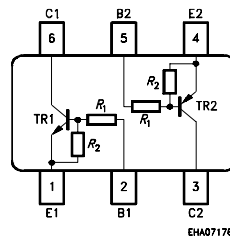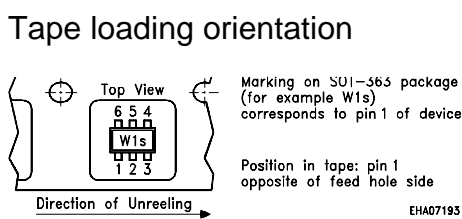
- Switching circuit, inverter, interface circuit, drive circuit
- Two (galvanic) internal isolated NPN/PNP Transistor in one package
- Built in bias resistor

  NPN: R1 = 47kΩ, R2 = 47kΩ

  PNP: R1 = 2.2kΩ, R2 = 47kΩ

Tape loading orientation

Marking on SOT−363 package (for example W1s) corresponds to pin 1 of device

Position in tape: pin 1 opposite of feed hole side

Type	Marking	Ordering Code	Pin Configuration						Package
BCR 48PN	WTs	Q62702-C2496	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT-363

Maximum Ratings

Parameter		Symbol	Values	Unit
Collector-emitter voltage		V_{CEO}	50	V
Collector-base voltage		V_{CBO}	50	
Emitter-base voltage	NPN	V_{EBO}	10	
Emitter-base voltage	PNP	V_{EBO}	5	
DC collector current	NPN	I_C	70	mA
DC collector current	PNP	I_C	100	
Input on voltage	NPN	$V_{i(on)}$	50	V
Input on voltage	PNP	$V_{i(on)}$	10	
Total power dissipation, T_S = 115°C		P_{tot}	250	mW
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	- 65 ... + 150	

Thermal Resistance

Parameter		Symbol	Values	Unit
Junction ambient [1]		R_{thJA}	≤ 275	K/W
Junction - soldering point		R_{thJS}	≤ 140	

1) Package mounted on pcb 40mm x 40mm x 1.5mm / 0.5cm^2 Cu

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics for NPN Type					
Collector-emitter breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage I_C = 100 µA, I_B = 0	$V_{(BR)CBO}$	50	-	-	
Collector cutoff current V_{CB} = 40 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter cutoff current V_{EB} = 10 V, I_C = 0	I_{EBO}	-	-	164	µA
DC current gain 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	mV
Input off voltage I_C = 100 µA, V_{CE} = 5 V	$V_{i(off)}$	0.8	-	1.5	V
Input on Voltage I_C = 2 mA, V_{CE} = 0.3 V	$V_{i(on)}$	1	-	3	
Input resistor	R_1	32	47	62	kΩ
Resistor ratio	R_1/R_2	0.9	1	1.1	-
AC Characteristics for NPN Type					
Transition frequency I_C = 10 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	100	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	3	-	pF

1) Pulse test: t < 300µs; D < 2%

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

| Parameter	Symbol	Values			Unit
		min.	**typ.**	**max.**	
DC Characteristics for PNP Type					
Collector-emitter breakdown voltage $I_C = 100\ \mu A,\ I_B = 0$	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage $I_C = 100\ \mu A,\ I_B = 0$	$V_{(BR)CBO}$	50	-	-	
Collector cutoff current $V_{CB} = 40\ V,\ I_E = 0$	I_{CBO}	-	-	100	nA
Emitter cutoff current $V_{EB} = 5\ V,\ I_C = 0$	I_{EBO}	-	-	164	
DC current gain $I_C = 5\ mA,\ V_{CE} = 5\ V,\ BC \dots 16\ W$	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 $I_C = 100\ \mu A,\ V_{CE} = 5\ V$	$V_{i(off)}$	0.4	-	0.8	
Input on voltage $I_C = 2\ mA,\ V_{CE} = 0.3\ V$	$V_{i(on)}$	0.5	-	1.1	
Input resistor	R_1	1.5	2.2	2.9	kΩ
Resistor ratio	R_1/R_2	0.042	0.047	0.052	-
AC Characteristics for PNP Type					
Transition frequency $I_C = 10\ mA,\ V_{CE} = 5\ V,\ f = 100\ MHz$	f_T	-	200	-	MHz
Collector-base capacitance $V_{CB} = 10\ V,\ f = 1\ MHz$	C_{cb}	-	3	-	pF

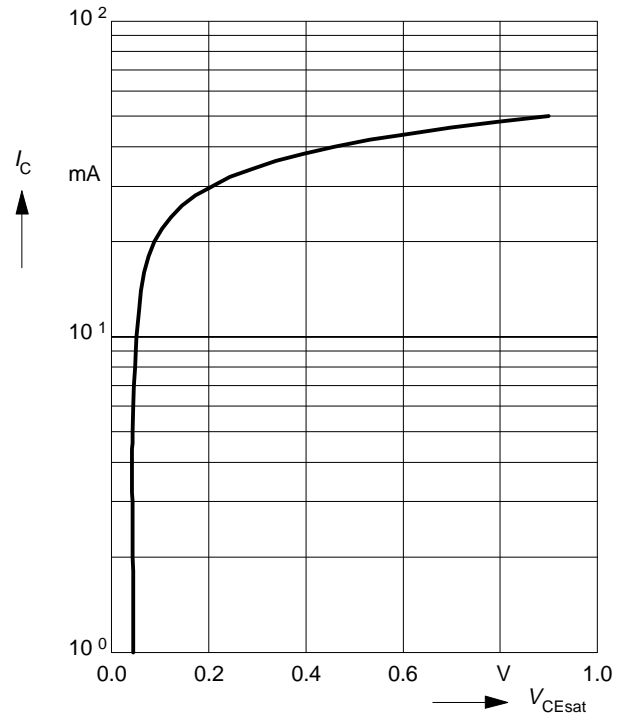1) Pulse test: t < 300µs; D < 2%

NPN TYPE

DC Current Gain $h_{FE} = f(I_C)$
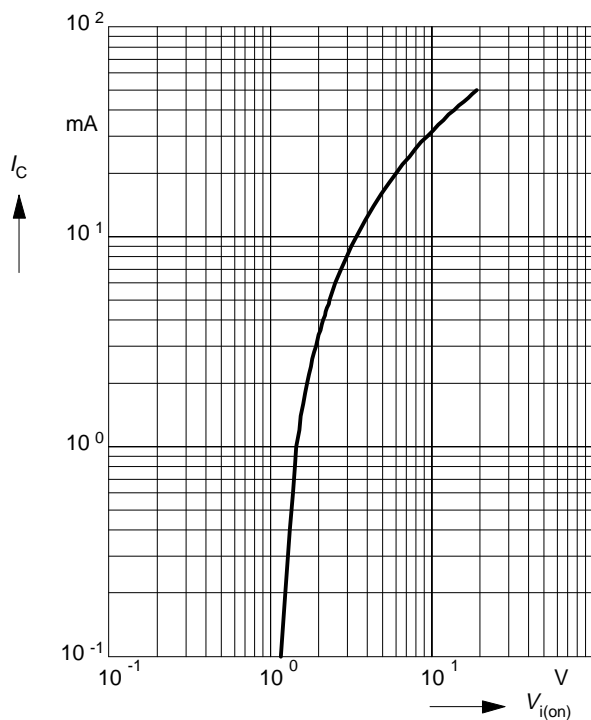V_{CE} = 5V (common emitter configuration)
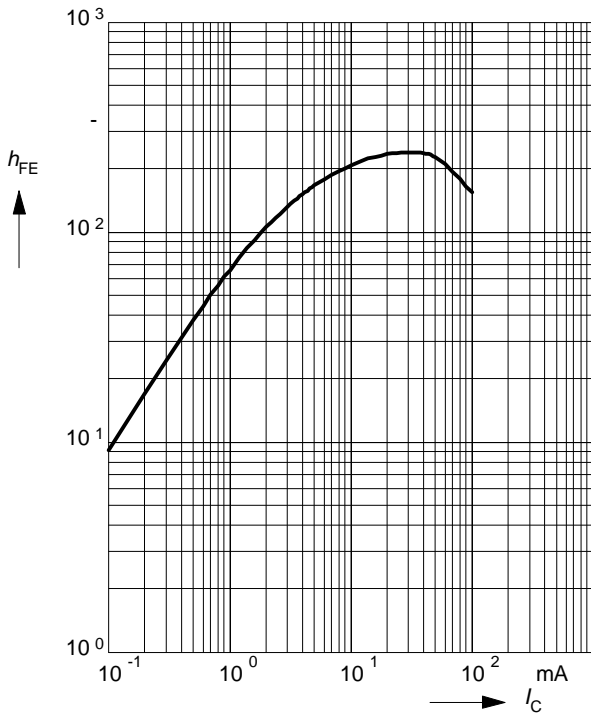
Collector-Emitter Saturation Voltage
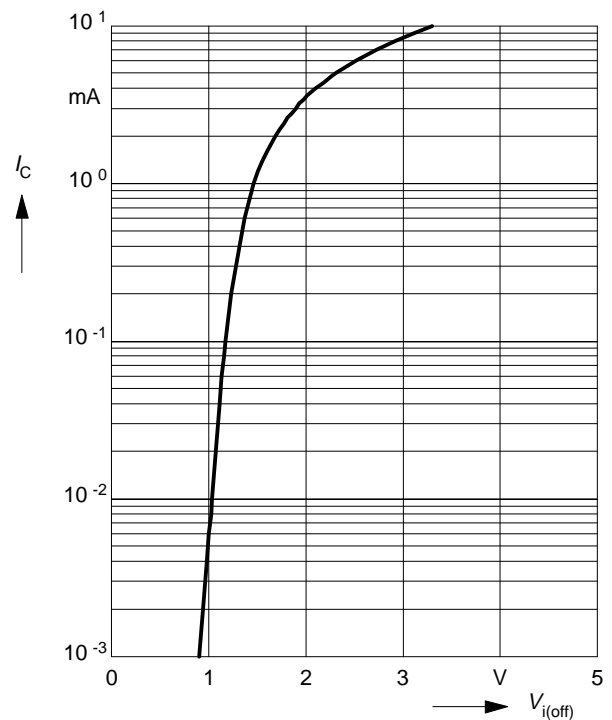$V_{CEsat} = f(I_C)$, $h_{FE} = 20$

Input on Voltage $V_{i(on)} = f(I_C)$
V_{CE} = 0.3V (common emitter configuration)
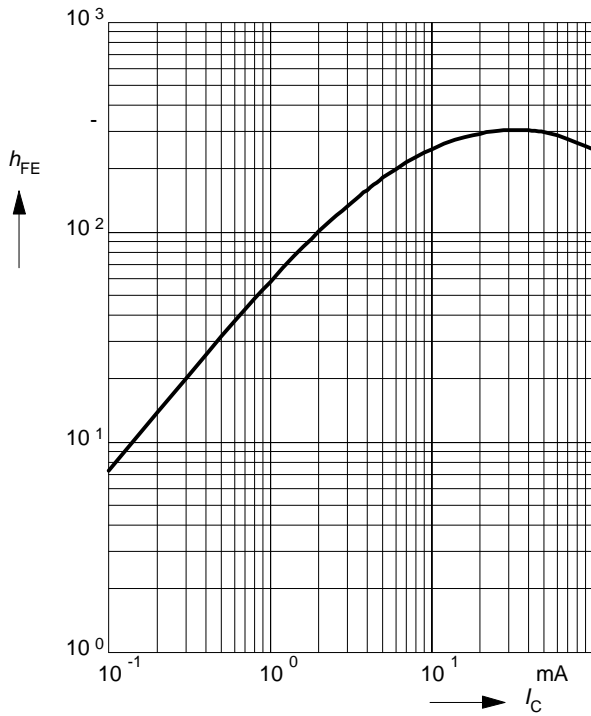
Input off voltage $V_{i(off)} = f(I_C)$
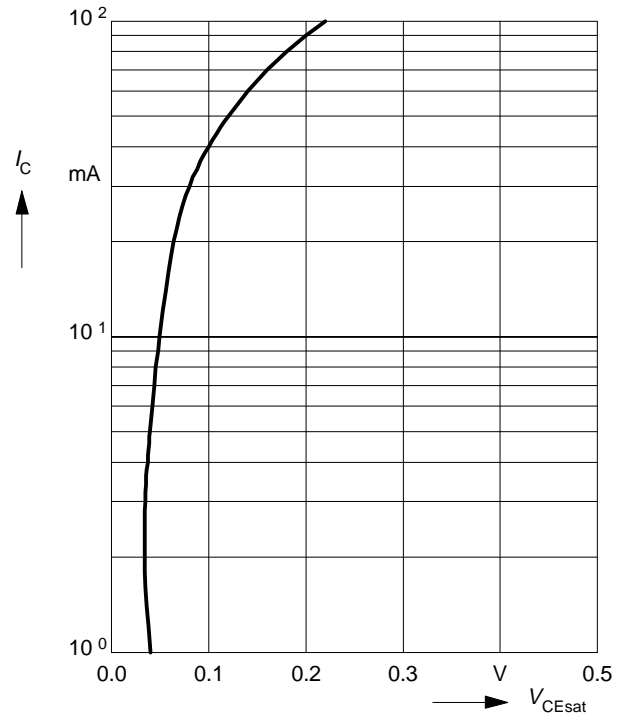V_{CE} = 5V (common emitter configuration)

PNP TYPE

DC Current Gain $h_{FE} = f(I_C)$

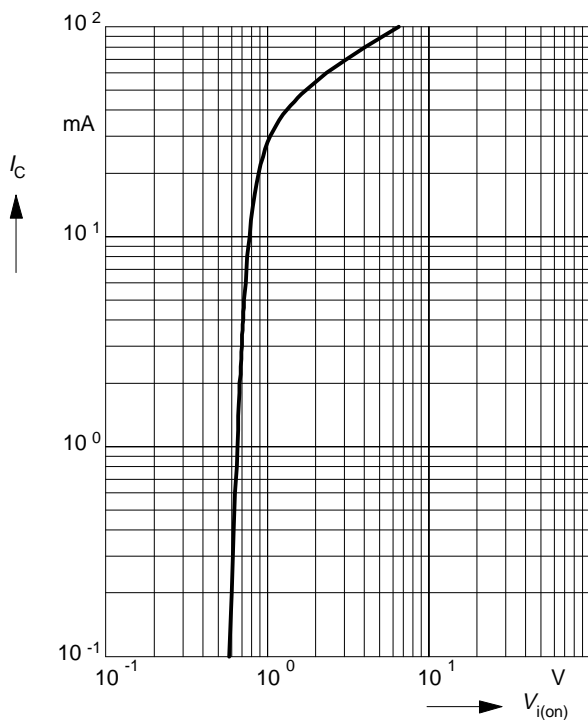$V_{CE} = 5V$ (common emitter configuration)

Collector-Emitter Saturation Voltage

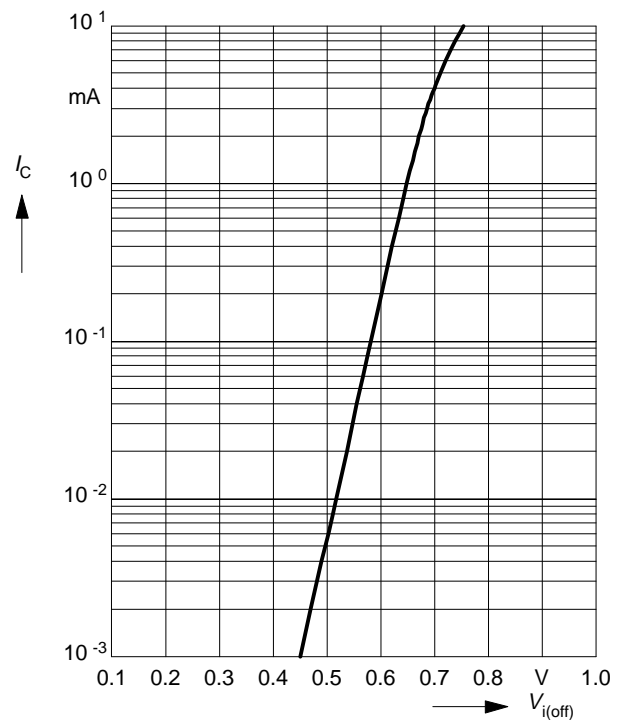$V_{CEsat} = f(I_C)$, $h_{FE} = 20$

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

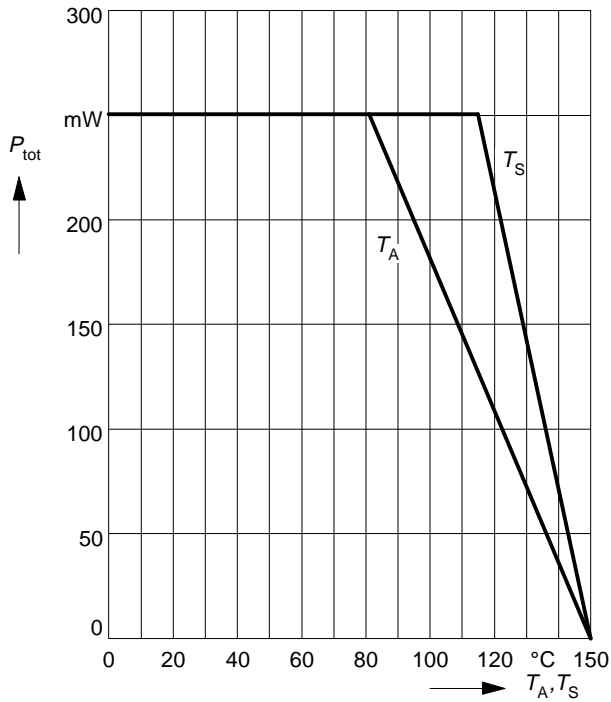$V_{CE} = 0.3V$ (common emitter configuration)

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

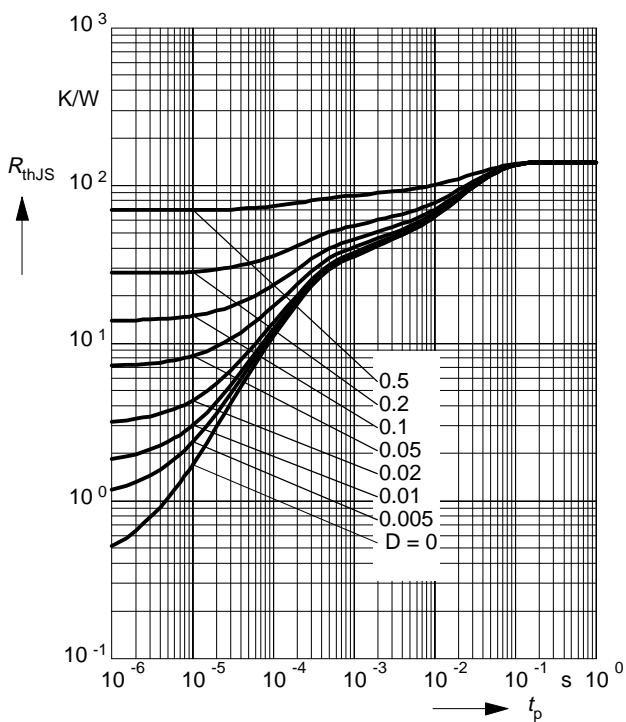$V_{CE} = 5V$ (common emitter configuration)

Total power dissipation $P_{tot} = f(T_A*; T_S)$

* Package mounted on epoxy

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

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