

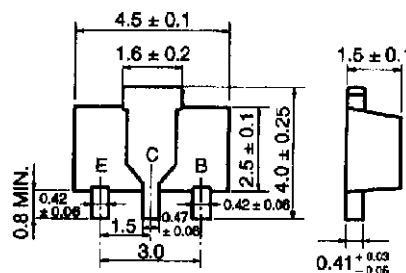
NPN SILICON EPITAXIAL TRANSISTOR
FOR LOW-FREQUENCY POWER AMPLIFIERS AND MID-SPEED SWITCHING

The 2SD2402 is a transistor featuring high current capacitance in small dimension. This transistor is ideal for DC/DC converters and motor drivers.

FEATURES

- High current capacitance
- Low collector saturation voltage
- Complementary transistor with 2SB1571

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

E : Emitter
C : Collector(Fin)
B : Base

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		50	V
Collector to emitter voltage	V_{CEO}		30	V
Emitter to base voltage	V_{EBO}		6.0	V
Collector current (DC)	$I_{C(DC)}$		5.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 10 ms duty cycle ≤ 50 %	8.0	A
Base current (DC)	$I_{B(DC)}$		0.2	A
Base current (pulse)	$I_{B(pulse)}$	PW ≤ 10 ms duty cycle ≤ 50 %	0.4	A
Total power dissipation	P_T	16 cm ² × 0.7 mm ceramic board mounted	2.0	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		-55 to +150	°C

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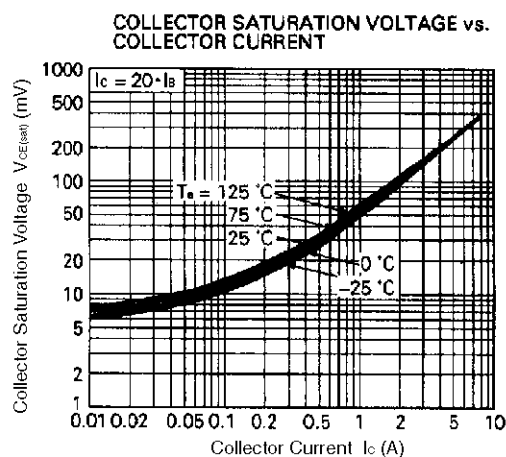
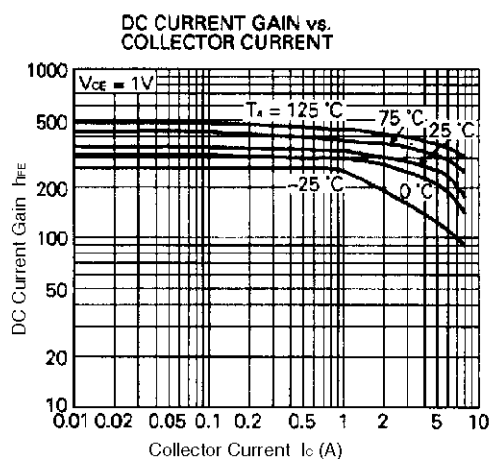
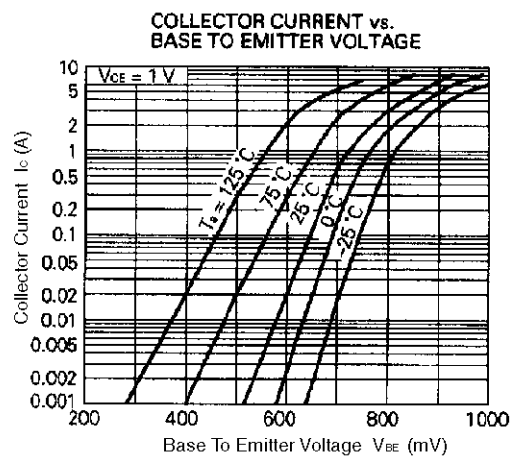
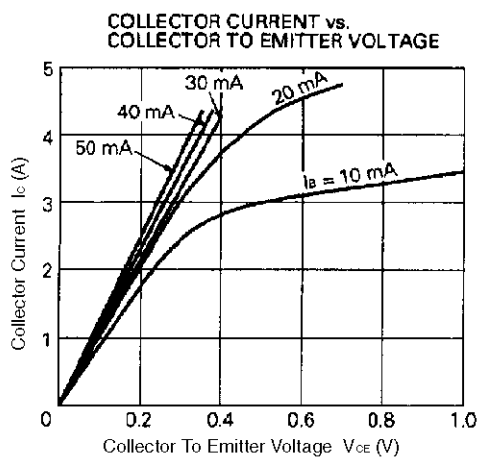
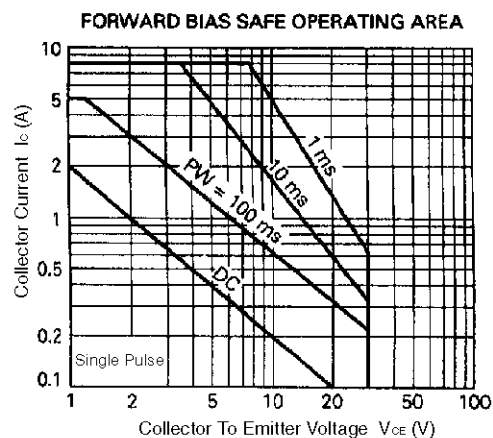
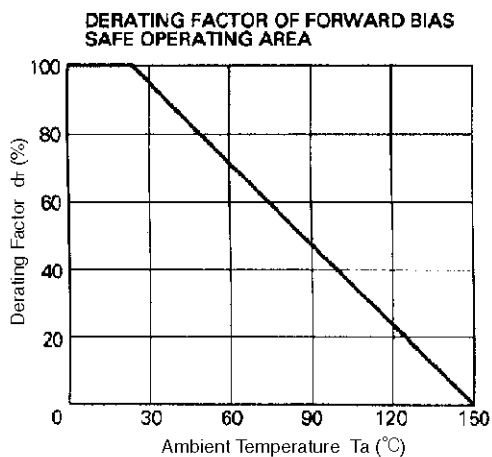
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			100	nA
Emitter cutoff current	I_{EBO}	$V_{EB} = 6.0 \text{ V}, I_C = 0$			100	nA
DC current gain	h_{FE1}	$V_{CE} = 1.0 \text{ V}, I_C = 1.0 \text{ A}$	80			—
DC current gain	h_{FE2}	$V_{CE} = 1.0 \text{ V}, I_C = 2.0 \text{ A}$	100	200	400	—
DC base voltage	V_{BE}	$V_{CE} = 1.0 \text{ V}, I_C = 0.1 \text{ A}$	600	650	700	mV
Collector saturation voltage	$V_{CE(sat)1}$	$I_C = 3.0 \text{ V}, I_B = 0.15 \text{ A}$		140	300	mV
Collector saturation voltage	$V_{CE(sat)2}$	$I_C = 5.0 \text{ V}, I_B = 0.25 \text{ A}$		230	500	mV
Base saturation voltage	$V_{BE(sat)}$	$I_C = 3.0 \text{ V}, I_B = 0.15 \text{ A}$		0.88	1.2	V
Gain bandwidth product	f_T	$V_{CE} = 10 \text{ V}, I_E = -0.5 \text{ A}$		170		MHz
Output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$		60		pF
Turn-on time	t_{on}	$I_C = 2.0 \text{ A}, V_{CC} = 10 \text{ V}$ $I_{B1} = -I_{B2} = 0.1 \text{ A}$ $R_L = 500 \Omega$		275		ns
Storage time	t_{stg}			485		ns
Fall time	t_f			45		ns

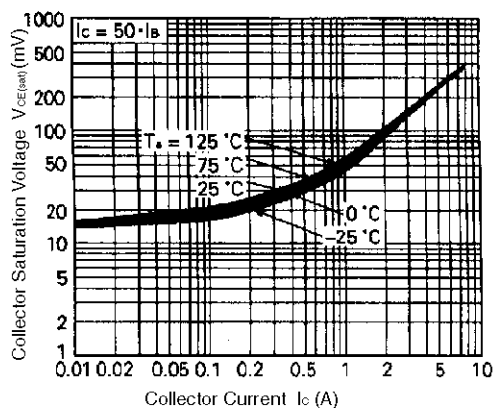
h_{FE} CLASSIFICATION

Marking	EX	EY	EZ
h_{FE2}	100 to 200	160 to 320	200 to 400

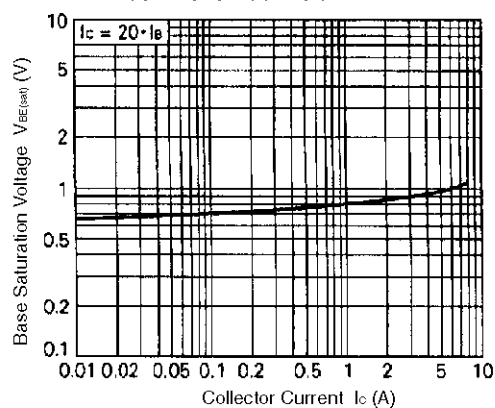
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



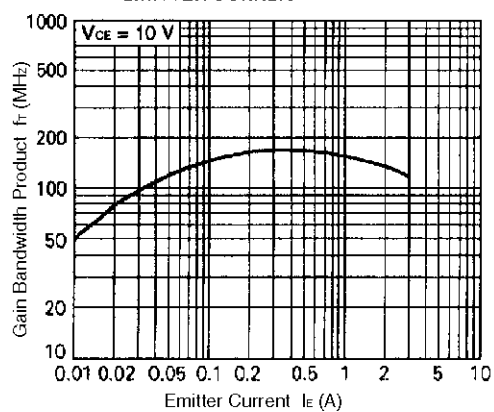
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



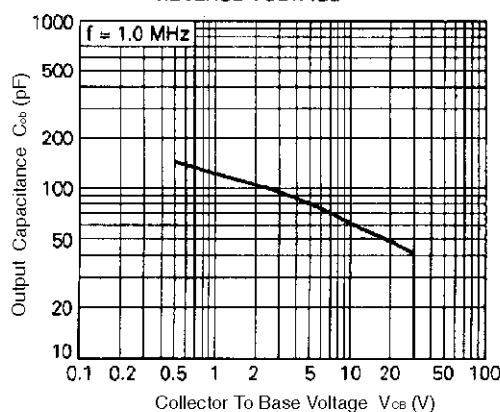
BASE SATURATION VOLTAGE vs.
COLLECTOR CURRENT



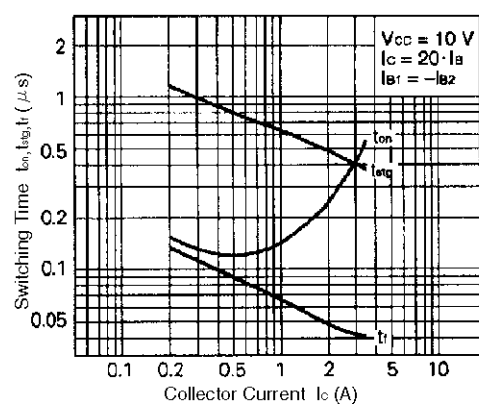
GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT



OUTPUT CAPACITANCE vs.
REVERSE VOLTAGE



SWITCHING CHARACTERISTICS



[MEMO]

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