

RESISTOR BUILT-IN TYPE PNP TRANSISTOR

FEATURES

- Compact package
- Resistors built-in type
- Complementary to GA4xxx

ORDERING INFORMATION

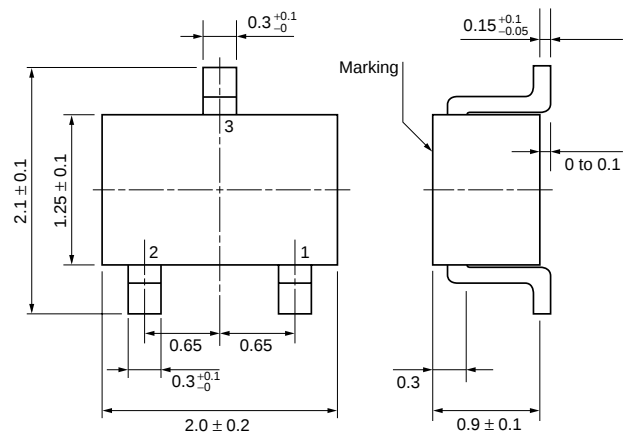
PART NUMBER	PACKAGE
GN4xxx	SC-70

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

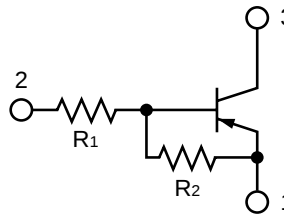
Collector to Base Voltage	V _{CBO}	-60	V
Collector to Emitter Voltage	V _{CEO}	-50	V
Emitter to Base Voltage	V _{EBO}	-5	V
Collector Current (DC)	I _C	-0.1	A
Collector Current (pulse) ^{Note}	I _{C(pulse)}	-0.2	A
Total Power Dissipation	P _T	0.15	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

Note PW ≤ 10 ms, Duty Cycle ≤ 50%

★ PACKAGE DRAWING (Unit: mm)



★ EQUIVALENT CIRCUIT



★ PIN CONNECTION

- 1: Emitter
2: Base
3: Collector

PART NUMBER	MARK	R ₁	R ₂	UNIT
GN4A4M	NA1	10.0	10.0	kΩ
GN4F4M	NB1	22.0	22.0	kΩ
GN4L4M	NC1	47.0	47.0	kΩ
GN4L3M	ND1	4.7	4.7	kΩ
GN4L3N	NE1	4.7	10.0	kΩ
GN4L3Z	NF1	4.7		kΩ
GN4A3Q	NG1	1.0	10.0	kΩ
GN4A4P	NH1	10.0	47.0	kΩ
GN4F4N	NJ1	22.0	47.0	kΩ

PART NUMBER	MARK	R ₁	R ₂	UNIT
GN4L4L	NK1	47.0	22.0	kΩ
GN4A4Z	NL1	10.0		kΩ
GN4F4Z	NM1	22.0		kΩ
GN4L4Z	NN1	47.0		kΩ
GN4F3M	NP1	2.2	2.2	kΩ
GN4F3P	NQ1	2.2	10.0	kΩ
GN4F3R	NR1	2.2	47.0	kΩ
GN4A4L	NS1	10.0	4.7	kΩ
GN4L4K	NT1	47.0	10.0	kΩ

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CBO}	V _{CB} = -50 V, I _E = 0			-100	nA
DC Current Gain	h _{FE1}	V _{CE} = -5.0 V, I _C = -5.0 mA	Note1			-
	h _{FE2}	V _{CE} = -5.0 V, I _C = -50 mA				-
Collector Saturation Voltage	V _{CE(sat)}	I _C = -5.0 mA, I _B = -0.25 mA			-0.2	V
Low-level Input Voltage	V _{IL}	V _{CE} = -5.0 V, I _C = -100 μA	Note2			V
High-level Input Voltage	V _{IH}	V _{CE} = -0.2 V, I _C = -5.0 mA				V
Input Resistor	R ₁		Note3			kΩ
Emitter to Base Resistor	R ₂					kΩ

Note 1.

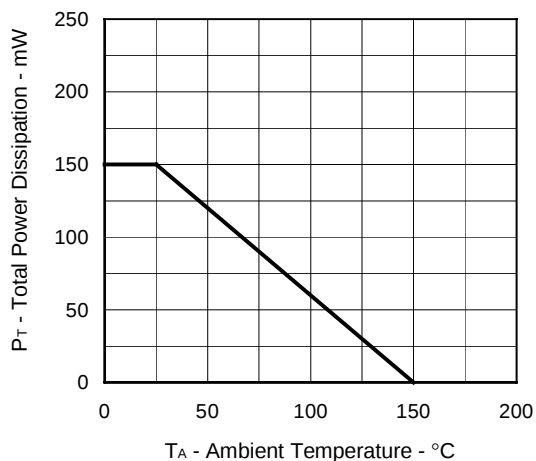
PART NUMBER	h _{FE1}			h _{FE2}			UNIT
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
GN4A4M	35		100	80			-
GN4F4M	60		195	90			-
GN4L4M	85		340	95			-
GN4L3M	20		80	80			-
GN4L3N	35		100	80			-
GN4L3Z	135		600	100			-
GN4A3Q	35		100	80			-
GN4A4P	85		340	95			-
GN4F4N	85		340	95			-
GN4L4L	60		195	90			-
GN4A4Z	135		600	100			-
GN4F4Z	135		600	100			-
GN4L4Z	135		600	100			-
★ GN4F3M	8		50	50			-
GN4F3P	35		100	80			-
GN4F3R	85		340	95			-
GN4A4L	20		80	80			-
GN4L4K	35		100	80			-

Note 2.

PART NUMBER	V _{IL}			V _{IH}			UNIT
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
GN4A4M			-0.8	-3.0			V
GN4F4M			-0.8	-4.0			V
GN4L4M			-0.8	-5.0			V
GN4L3M			-0.8	-3.0			V
GN4L3N			-0.6	-3.0			V
GN4L3Z			-0.5	-1.2			V
GN4A3Q			-0.5	-2.0			V
GN4A4P			-0.5	-3.0			V
GN4F4N			-0.6	-3.0			V
GN4L4L			-0.9	-6.0			V
GN4A4Z			-0.5	-2.0			V
GN4F4Z			-0.5	-3.0			V
GN4L4Z			-0.5	-4.0			V
GN4F3M			-0.8	-3.0			V
GN4F3P			-0.5	-2.0			V
GN4F3R			-0.5	-2.0			V
GN4A4L			-0.9	-6.0			V
GN4L4K			-2.0	-8.0			V

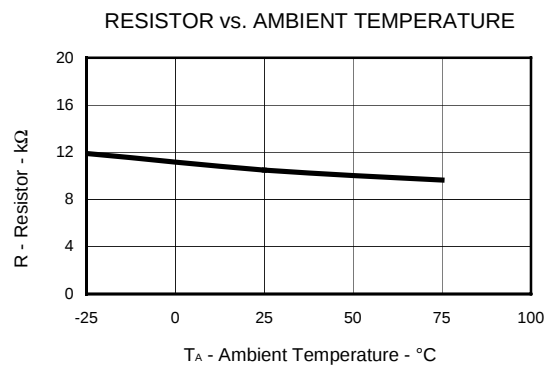
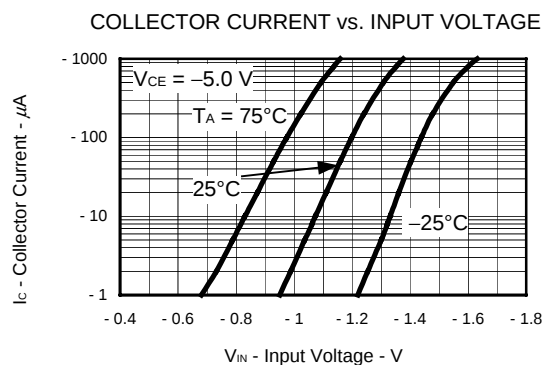
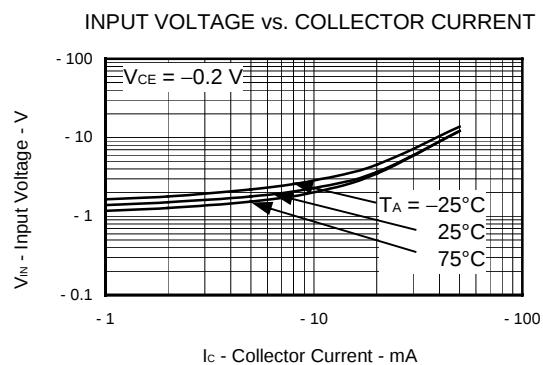
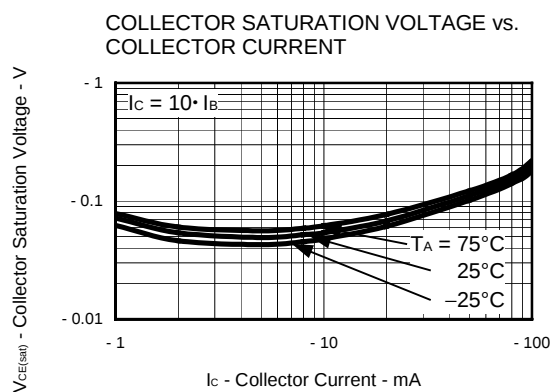
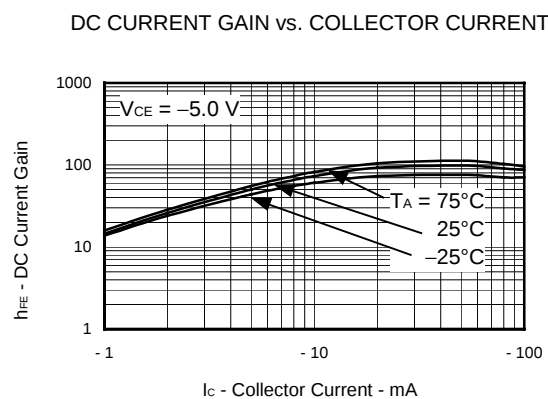
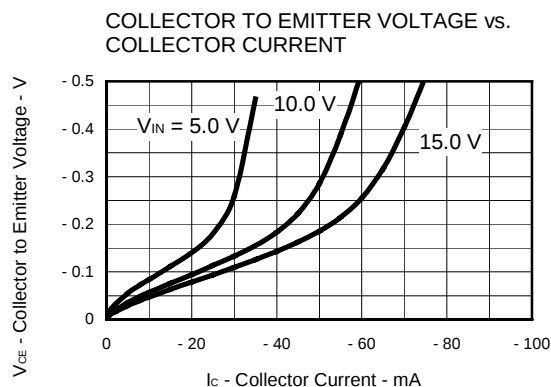
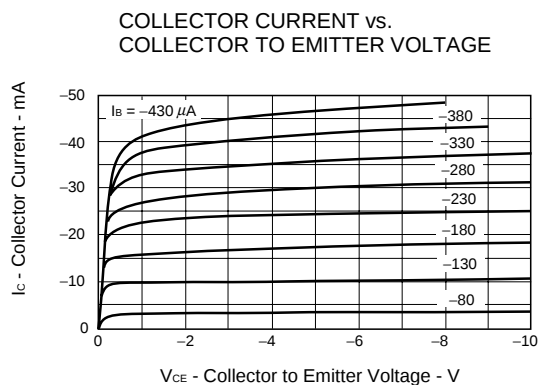
Note 3.

PART NUMBER	R ₁			R ₂			UNIT
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
GN4A4M	7.00	10.00	13.00	7.00	10.00	13.00	k Ω
GN4F4M	15.40	22.00	28.60	15.40	22.00	28.60	k Ω
GN4L4M	32.90	47.00	61.10	32.90	47.00	61.10	k Ω
GN4L3M	3.29	4.70	6.11	3.29	4.70	6.11	k Ω
GN4L3N	3.29	4.70	6.11	7.00	10.00	13.00	k Ω
GN4L3Z	3.29	4.70	6.11				k Ω
GN4A3Q	0.70	1.00	1.30	7.00	10.00	13.00	k Ω
GN4A4P	7.00	10.00	13.00	32.90	47.00	61.10	k Ω
GN4F4N	15.40	22.00	28.60	32.90	47.00	61.10	k Ω
GN4L4L	32.90	47.00	61.10	15.40	22.00	28.60	k Ω
GN4A4Z	7.00	10.00	13.00				k Ω
GN4F4Z	15.40	22.00	28.60				k Ω
GN4L4Z	32.90	47.00	61.10				k Ω
GN4F3M	1.54	2.20	2.86	1.54	2.20	2.86	k Ω
GN4F3P	1.54	2.20	2.86	7.00	10.00	13.00	k Ω
GN4F3R	1.54	2.20	2.86	32.90	47.00	61.10	k Ω
GN4A4L	7.00	10.00	13.00	3.29	4.70	6.11	k Ω
GN4L4K	32.90	47.00	61.10	7.00	10.00	13.00	k Ω

TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE

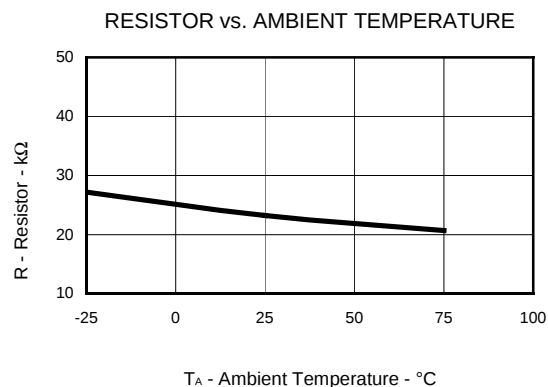
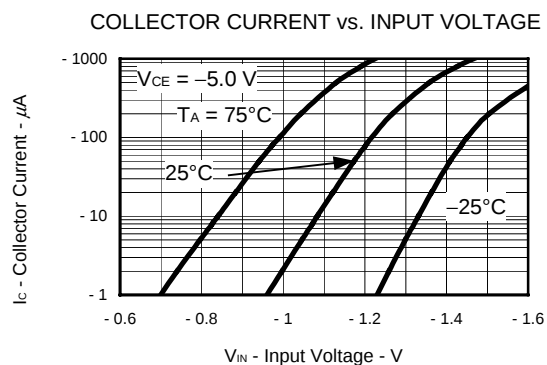
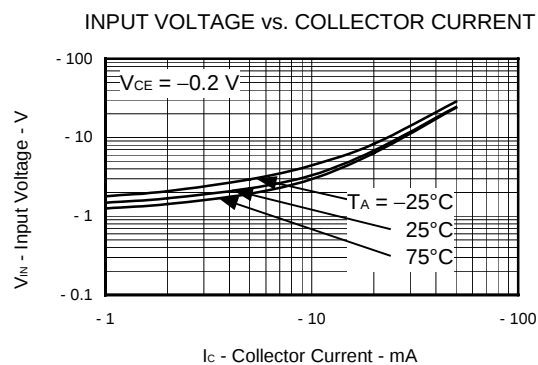
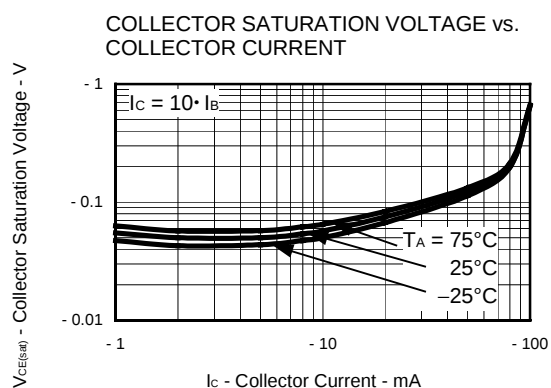
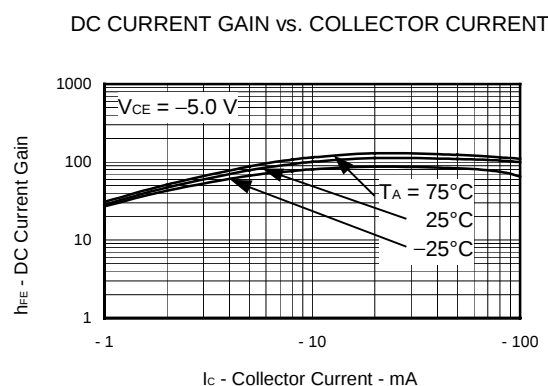
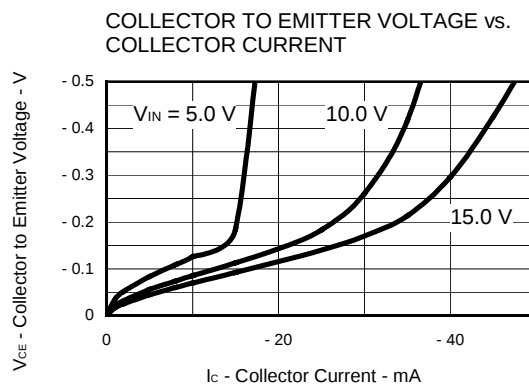
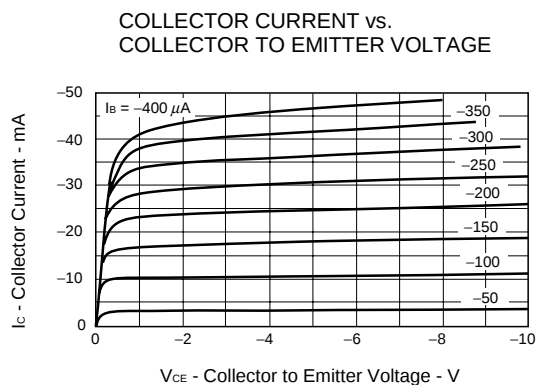
[GN4A4M]

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

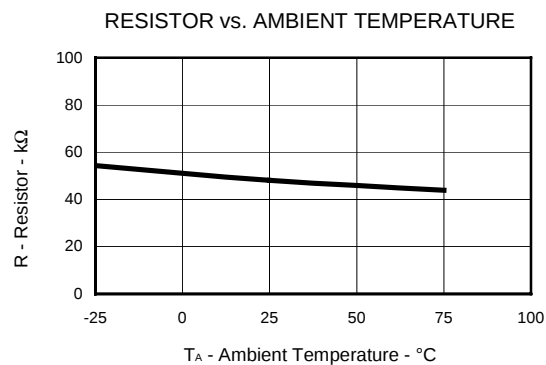
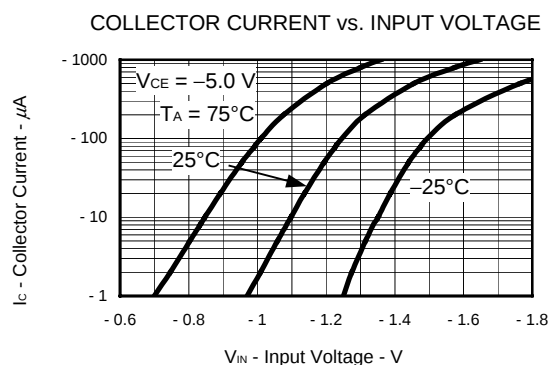
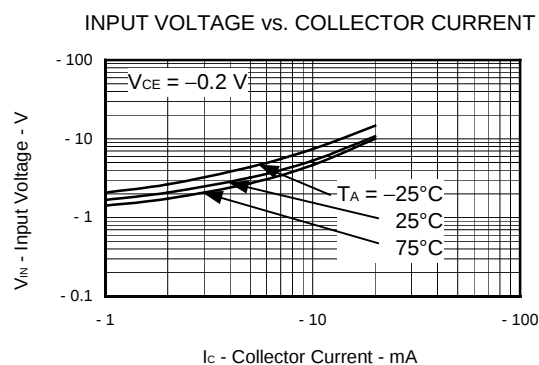
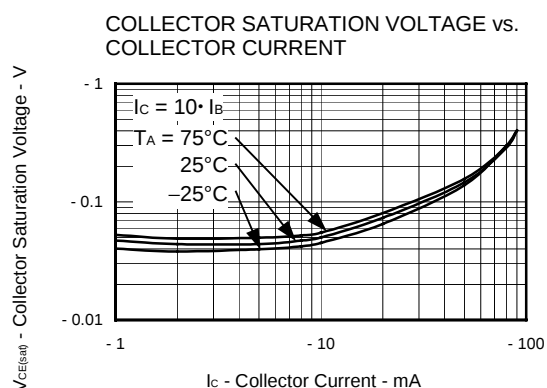
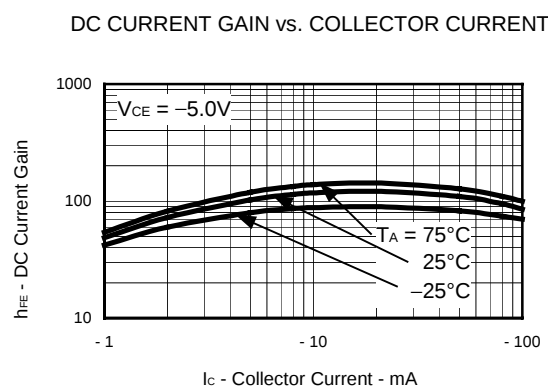
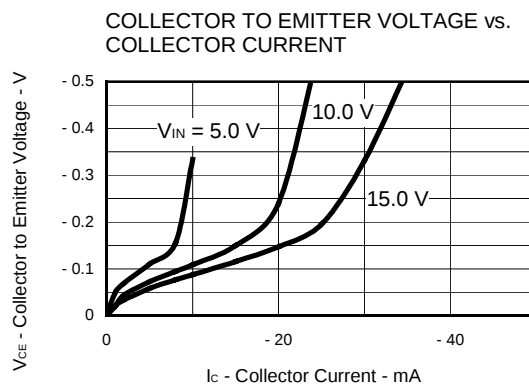
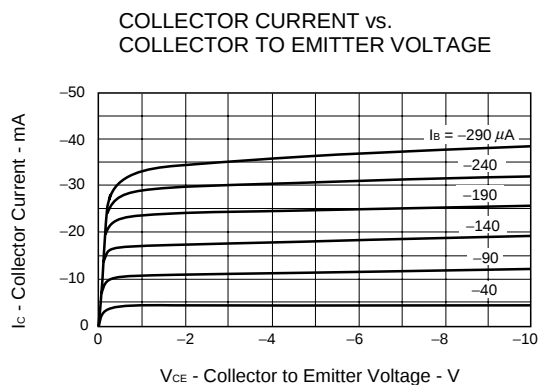


[GN4F4M]

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



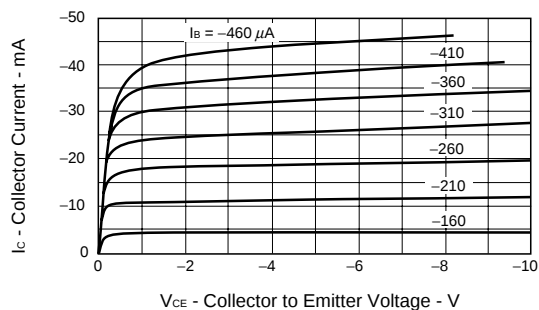
[GN4L4M]
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



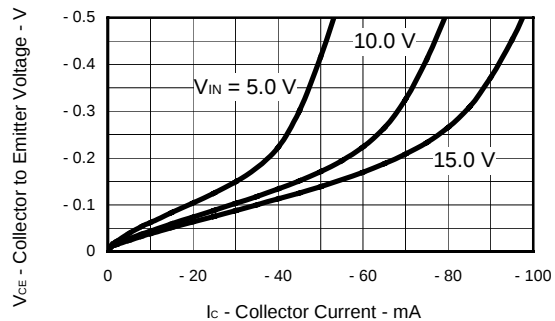
[GN4L3M]

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

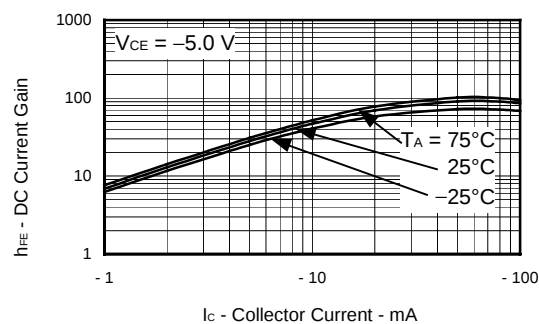
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



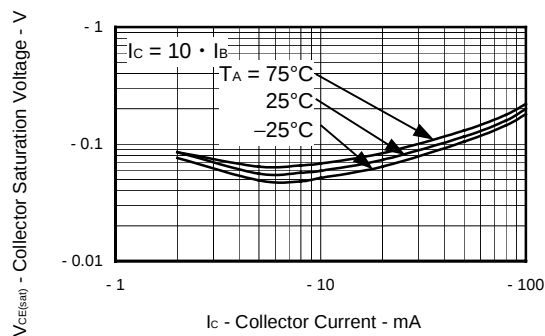
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



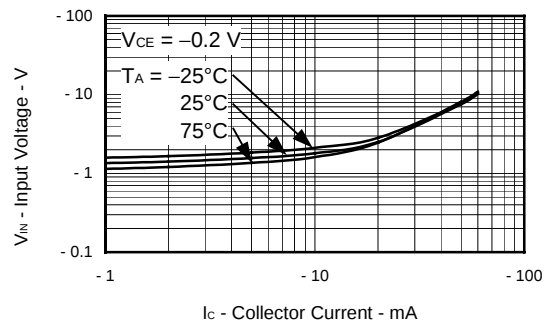
DC CURRENT GAIN vs. COLLECTOR CURRENT



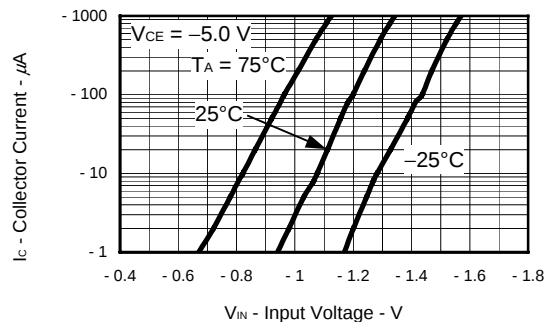
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



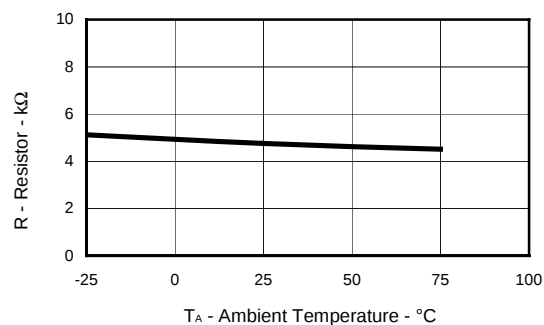
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



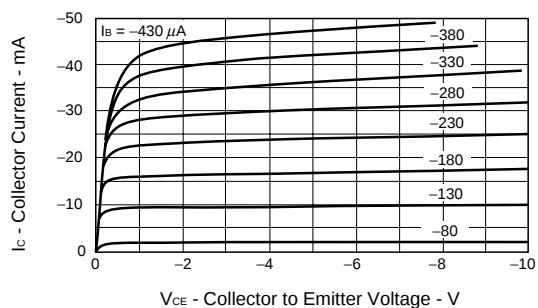
RESISTOR vs. AMBIENT TEMPERATURE



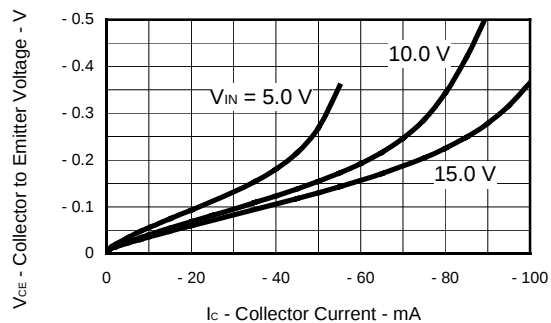
[GN4L3N]

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

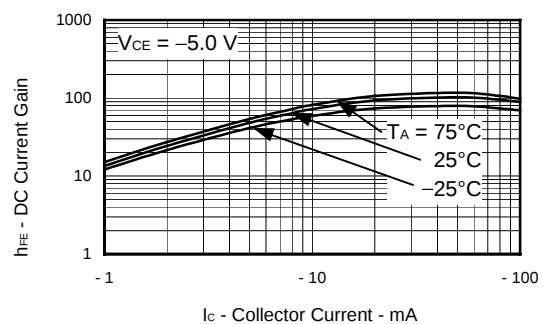
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



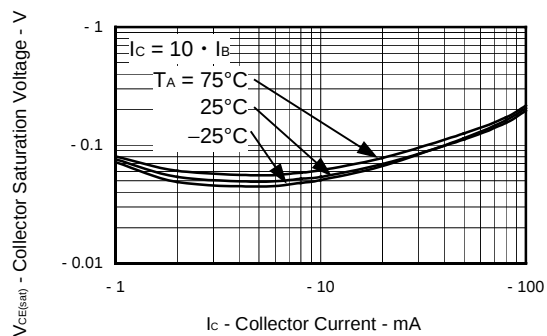
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



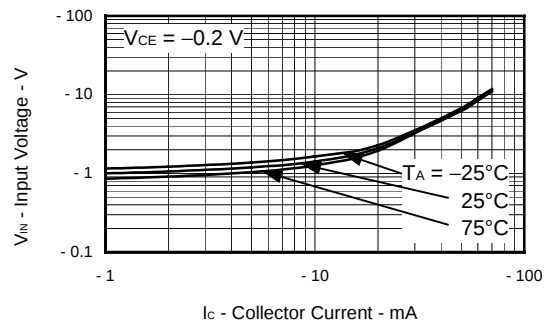
DC CURRENT GAIN vs. COLLECTOR CURRENT



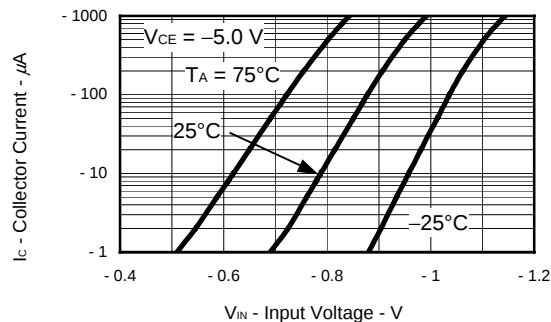
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



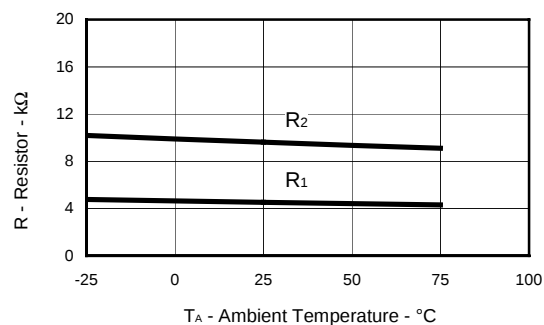
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE

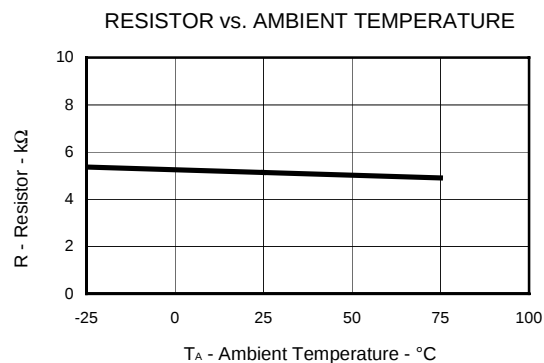
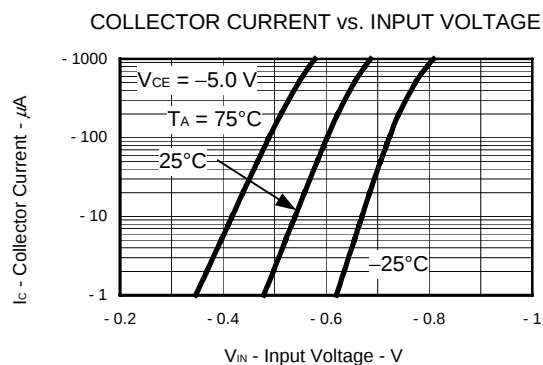
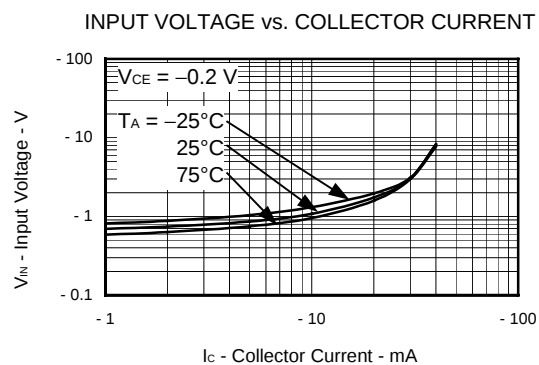
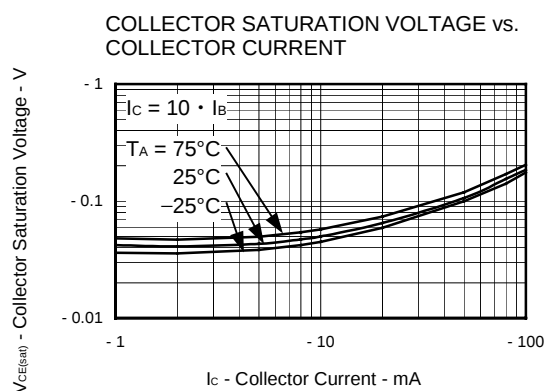
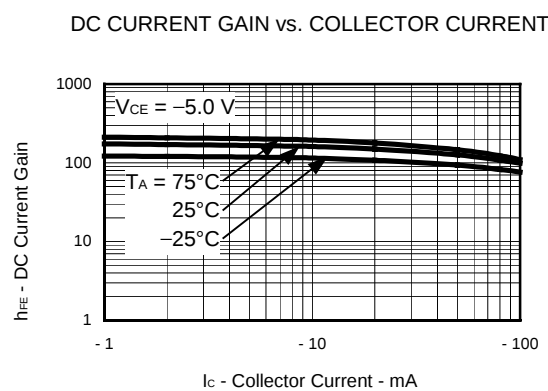
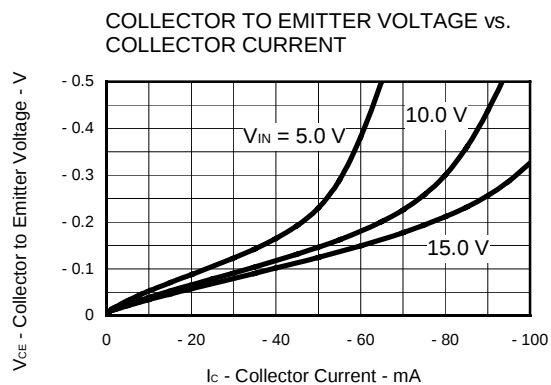
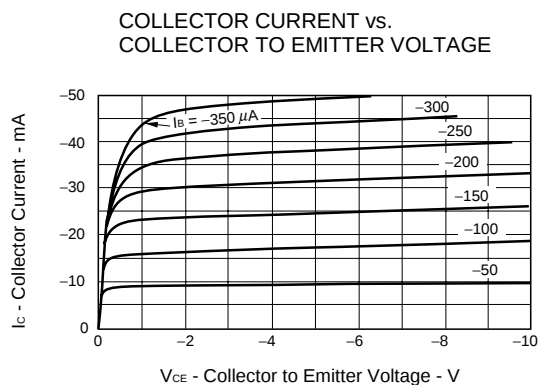


RESISTOR vs. AMBIENT TEMPERATURE

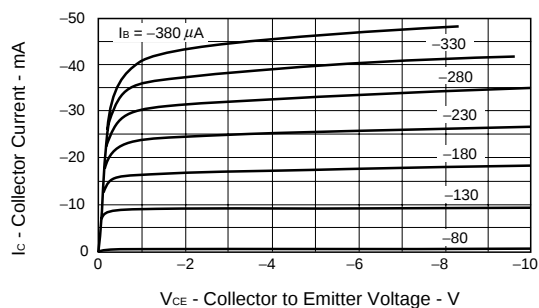
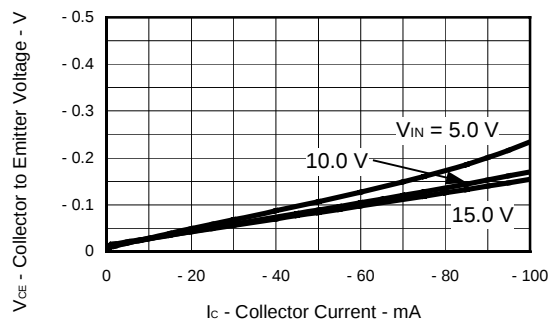


[GN4L3Z]

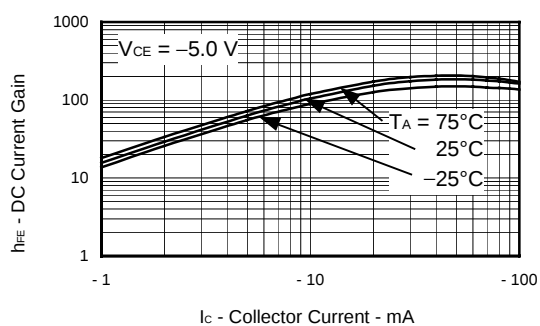
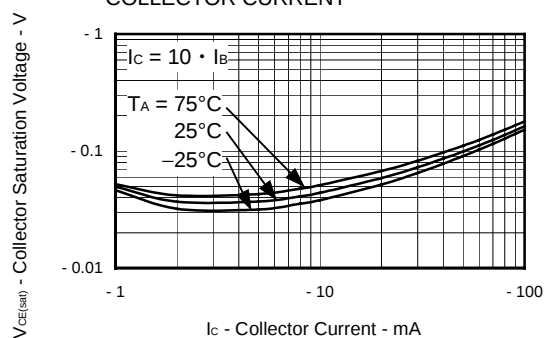
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



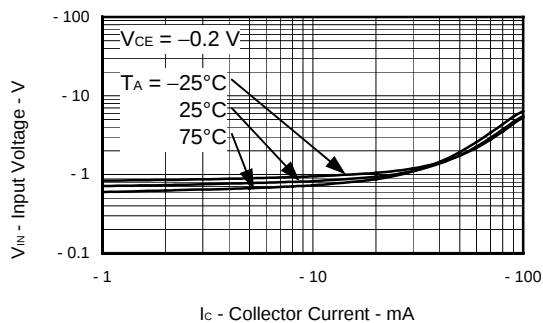
[GN4A3Q]

TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGECOLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT

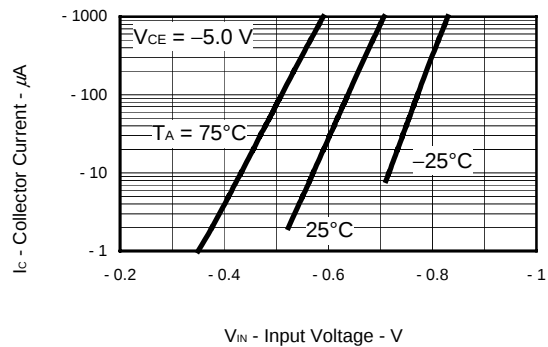
DC CURRENT GAIN vs. COLLECTOR CURRENT

COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT

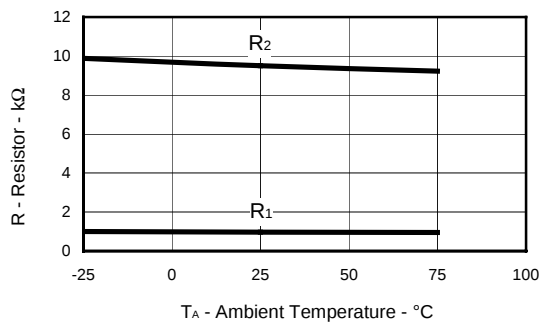
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



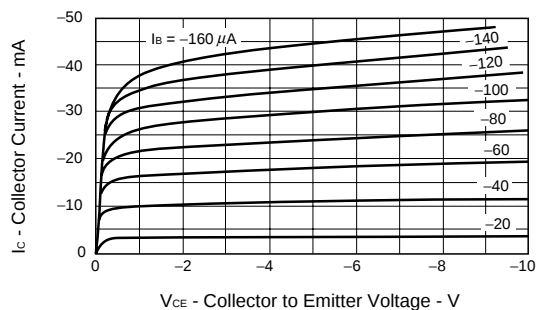
RESISTOR vs. AMBIENT TEMPERATURE



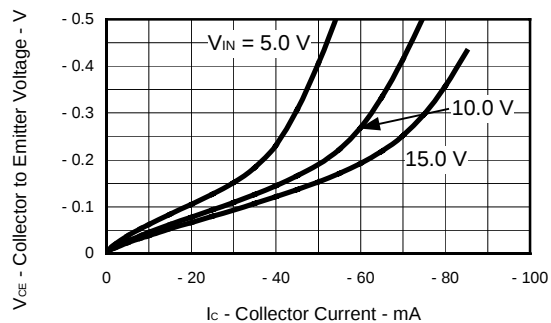
[GN4A4P]

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

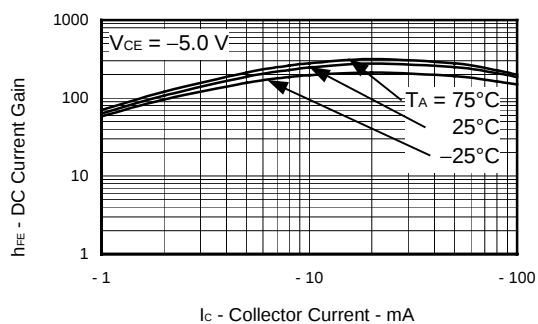
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



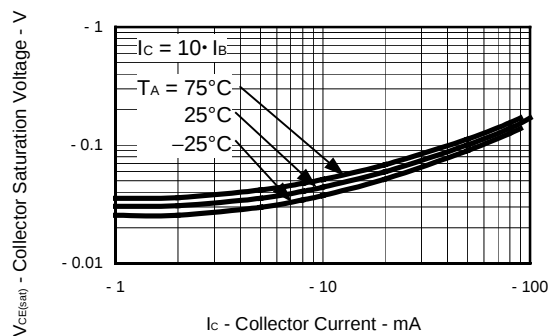
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



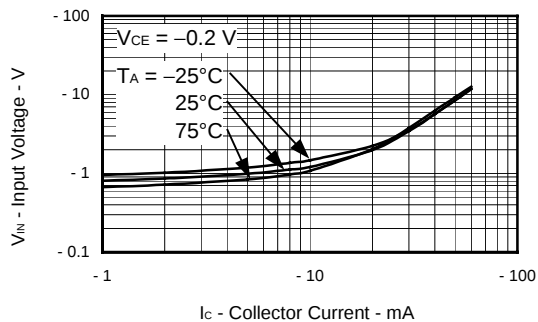
DC CURRENT GAIN vs. COLLECTOR CURRENT



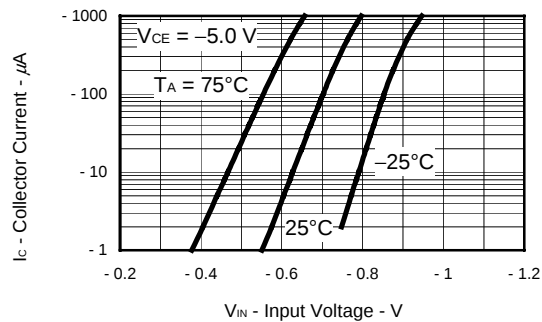
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



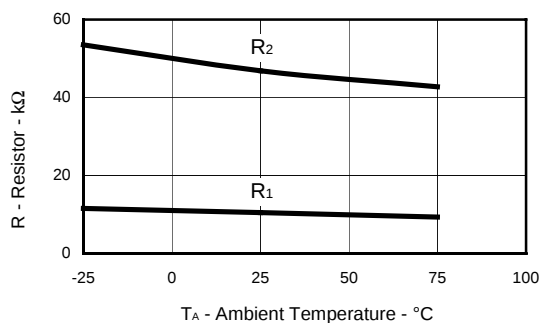
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



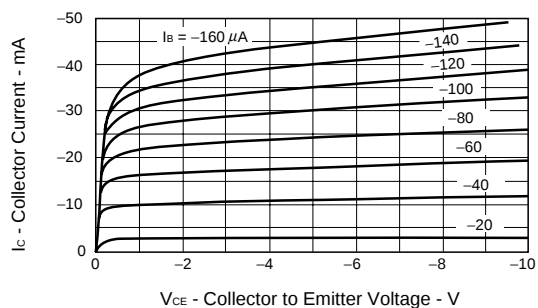
RESISTOR vs. AMBIENT TEMPERATURE



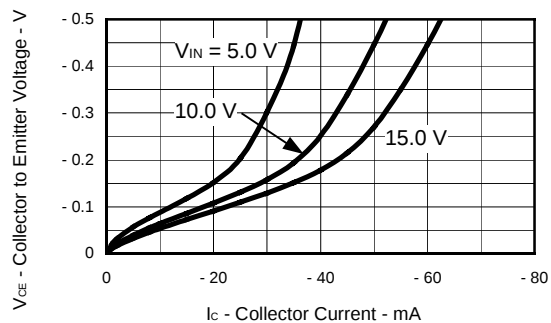
[GN4F4N]

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

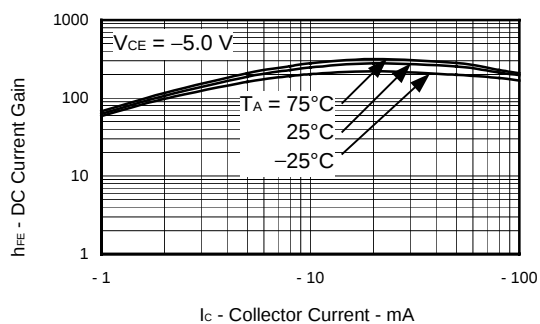
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



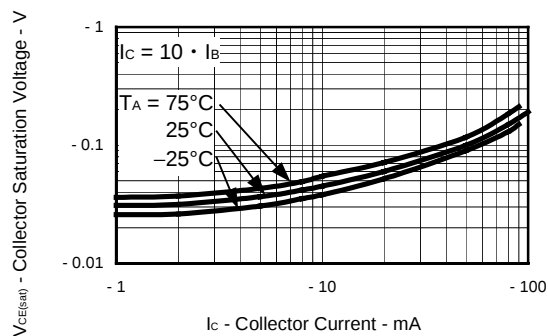
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



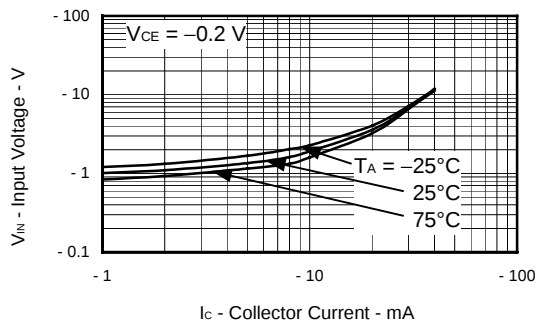
DC CURRENT GAIN vs. COLLECTOR CURRENT



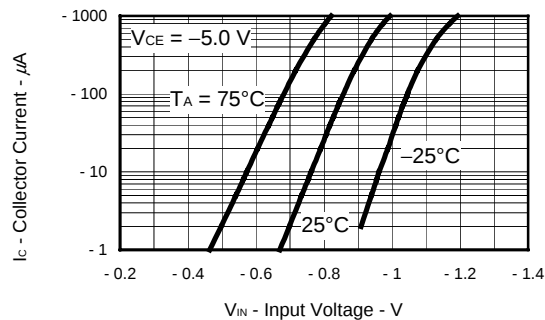
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



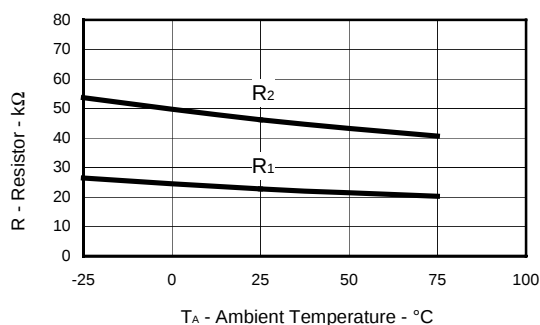
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



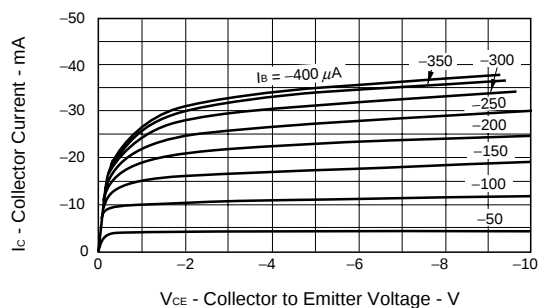
RESISTOR vs. AMBIENT TEMPERATURE



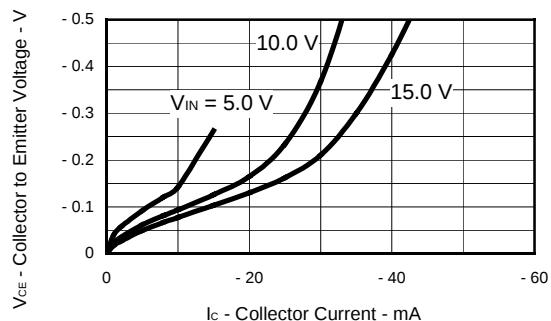
[GN4L4L]

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

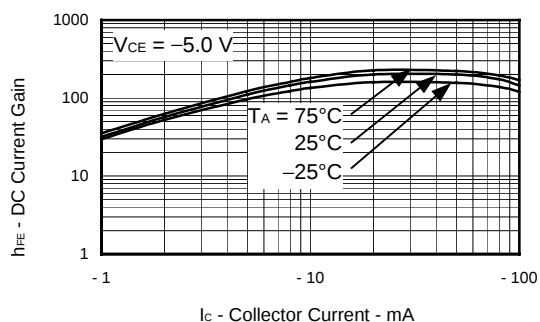
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



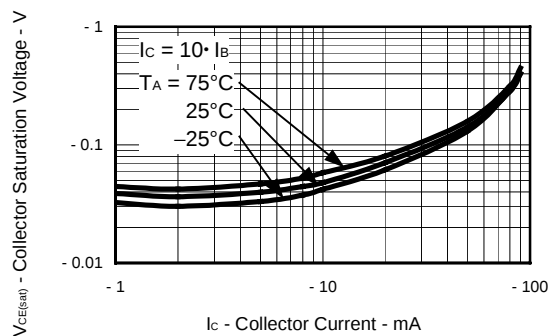
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



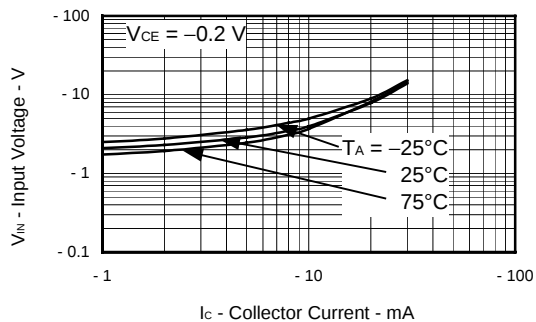
DC CURRENT GAIN vs. COLLECTOR CURRENT



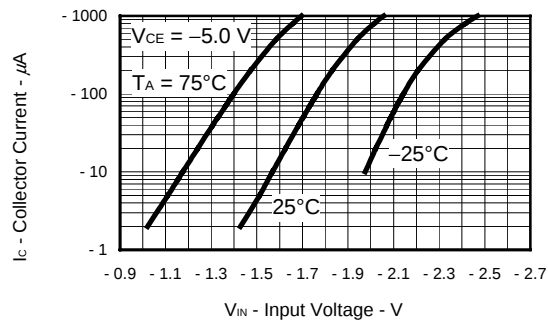
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



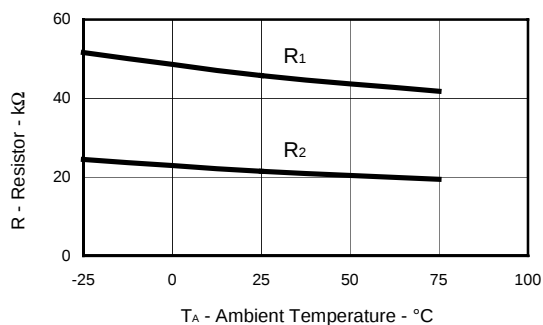
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



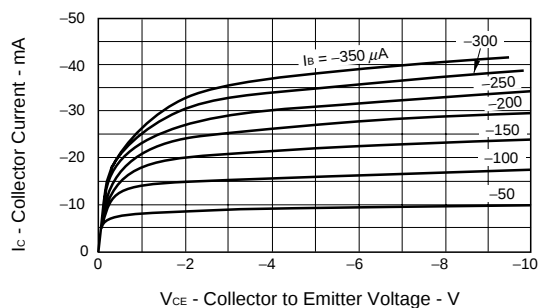
RESISTOR vs. AMBIENT TEMPERATURE



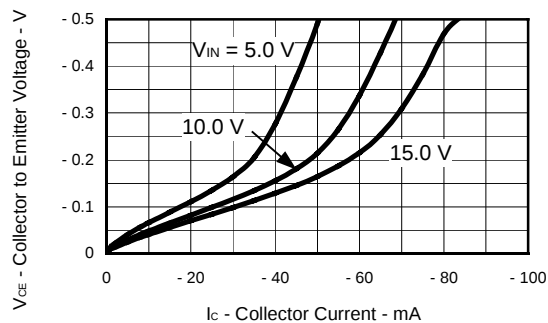
[GN4A4Z]

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

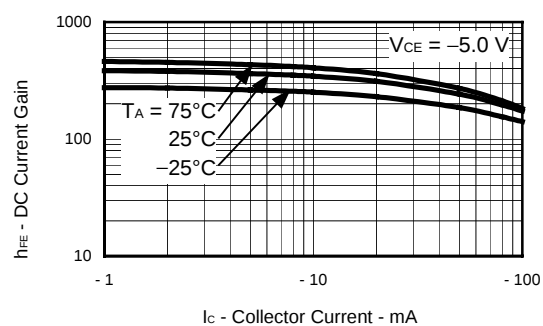
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



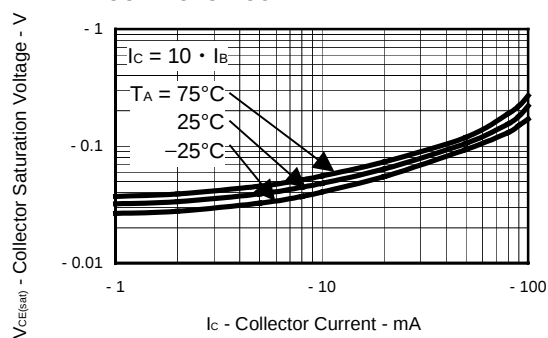
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



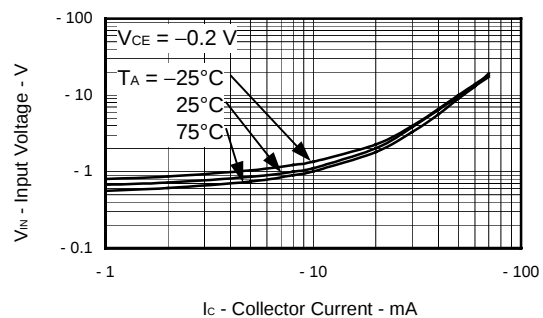
DC CURRENT GAIN vs. COLLECTOR CURRENT



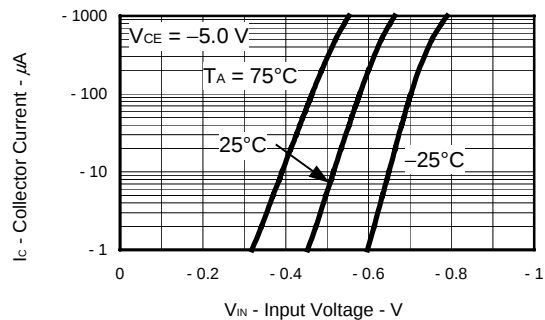
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



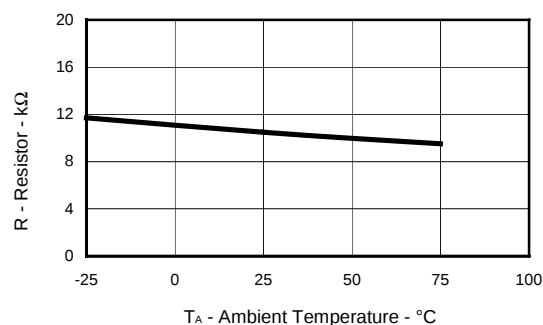
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



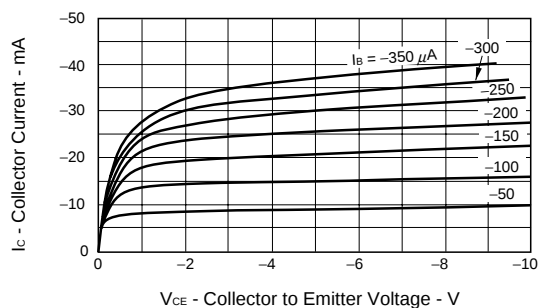
RESISTOR vs. AMBIENT TEMPERATURE



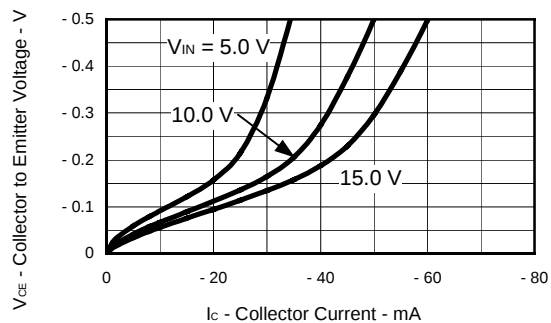
[GN4F4Z]

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

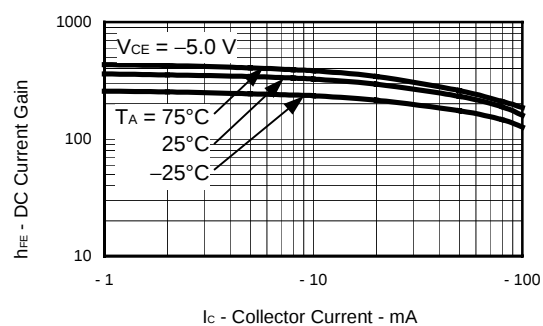
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



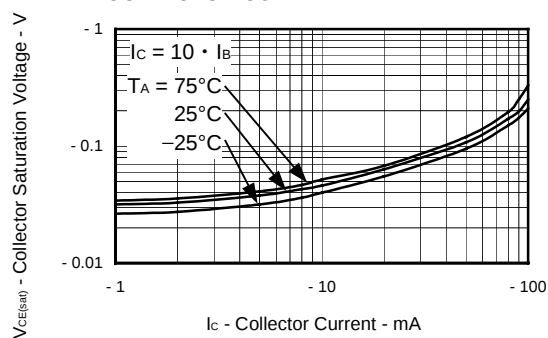
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



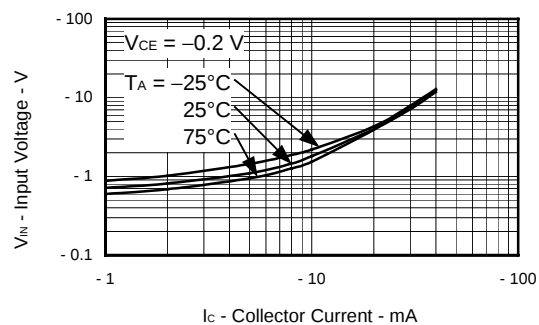
DC CURRENT GAIN vs. COLLECTOR CURRENT



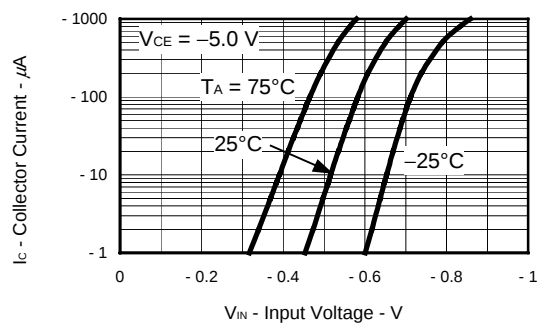
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



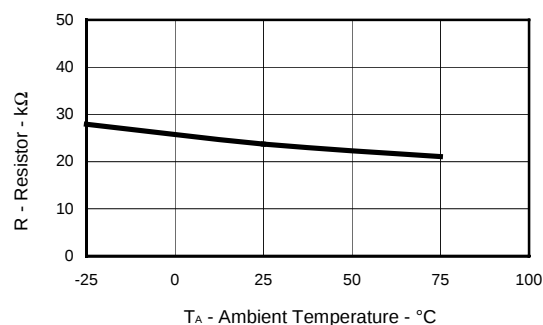
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



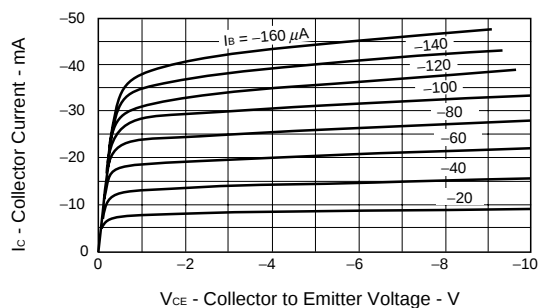
RESISTOR vs. AMBIENT TEMPERATURE



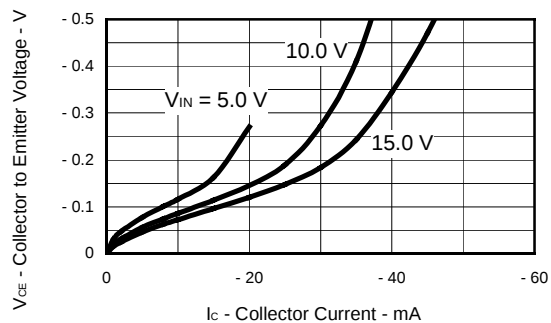
[GN4L4Z]

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

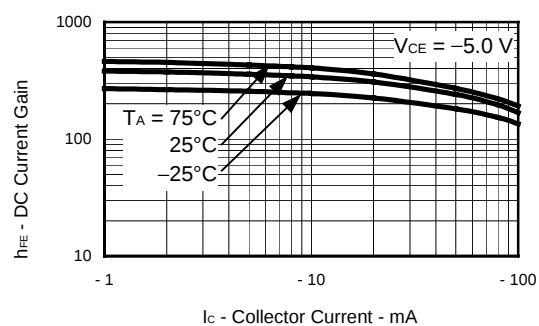
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



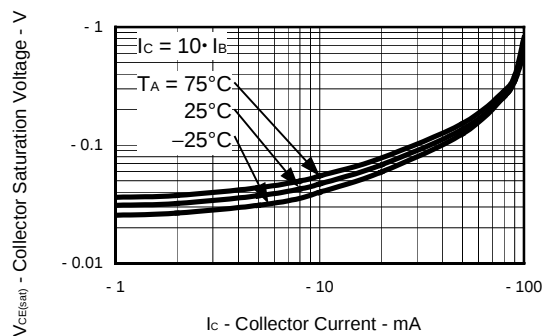
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



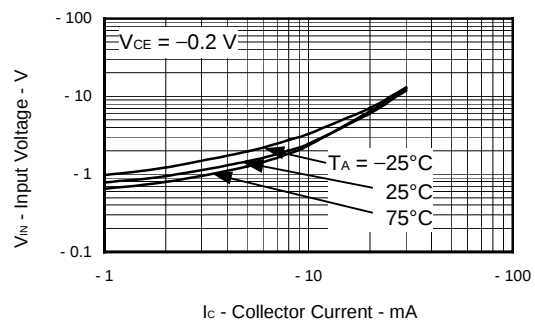
DC CURRENT GAIN vs. COLLECTOR CURRENT



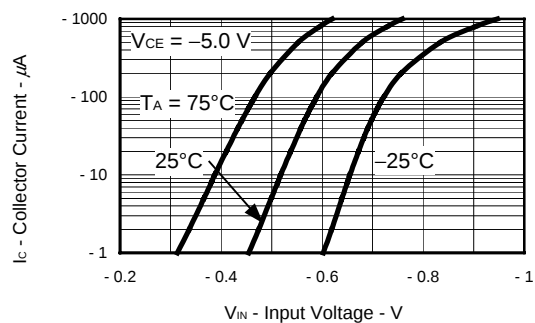
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



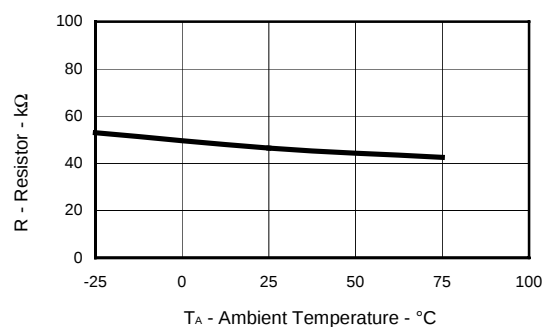
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE

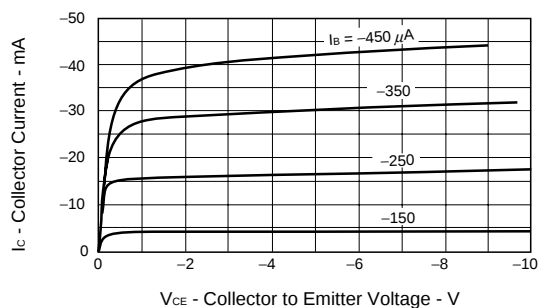


RESISTOR vs. AMBIENT TEMPERATURE

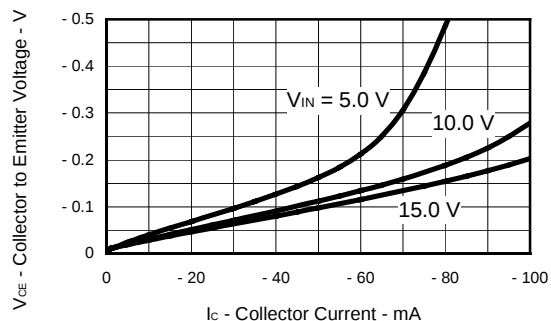


[GN4F3M]
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

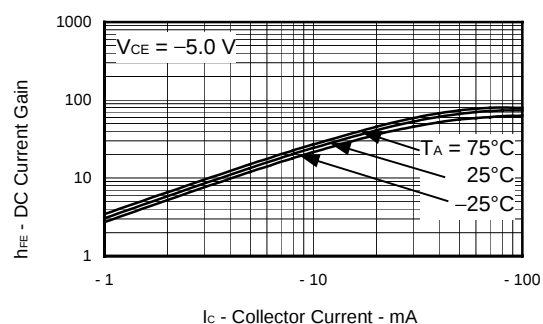
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



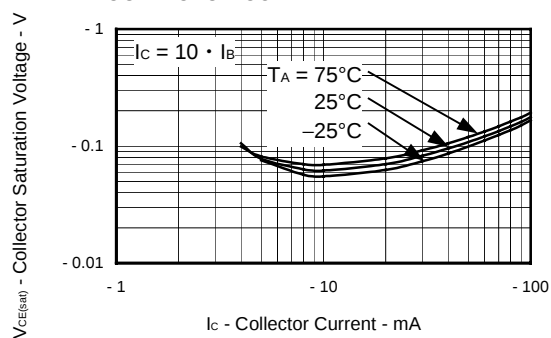
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



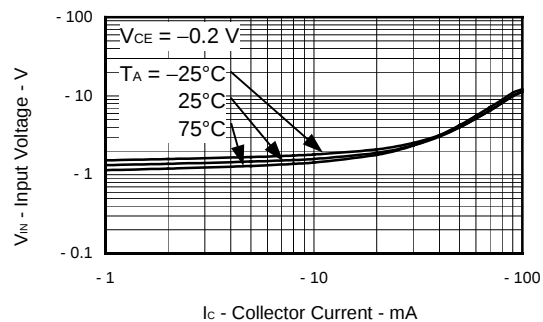
DC CURRENT GAIN vs. COLLECTOR CURRENT



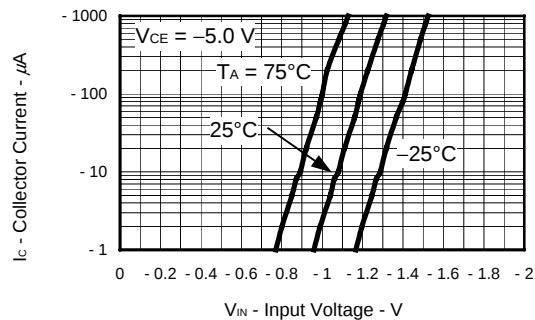
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



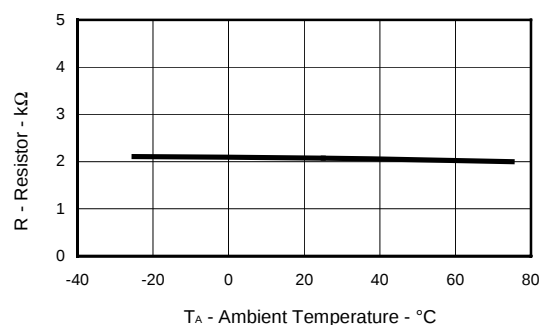
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



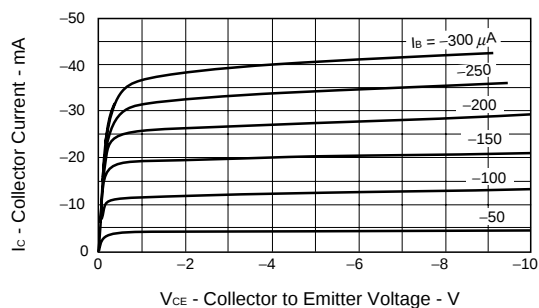
RESISTOR vs. AMBIENT TEMPERATURE



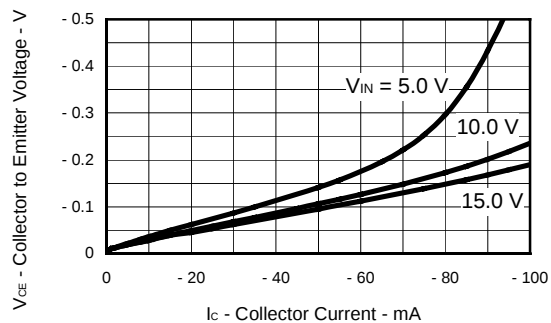
[GN4F3P]

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

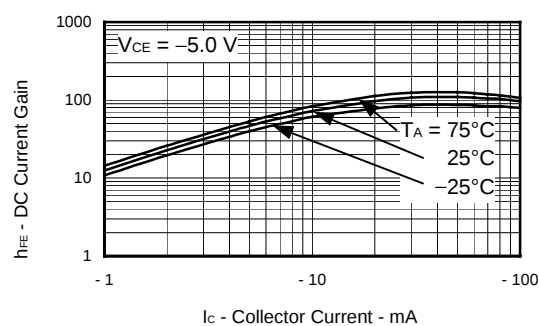
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



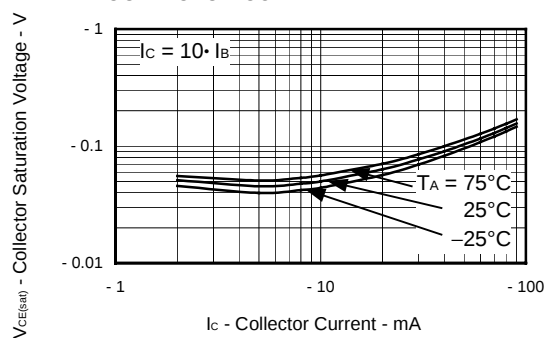
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



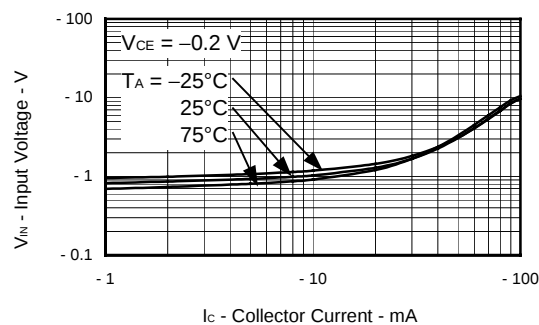
DC CURRENT GAIN vs. COLLECTOR CURRENT



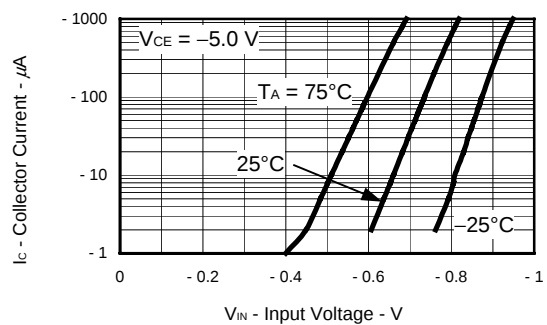
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



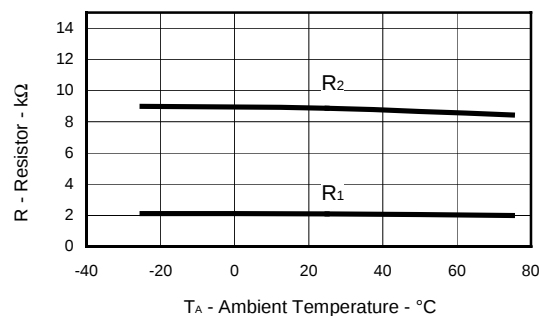
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



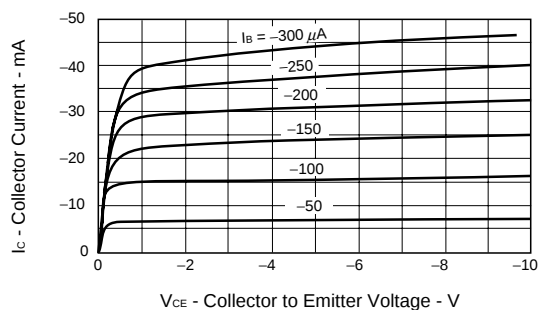
RESISTOR vs. AMBIENT TEMPERATURE



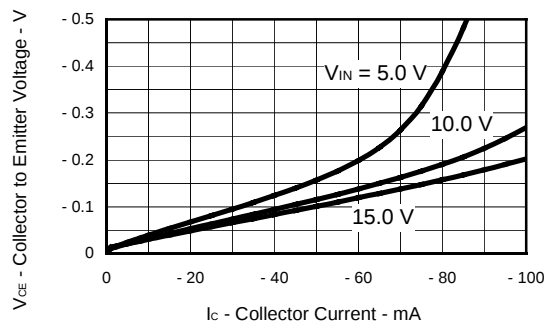
[GN4F3R]

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

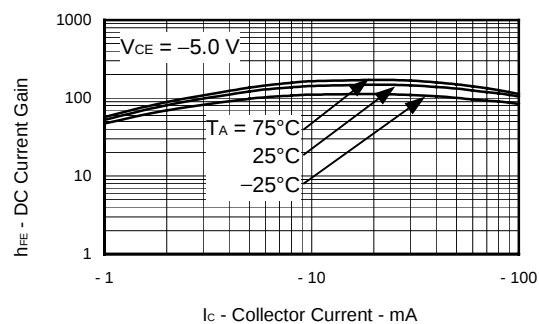
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



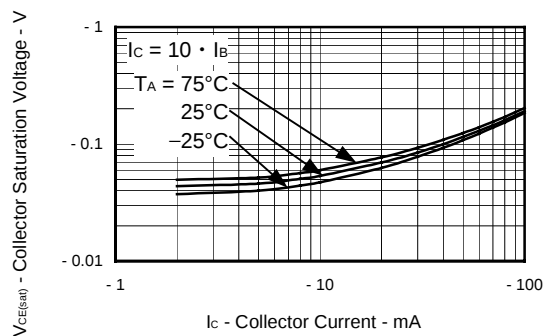
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



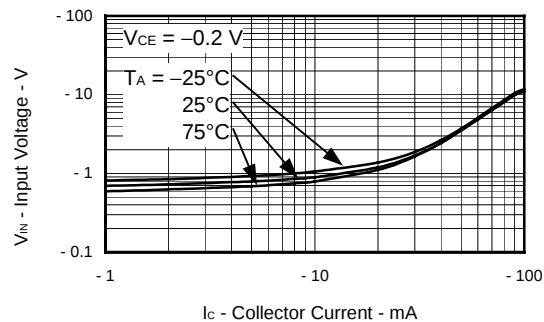
DC CURRENT GAIN vs. COLLECTOR CURRENT



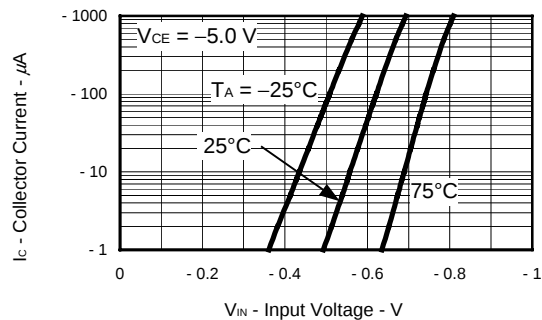
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



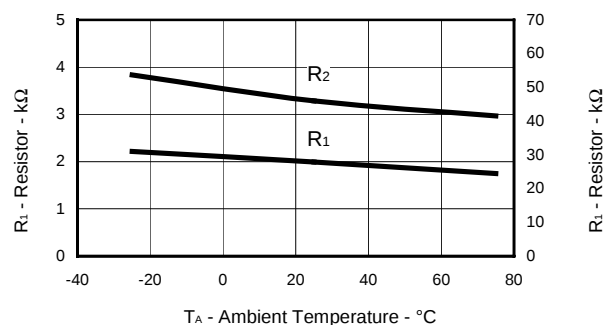
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE

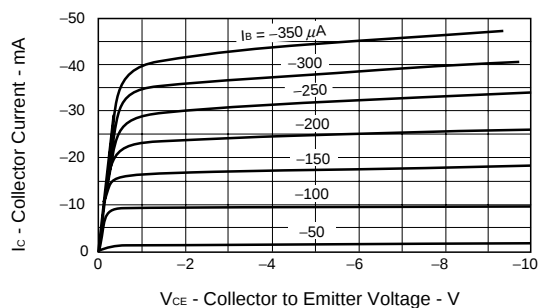


RESISTOR vs. AMBIENT TEMPERATURE

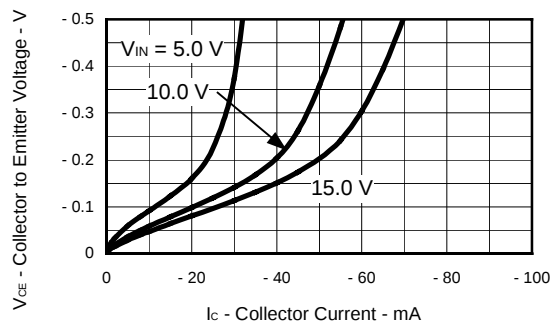


[GN4A4L]
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

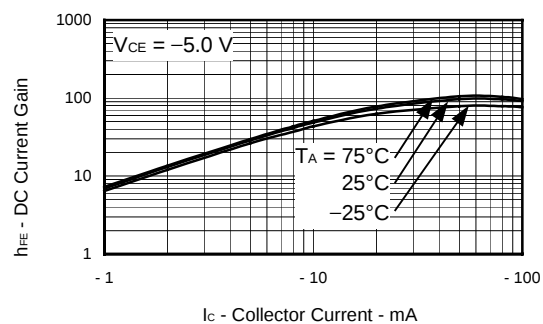
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



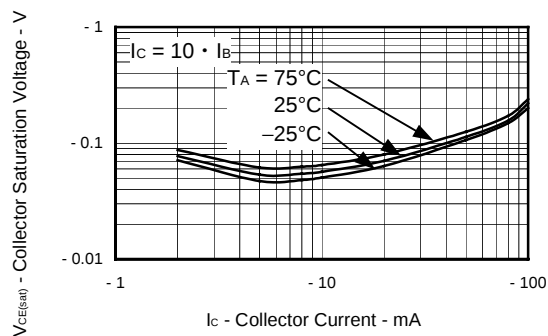
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



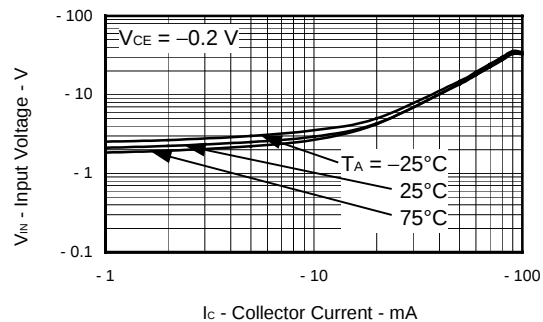
DC CURRENT GAIN vs. COLLECTOR CURRENT



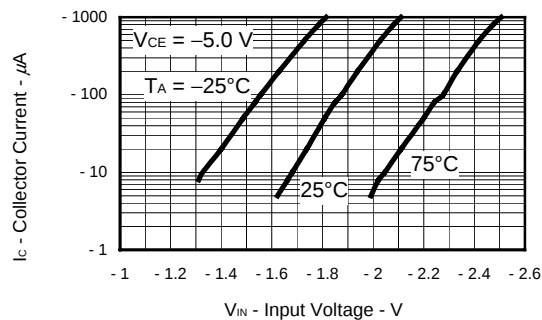
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



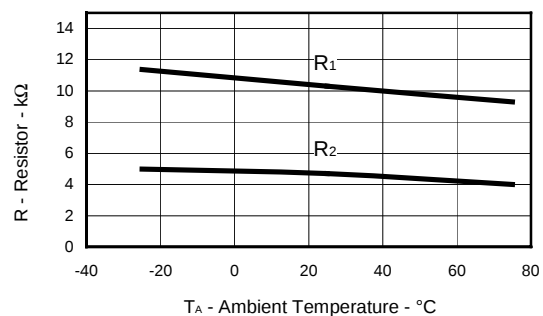
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



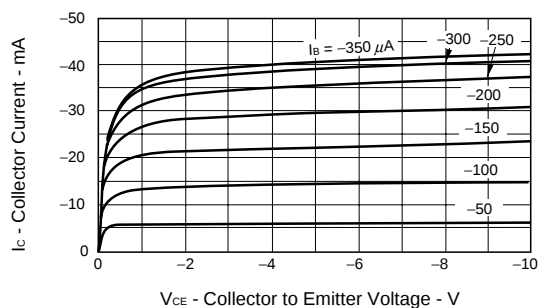
RESISTOR vs. AMBIENT TEMPERATURE



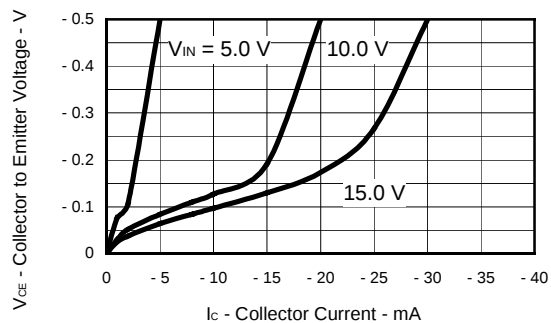
[GN4L4K]

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

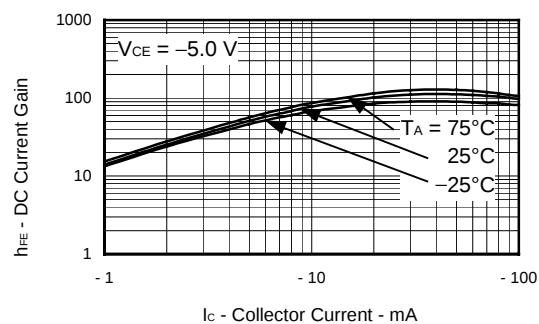
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



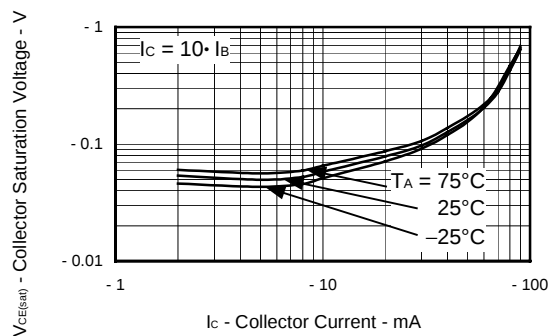
COLLECTOR TO EMITTER VOLTAGE vs.
COLLECTOR CURRENT



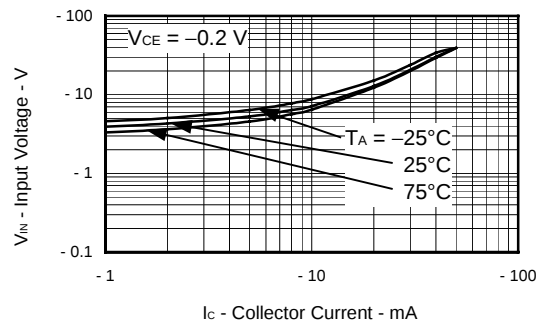
DC CURRENT GAIN vs. COLLECTOR CURRENT



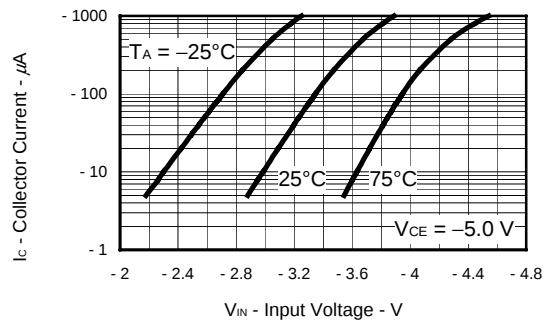
COLLECTOR SATURATION VOLTAGE vs.
COLLECTOR CURRENT



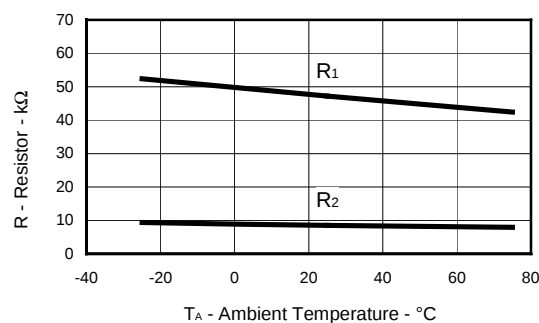
INPUT VOLTAGE vs. COLLECTOR CURRENT



COLLECTOR CURRENT vs. INPUT VOLTAGE



RESISTOR vs. AMBIENT TEMPERATURE



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