

### RESISTOR BUILT-IN TYPE PNP TRANSISTOR

#### FEATURES

- Compact package
- Resistors built-in type
- Complementary to KA4xxx

#### ORDERING INFORMATION

| PART NUMBER | PACKAGE |
|-------------|---------|
| KN4xxx      | SC-75   |

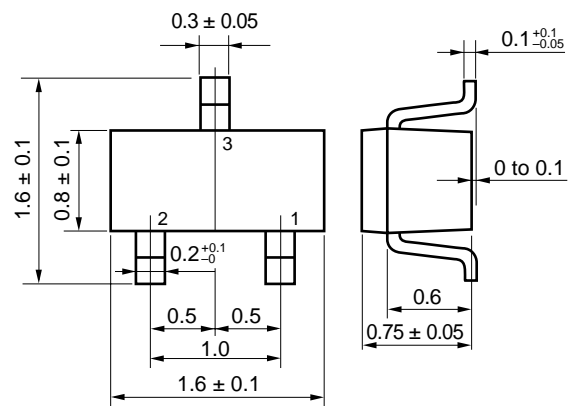
#### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

|   |                       |             |    |
|---|-----------------------|-------------|----|
| Collector to Base Voltage                 | V <sub>CBO</sub>      | -60         | V  |
| Collector to Emitter Voltage              | V <sub>CEO</sub>      | -50         | V  |
| Emitter to Base Voltage                   | V <sub>EBO</sub>      | -5          | V  |
| Collector Current (DC)                    | I <sub>C</sub>        | -0.1        | A  |
| Collector Current (pulse) <sup>Note</sup> | I <sub>C(pulse)</sub> | -0.2        | A  |
| Total Power Dissipation                   | P <sub>T</sub>        | 0.15        | W  |
| Junction Temperature                      | T <sub>j</sub>        | 150         | °C |
| Storage Temperature                       | T <sub>stg</sub>      | -55 to +150 | °C |

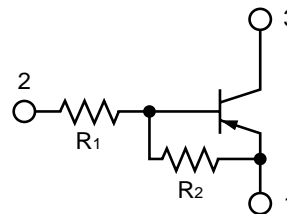
**Note** PW ≤ 10 ms, Duty Cycle ≤ 50%

| PART NUMBER | MARK | R <sub>1</sub> | R <sub>2</sub> | UNIT |
|-------------|------|----------------|----------------|------|
| KN4A4M      | A7   | 10.0           | 10.0           | kΩ   |
| KN4F4M      | B7   | 22.0           | 22.0           | kΩ   |
| KN4L4M      | C7   | 47.0           | 47.0           | kΩ   |
| KN4L3M      | D7   | 4.7            | 4.7            | kΩ   |
| KN4L3N      | E7   | 4.7            | 10.0           | kΩ   |
| KN4L3Z      | F7   | 4.7            |                | kΩ   |
| KN4A3Q      | G7   | 1.0            | 10.0           | kΩ   |
| KN4A4P      | H7   | 10.0           | 47.0           | kΩ   |
| ★ KN4F4N    | X7   | 22.0           | 47.0           | kΩ   |

#### ★ PACKAGE DRAWING (Unit: mm)



#### ★ EQUIVALENT CIRCUIT



#### ★ PIN CONNECTION

- 1: Emitter
- 2: Base
- 3: Collector

| PART NUMBER | MARK | R <sub>1</sub> | R <sub>2</sub> | UNIT |
|-------------|------|----------------|----------------|------|
| KN4L4L      | K7   | 47.0           | 22.0           | kΩ   |
| KN4A4Z      | Y7   | 10.0           |                | kΩ   |
| KN4F4Z      | Z7   | 22.0           |                | kΩ   |
| KN4L4Z      | N7   | 47.0           |                | kΩ   |
| KN4F3M      | P7   | 2.2            | 2.2            | kΩ   |
| KN4F3P      | Q7   | 2.2            | 10.0           | kΩ   |
| KN4F3R      | R7   | 2.2            | 47.0           | kΩ   |
| KN4A4L      | S7   | 10.0           | 4.7            | kΩ   |
| KN4L4K      | T7   | 47.0           | 10.0           | kΩ   |

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Not all products and/or types are available in every country. Please check with an NEC Electronics sales representative for availability and additional information.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

| CHARACTERISTICS              | SYMBOL               | TEST CONDITIONS                                     | MIN.         | TYP. | MAX. | UNIT |
|------------------------------|----------------------|---|--------------|------|------|------|
| Collector Cut-off Current    | I <sub>CBO</sub>     | V <sub>CB</sub> = -5.0 V, I <sub>E</sub> = 0        |              |      | -100 | nA   |
| DC Current Gain              | h <sub>FE1</sub>     | V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -5.0 mA  | <b>Note1</b> |      |      | -    |
|                              | h <sub>FE2</sub>     | V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -50 mA   |              |      |      | -    |
| Collector Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> = -5.0 mA, I <sub>B</sub> = -0.25 mA |              |      | -0.2 | V    |
| Low-level Input Voltage      | V <sub>IL</sub>      | V <sub>CE</sub> = -5.0 V, I <sub>C</sub> = -100 μA  | <b>Note2</b> |      |      | V    |
| High-level Input Voltage     | V <sub>IH</sub>      | V <sub>CE</sub> = -0.2 V, I <sub>C</sub> = -5.0 mA  |              |      |      | V    |
| Input Resistor               | R <sub>1</sub>       |   | <b>Note3</b> |      |      | kΩ   |
| Emitter to Base Resistor     | R <sub>2</sub>       |   |              |      |      | kΩ   |

**Note 1.**

| PART NUMBER | h <sub>FE1</sub> |      |      | h <sub>FE2</sub> |      |      | UNIT |
|-------------|------------------|------|------|------------------|------|------|------|
|             | MIN.             | TYP. | MAX. | MIN.             | TYP. | MAX. |      |
| KN4A4M      | 35               |      | 100  | 80               |      |      | -    |
| KN4F4M      | 60               |      | 195  | 90               |      |      | -    |
| KN4L4M      | 85               |      | 340  | 95               |      |      | -    |
| KN4L3M      | 20               |      | 80   | 80               |      |      | -    |
| KN4L3N      | 35               |      | 100  | 80               |      |      | -    |
| KN4L3Z      | 135              |      | 600  | 100              |      |      | -    |
| KN4A3Q      | 35               |      | 100  | 80               |      |      | -    |
| KN4A4P      | 85               |      | 340  | 95               |      |      | -    |
| KN4F4N      | 85               |      | 340  | 95               |      |      | -    |
| KN4L4L      | 60               |      | 195  | 90               |      |      | -    |
| KN4A4Z      | 135              |      | 600  | 100              |      |      | -    |
| KN4F4Z      | 135              |      | 600  | 100              |      |      | -    |
| KN4L4Z      | 135              |      | 600  | 100              |      |      | -    |
| ★ KN4F3M    | 8                |      | 50   | 50               |      |      | -    |
| KN4F3P      | 35               |      | 100  | 80               |      |      | -    |
| KN4F3R      | 85               |      | 340  | 95               |      |      | -    |
| KN4A4L      | 20               |      | 80   | 80               |      |      | -    |
| KN4L4K      | 35               |      | 100  | 80               |      |      | -    |

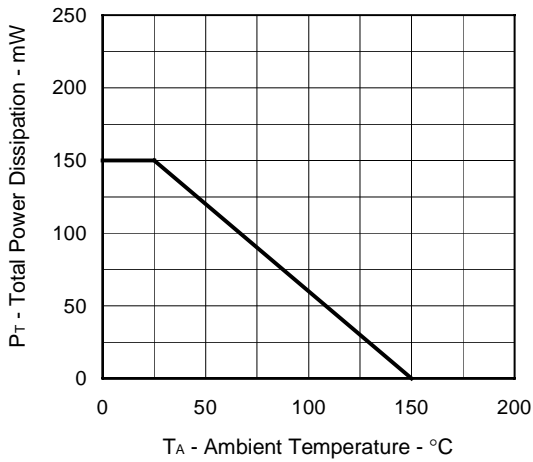
**Note 2.**

| PART NUMBER | V <sub>IL</sub> |      |      | V <sub>IH</sub> |      |      | UNIT |
|-------------|-----------------|------|------|-----------------|------|------|------|
|             | MIN.            | TYP. | MAX. | MIN.            | TYP. | MAX. |      |
| KN4A4M      |                 |      | -0.8 | -3.0            |      |      | V    |
| KN4F4M      |                 |      | -0.8 | -4.0            |      |      | V    |
| KN4L4M      |                 |      | -0.8 | -5.0            |      |      | V    |
| KN4L3M      |                 |      | -0.8 | -3.0            |      |      | V    |
| KN4L3N      |                 |      | -0.6 | -3.0            |      |      | V    |
| KN4L3Z      |                 |      | -0.5 | -1.2            |      |      | V    |
| KN4A3Q      |                 |      | -0.5 | -2.0            |      |      | V    |
| KN4A4P      |                 |      | -0.5 | -3.0            |      |      | V    |
| KN4F4N      |                 |      | -0.6 | -3.0            |      |      | V    |
| KN4L4L      |                 |      | -0.9 | -6.0            |      |      | V    |
| KN4A4Z      |                 |      | -0.5 | -2.0            |      |      | V    |
| KN4F4Z      |                 |      | -0.5 | -3.0            |      |      | V    |
| KN4L4Z      |                 |      | -0.5 | -4.0            |      |      | V    |
| KN4F3M      |                 |      | -0.8 | -3.0            |      |      | V    |
| KN4F3P      |                 |      | -0.5 | -2.0            |      |      | V    |
| KN4F3R      |                 |      | -0.5 | -2.0            |      |      | V    |
| KN4A4L      |                 |      | -0.9 | -6.0            |      |      | V    |
| KN4L4K      |                 |      | -2.0 | -8.0            |      |      | V    |

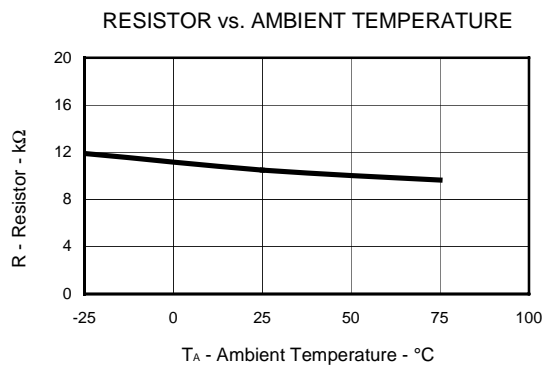
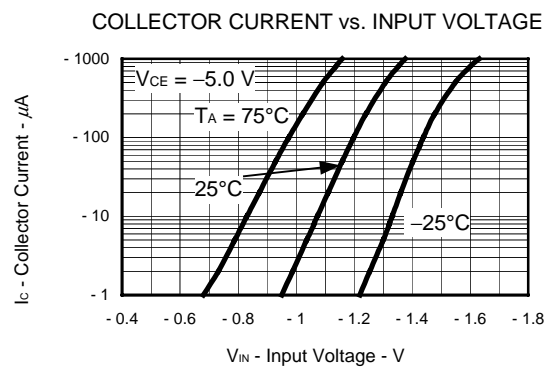
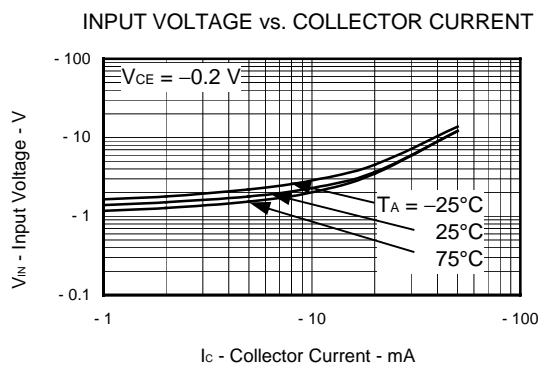
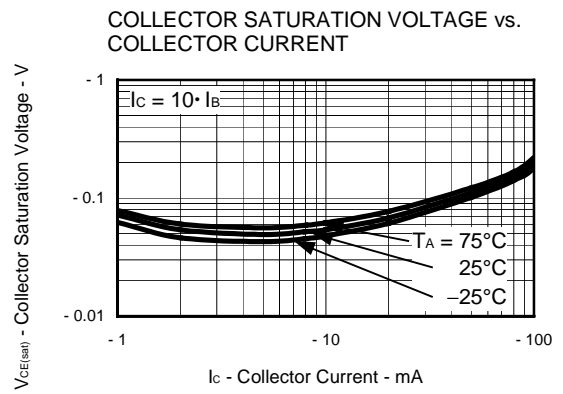
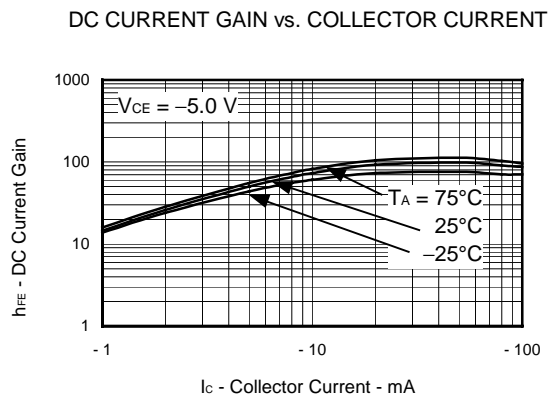
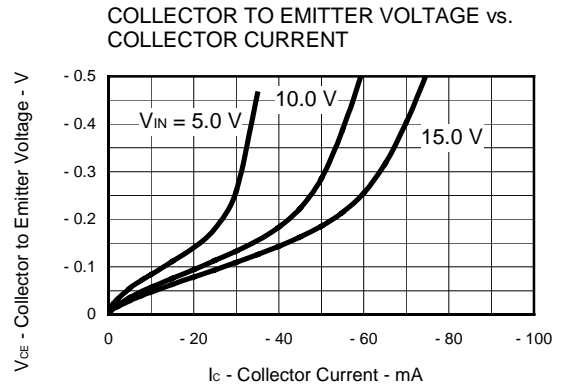
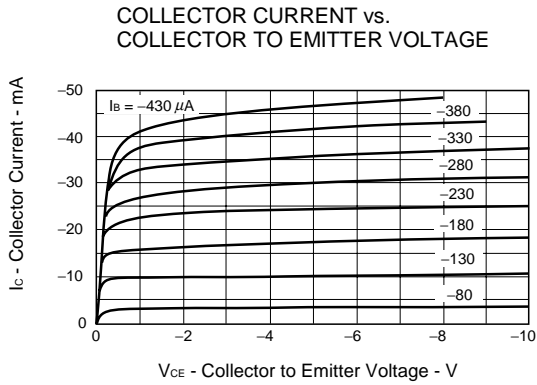
Note 3.

| PART NUMBER | R <sub>1</sub> |       |       | R <sub>2</sub> |       |       | UNIT |
|-------------|----------------|-------|-------|----------------|-------|-------|------|
|             | MIN.           | TYP.  | MAX.  | MIN.           | TYP.  | MAX.  |      |
| KN4A4M      | 7.00           | 10.00 | 13.00 | 7.00           | 10.00 | 13.00 | kΩ   |
| KN4F4M      | 15.40          | 22.00 | 28.60 | 15.40          | 22.00 | 28.60 | kΩ   |
| KN4L4M      | 32.90          | 47.00 | 61.10 | 32.90          | 47.00 | 61.10 | kΩ   |
| KN4L3M      | 3.29           | 4.70  | 6.11  | 3.29           | 4.70  | 6.11  | kΩ   |
| KN4L3N      | 3.29           | 4.70  | 6.11  | 7.00           | 10.00 | 13.00 | kΩ   |
| KN4L3Z      | 3.29           | 4.70  | 6.11  |                |       |       | kΩ   |
| KN4A3Q      | 0.70           | 1.00  | 1.30  | 7.00           | 10.00 | 13.00 | kΩ   |
| KN4A4P      | 7.00           | 10.00 | 13.00 | 32.90          | 47.00 | 61.10 | kΩ   |
| KN4F4N      | 15.40          | 22.00 | 28.60 | 32.90          | 47.00 | 61.10 | kΩ   |
| KN4L4L      | 32.90          | 47.00 | 61.10 | 15.40          | 22.00 | 28.60 | kΩ   |
| KN4A4Z      | 7.00           | 10.00 | 13.00 |                |       |       | kΩ   |
| KN4F4Z      | 15.40          | 22.00 | 28.60 |                |       |       | kΩ   |
| KN4L4Z      | 32.90          | 47.00 | 61.10 |                |       |       | kΩ   |
| KN4F3M      | 1.54           | 2.20  | 2.86  | 1.54           | 2.20  | 2.86  | kΩ   |
| KN4F3P      | 1.54           | 2.20  | 2.86  | 7.00           | 10.00 | 13.00 | kΩ   |
| KN4F3R      | 1.54           | 2.20  | 2.86  | 32.90          | 47.00 | 61.10 | kΩ   |
| KN4A4L      | 7.00           | 10.00 | 13.00 | 3.29           | 4.70  | 6.11  | kΩ   |
| KN4L4K      | 32.90          | 47.00 | 61.10 | 7.00           | 10.00 | 13.00 | kΩ   |

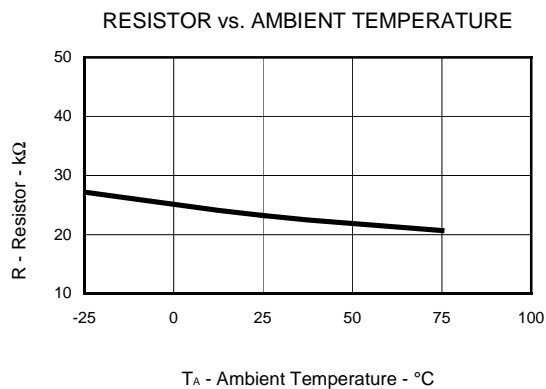
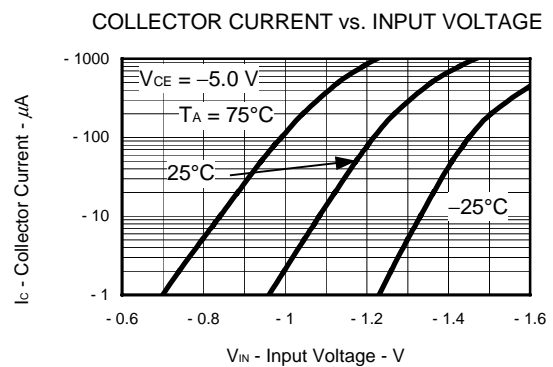
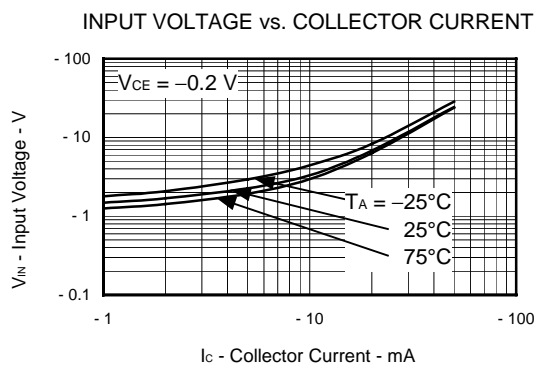
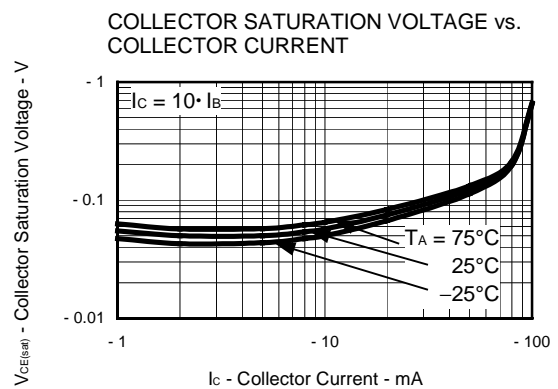
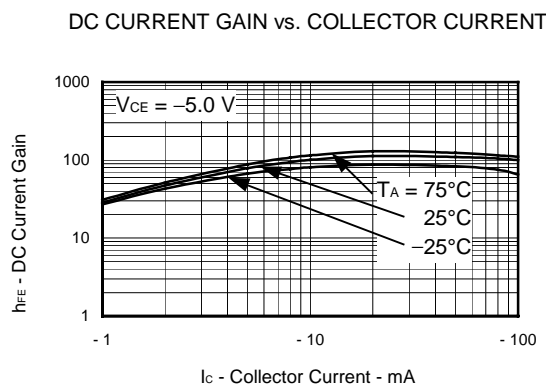
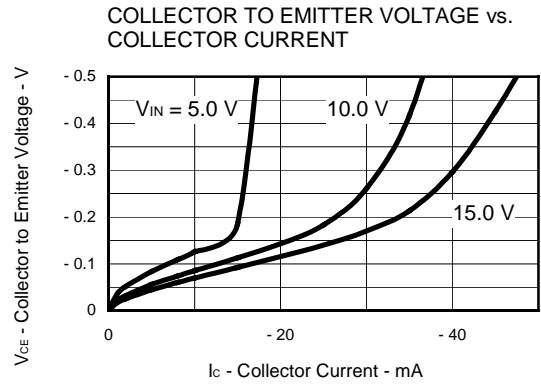
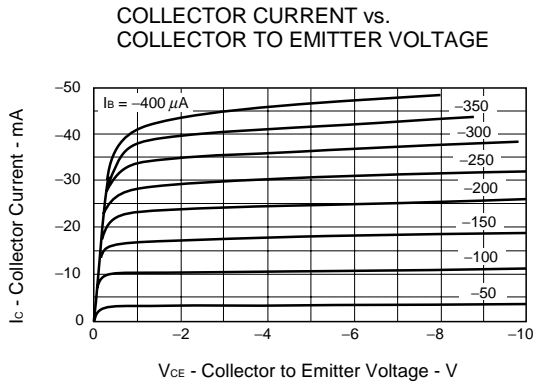
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



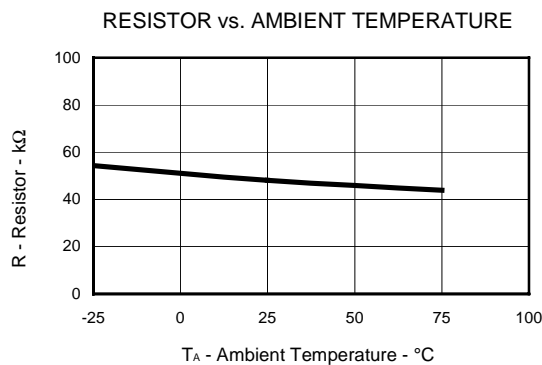
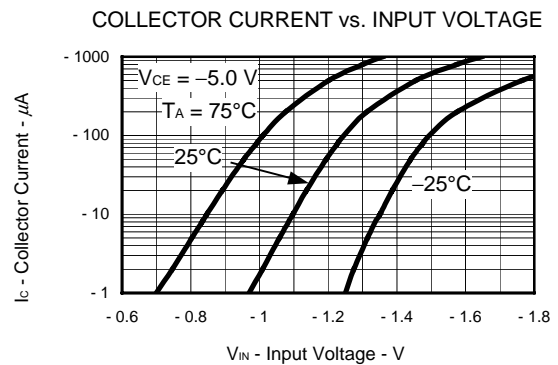
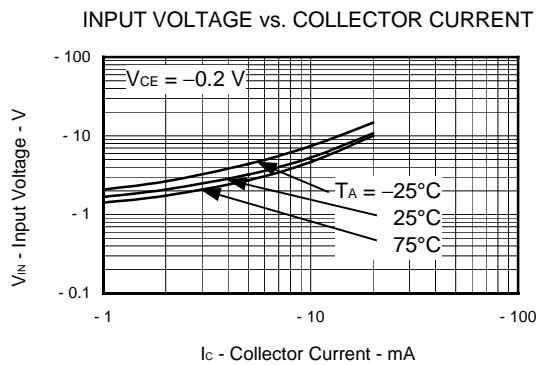
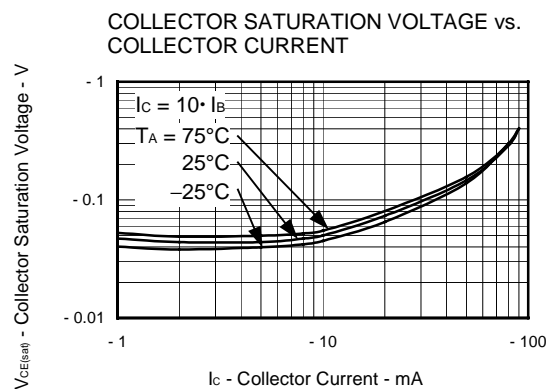
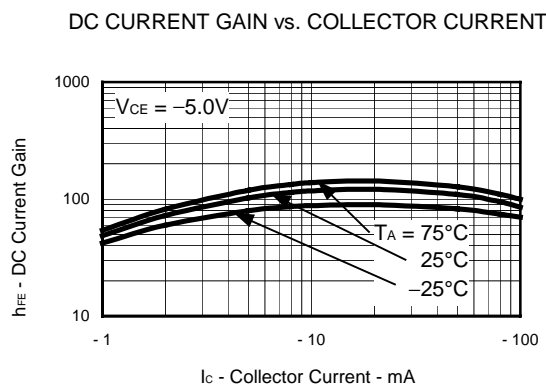
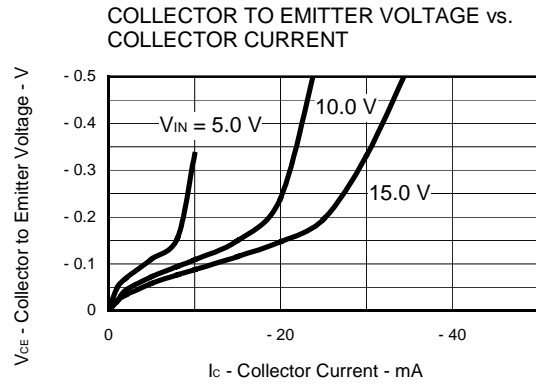
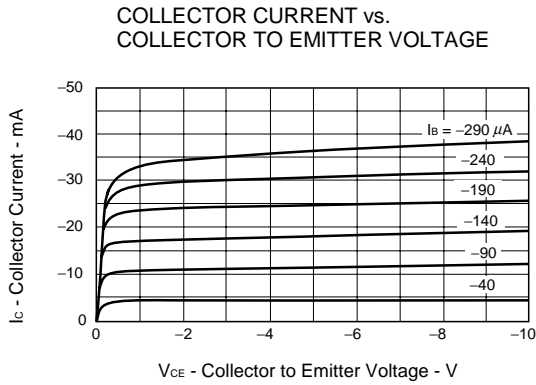
**[KN4A4M]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



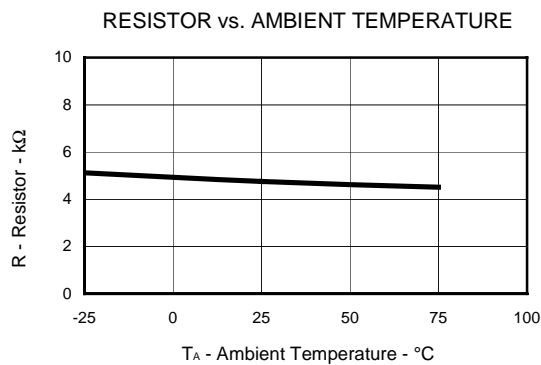
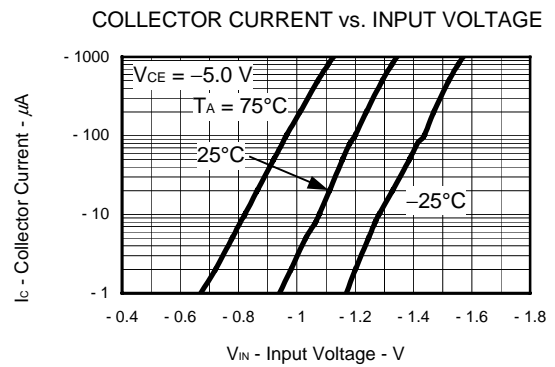
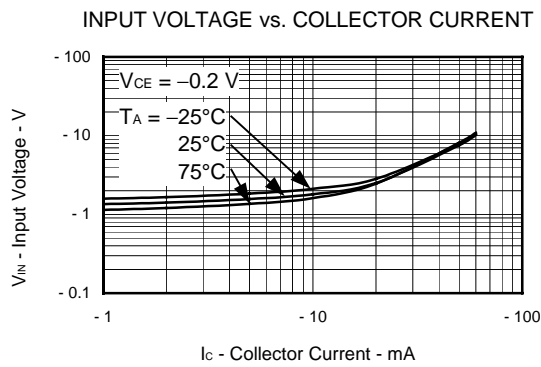
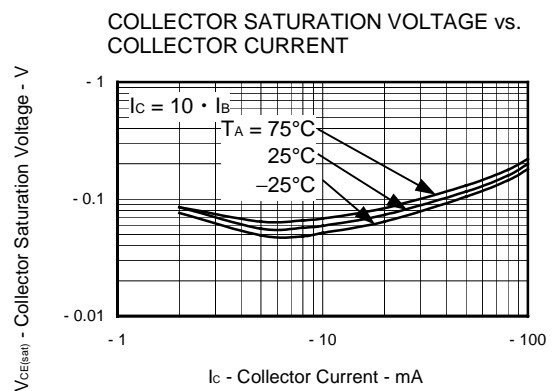
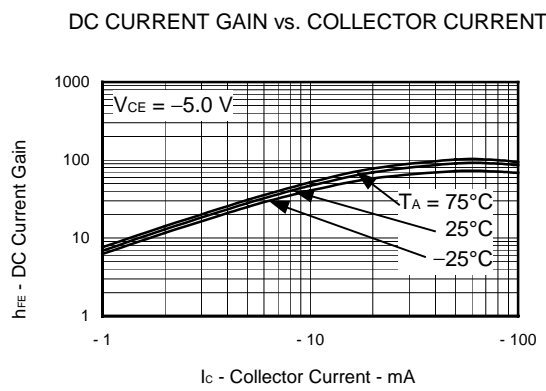
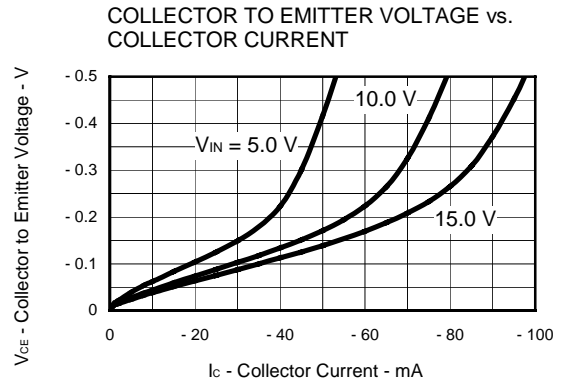
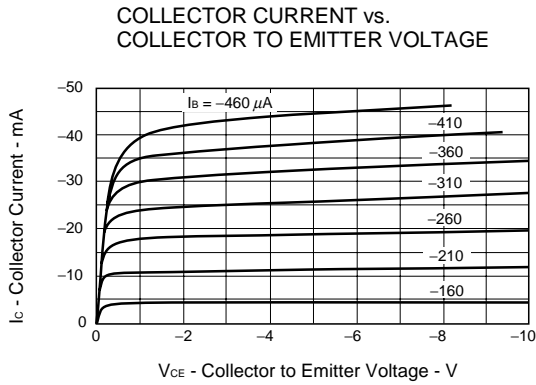
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**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



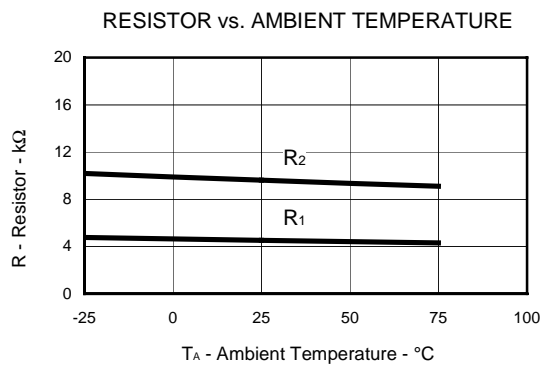
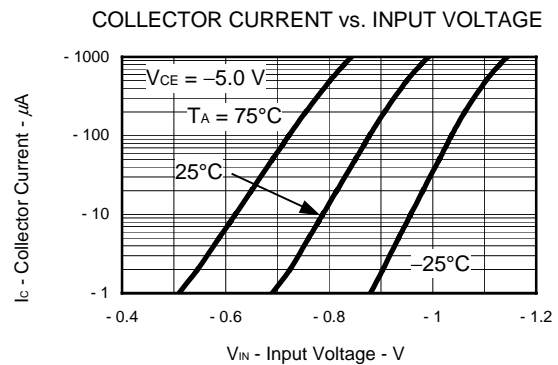
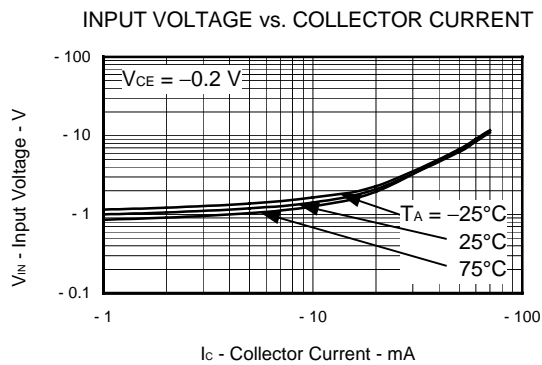
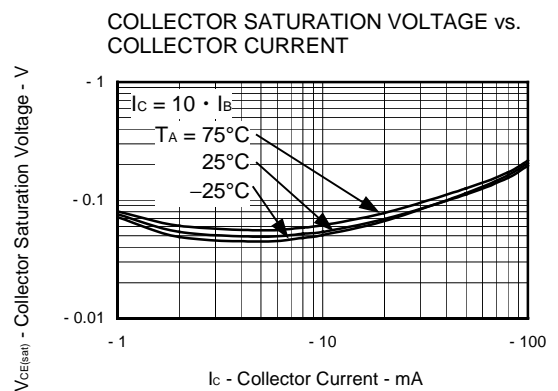
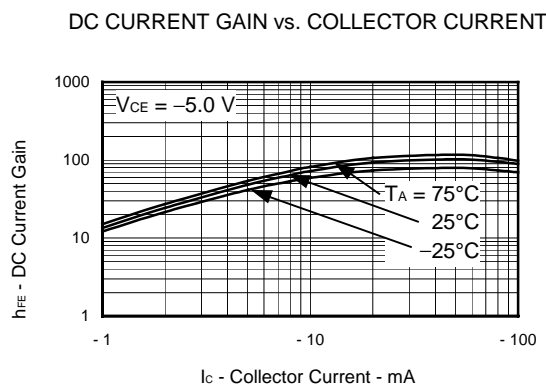
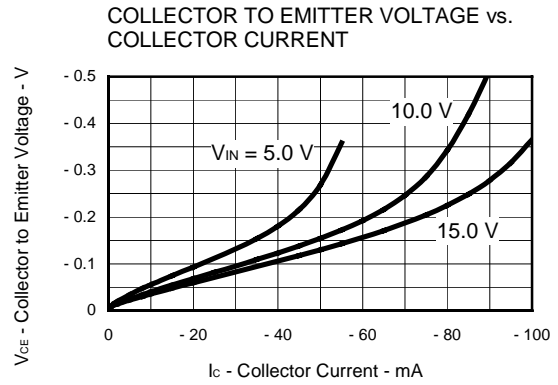
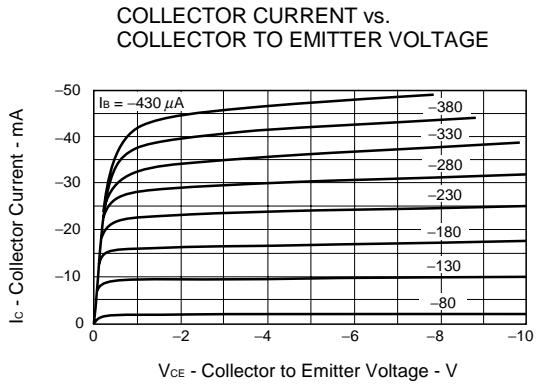
**[KN4L4M]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



**[KN4L3M]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

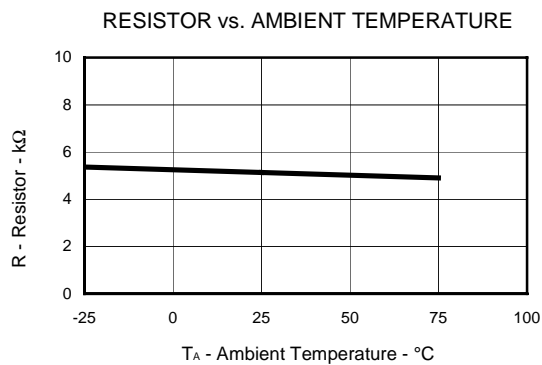
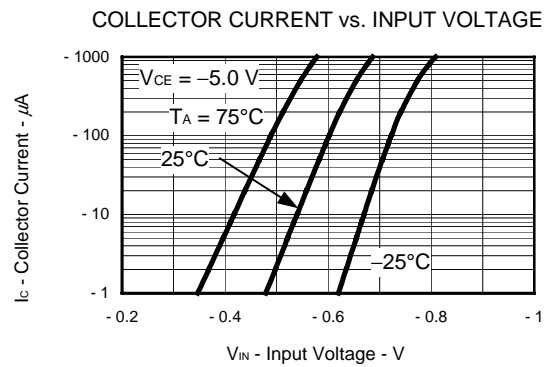
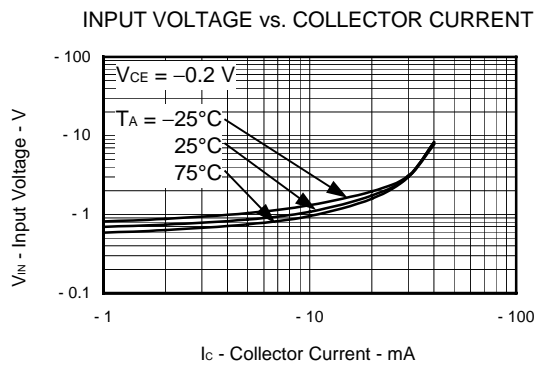
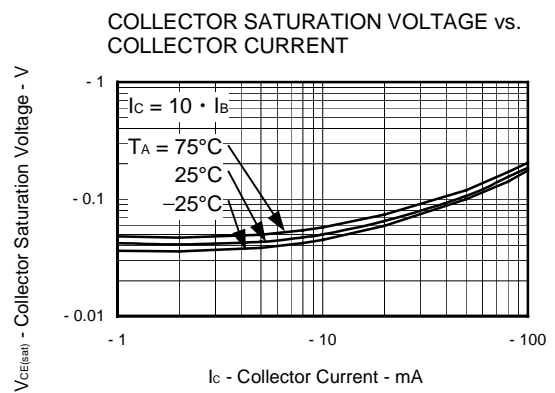
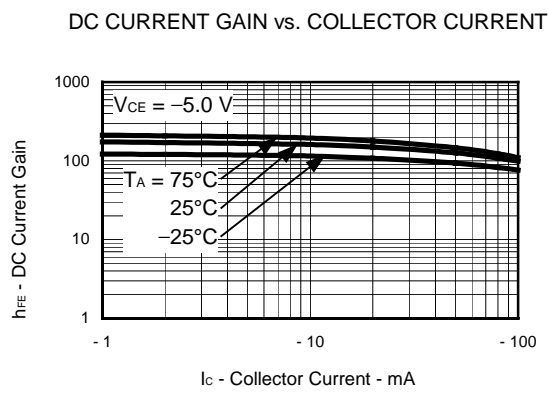
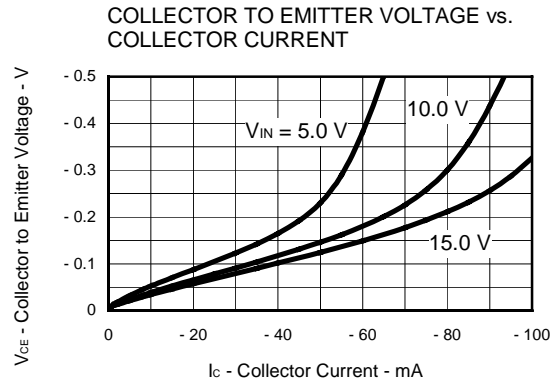
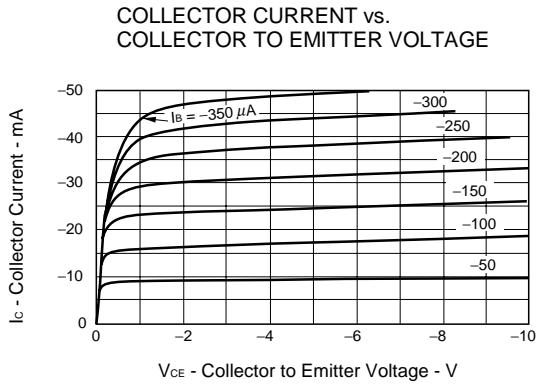


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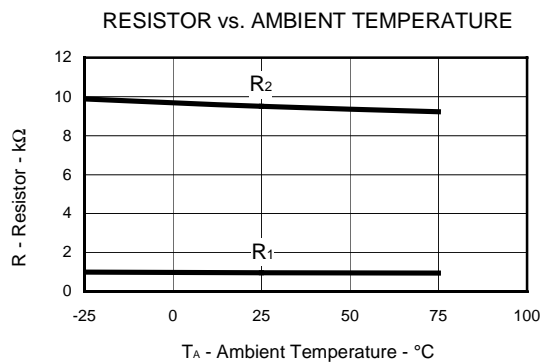
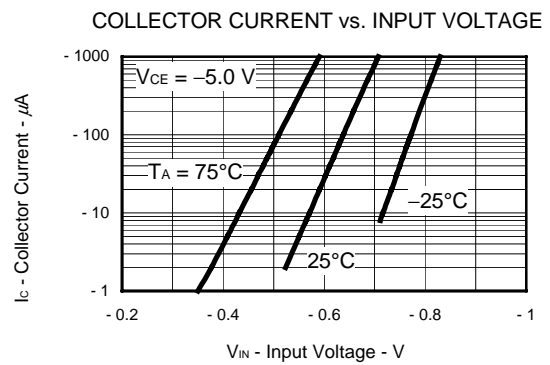
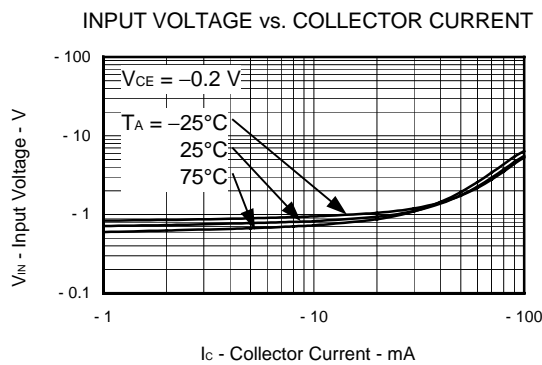
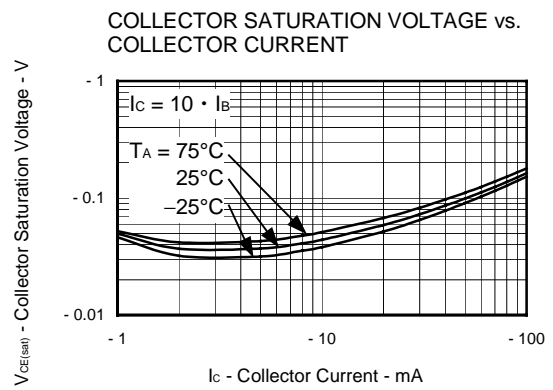
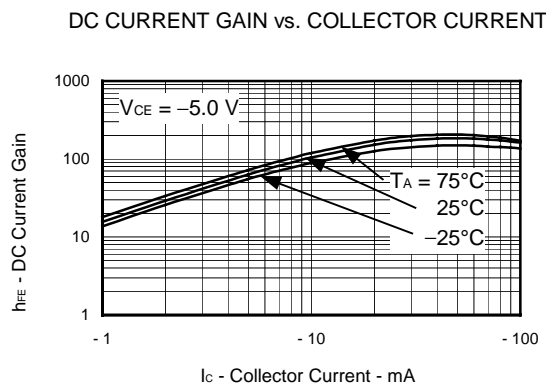
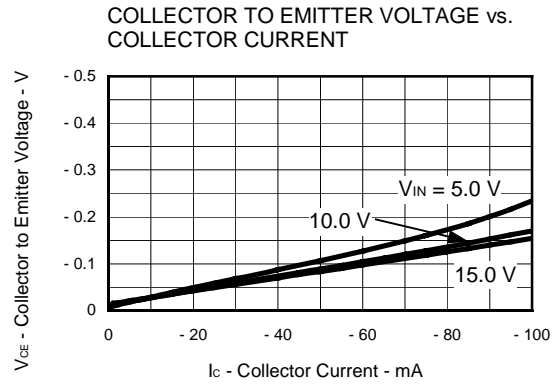
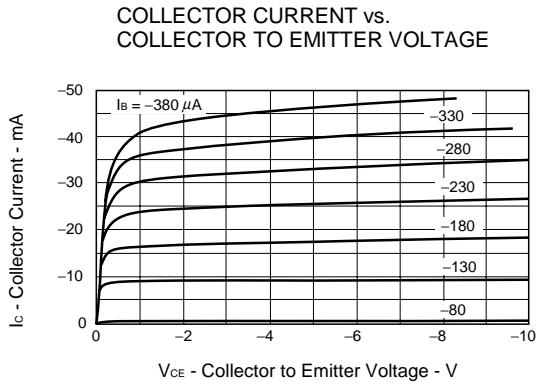




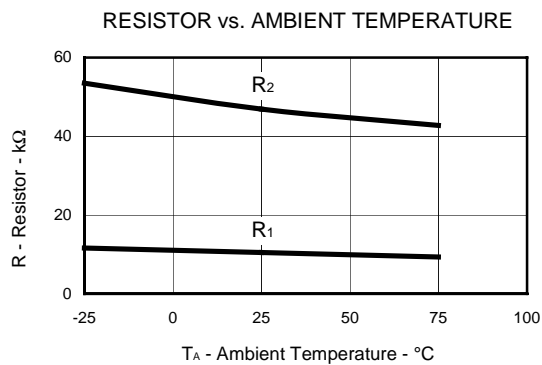
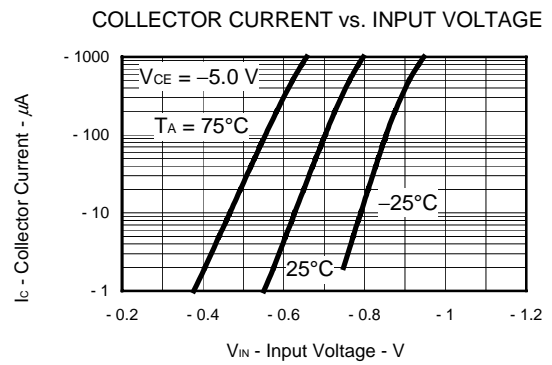
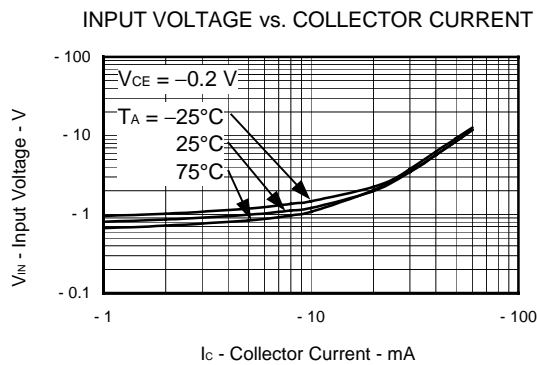
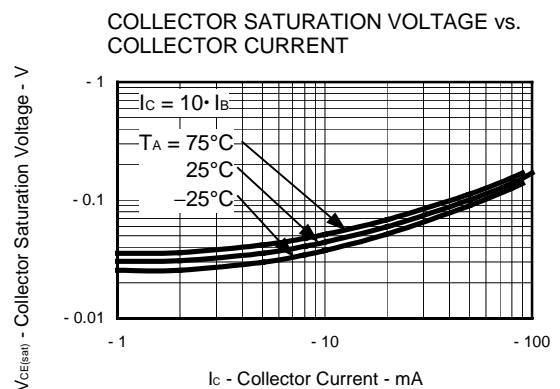
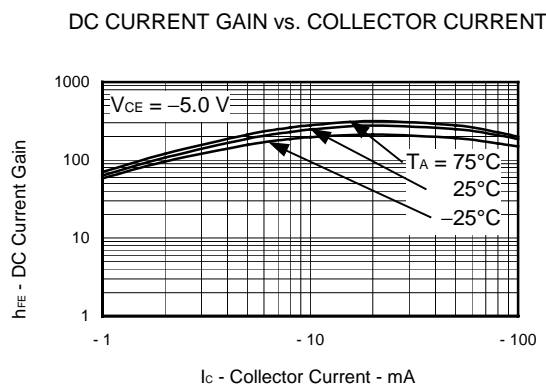
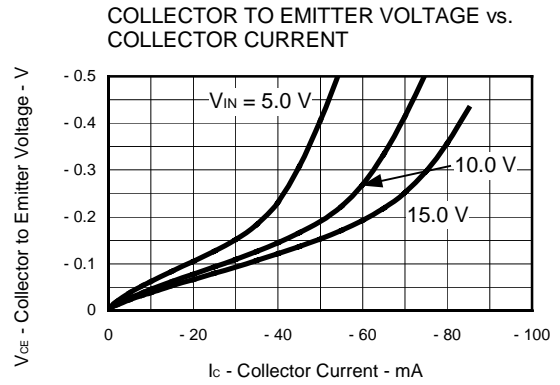
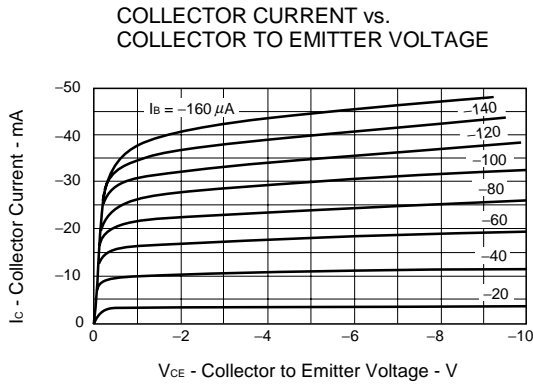
[KN4L3Z]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



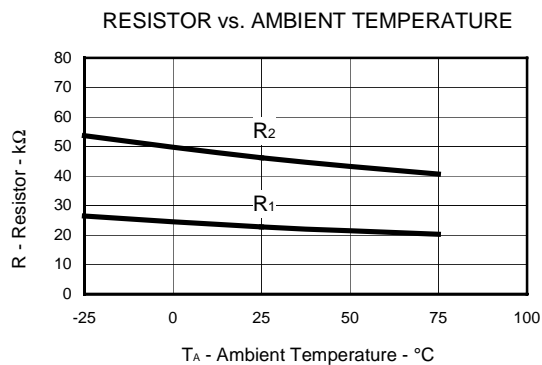
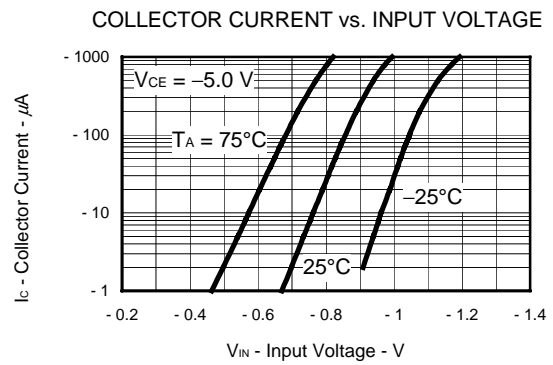
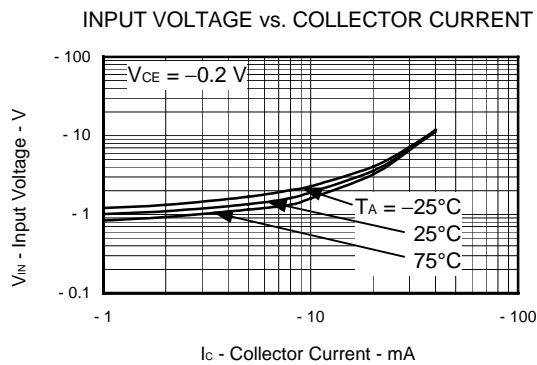
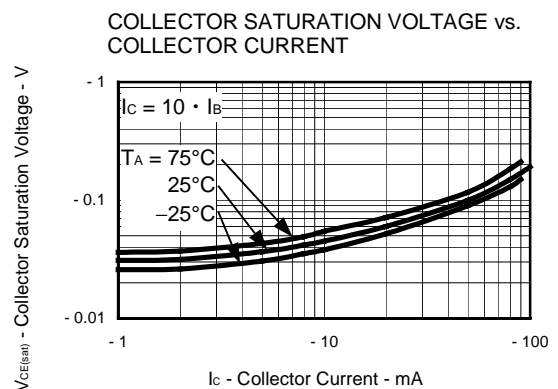
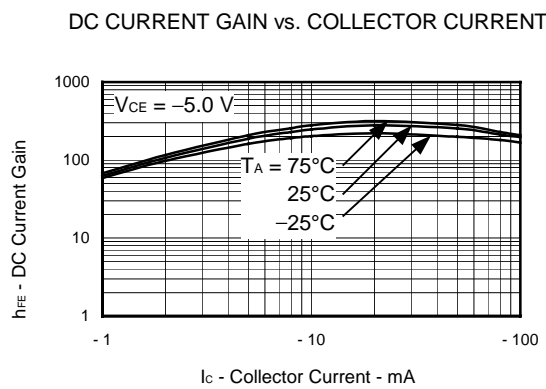
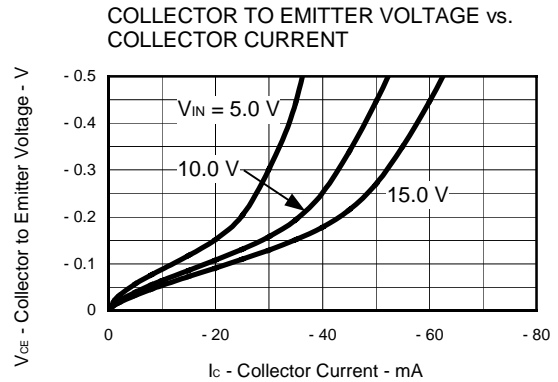
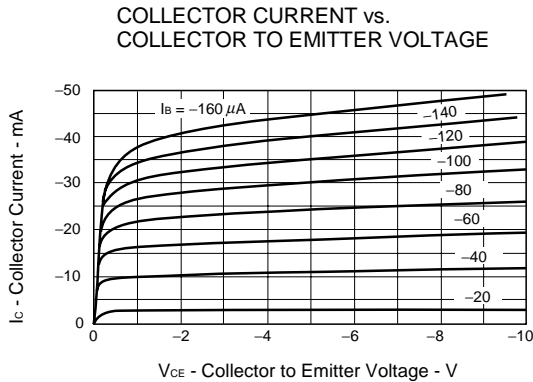
**[KN4A3Q]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



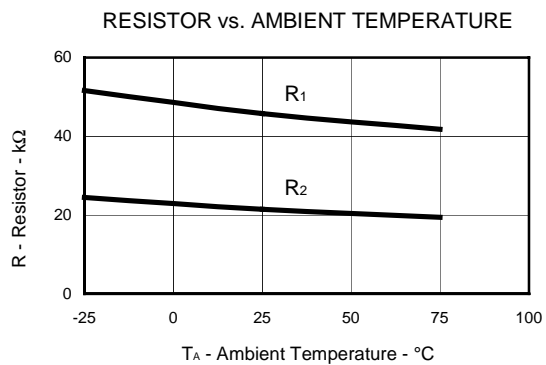
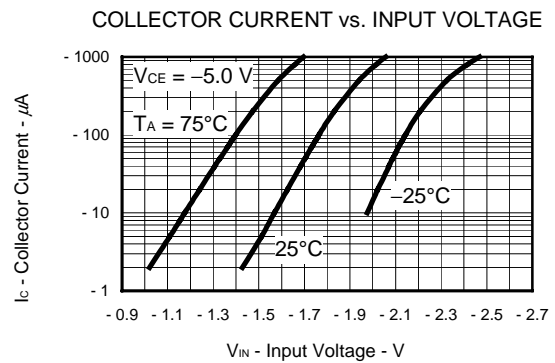
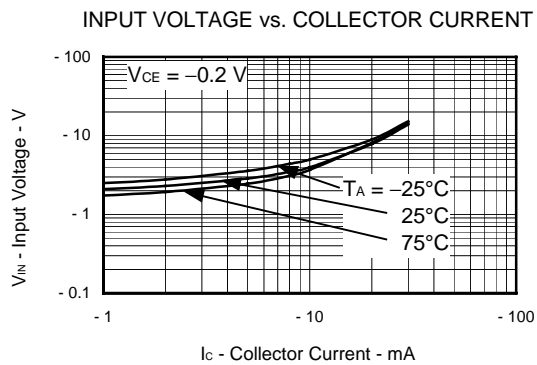
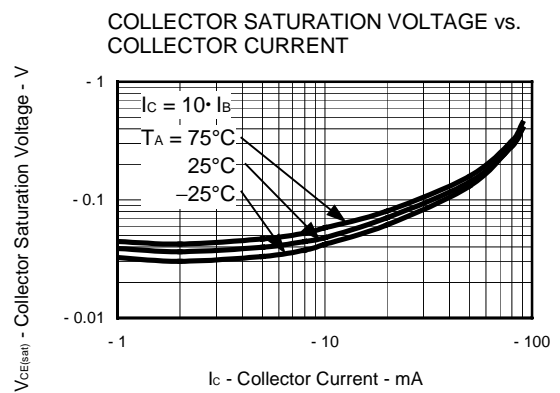
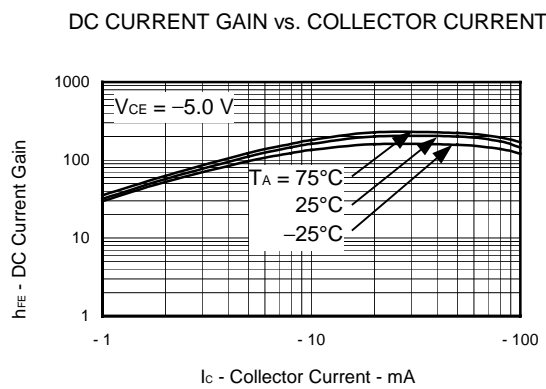
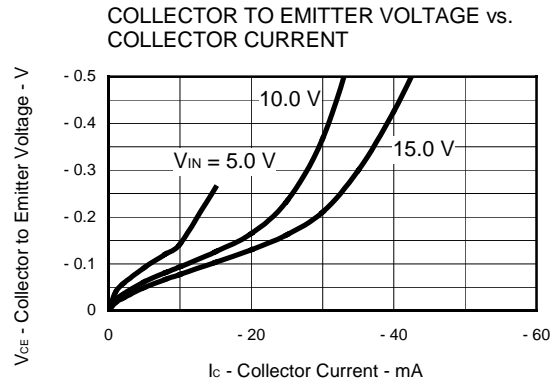
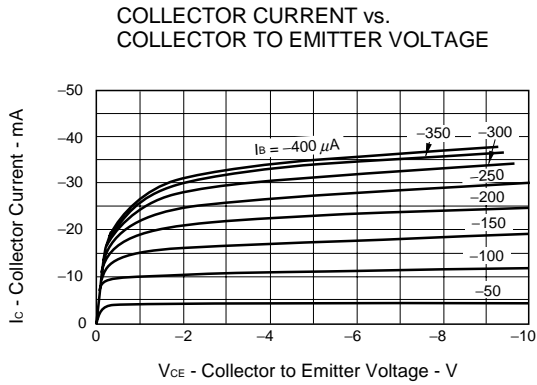
**[KN4A4P]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



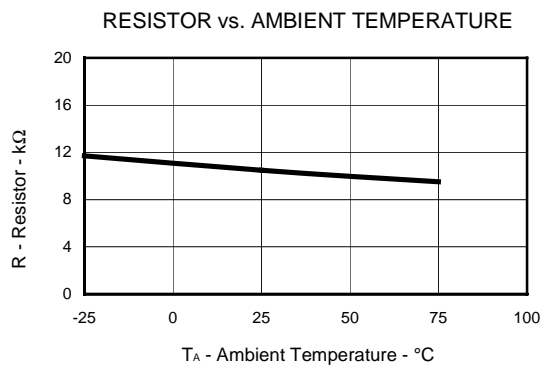
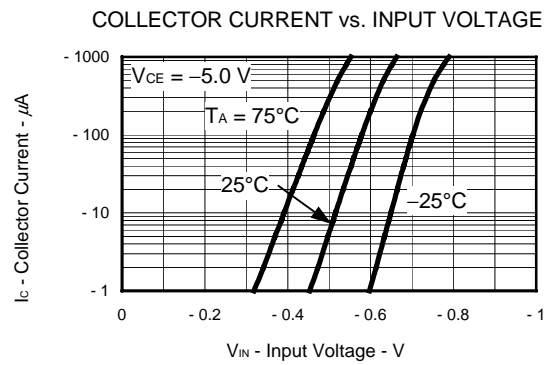
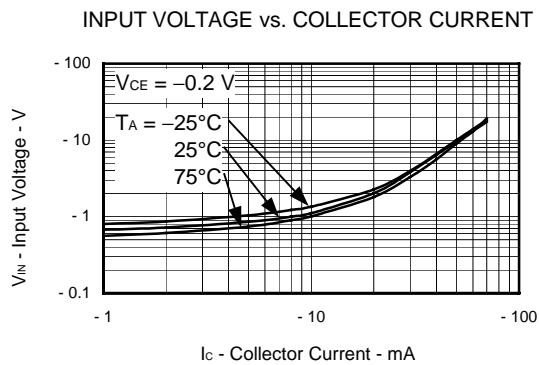
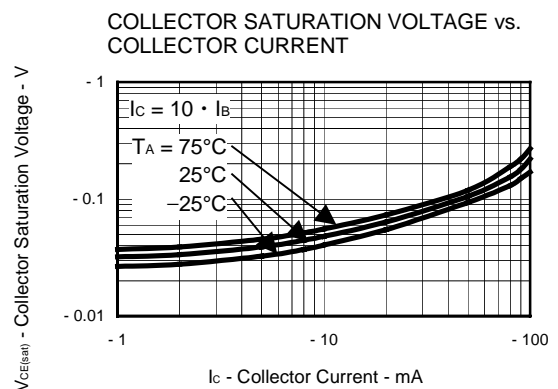
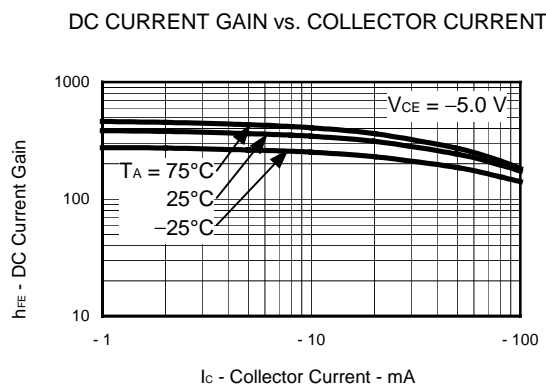
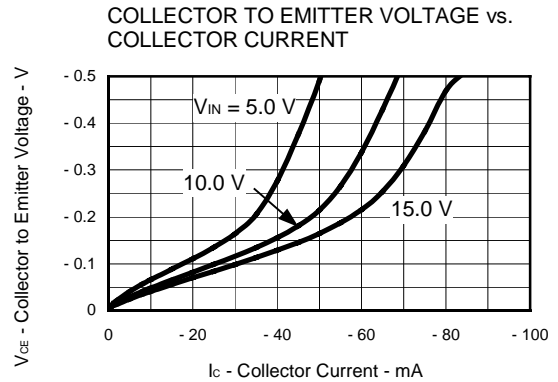
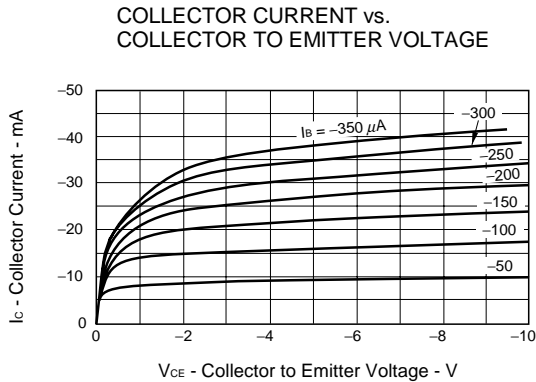
**[KN4F4N]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



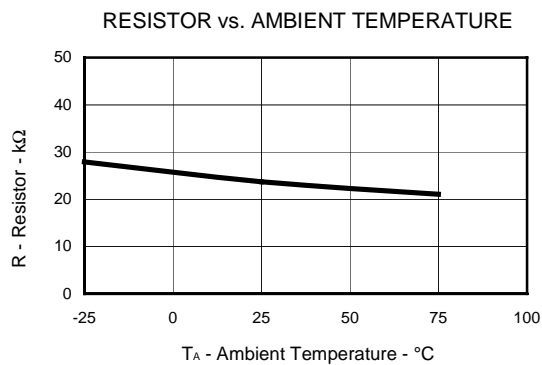
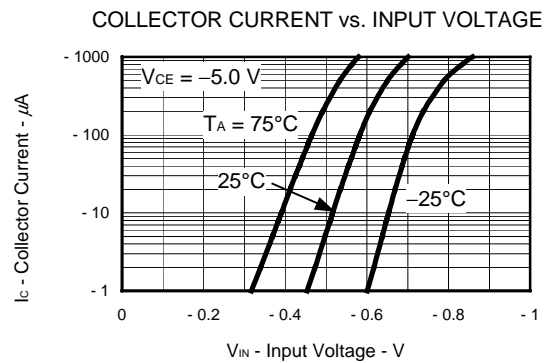
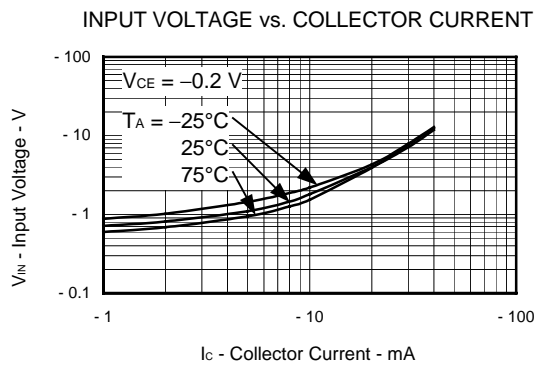
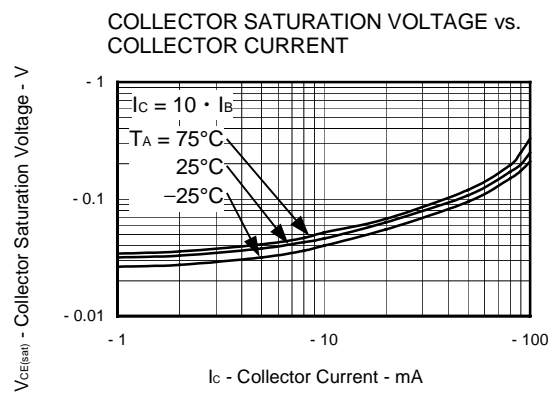
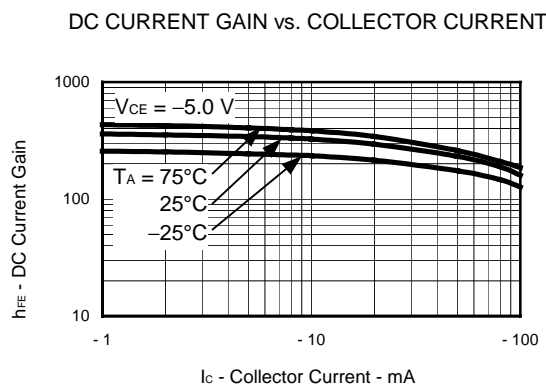
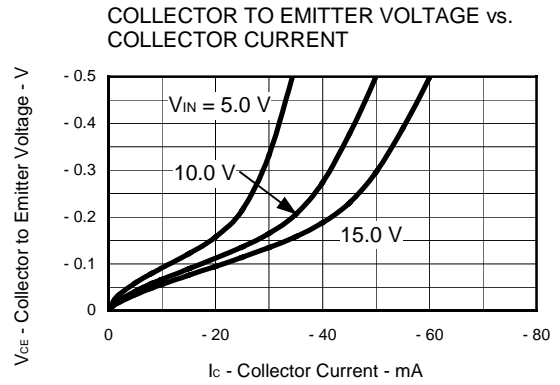
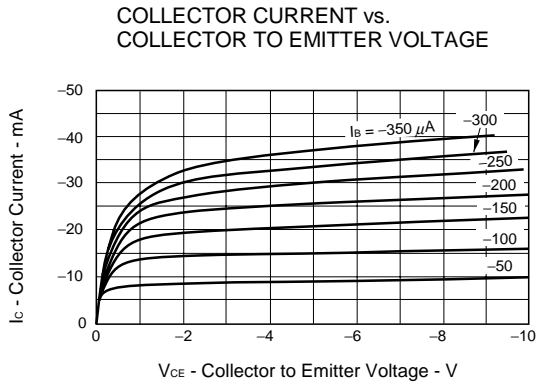
[KN4L4L]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



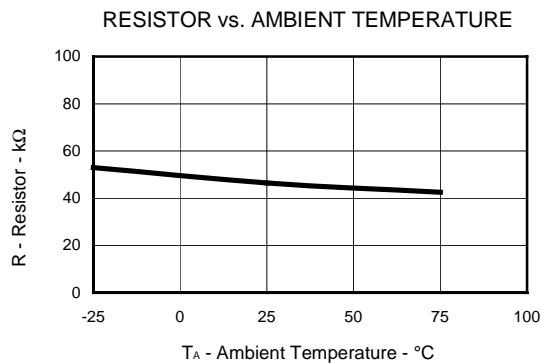
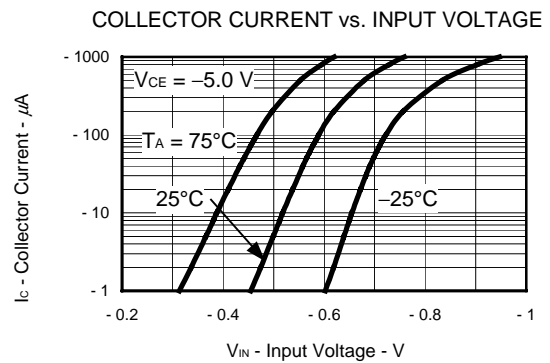
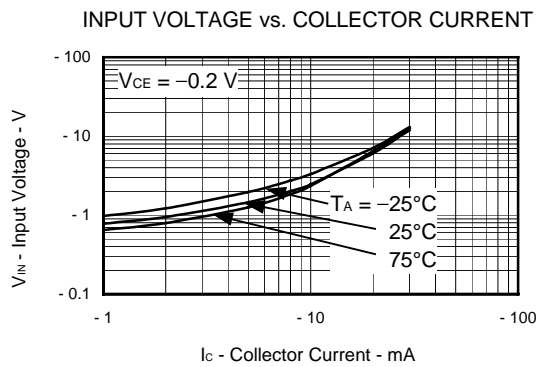
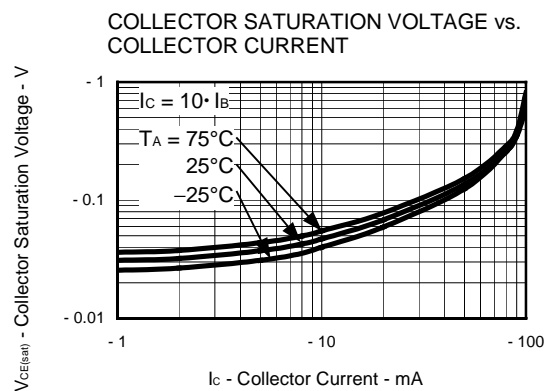
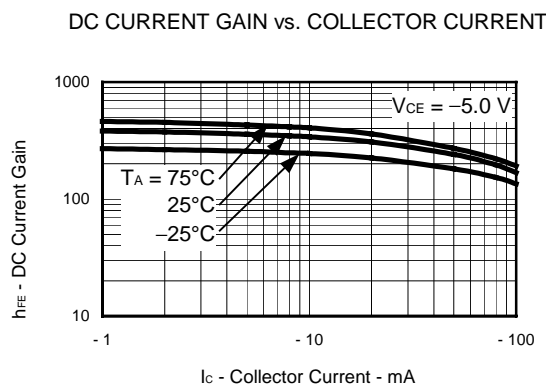
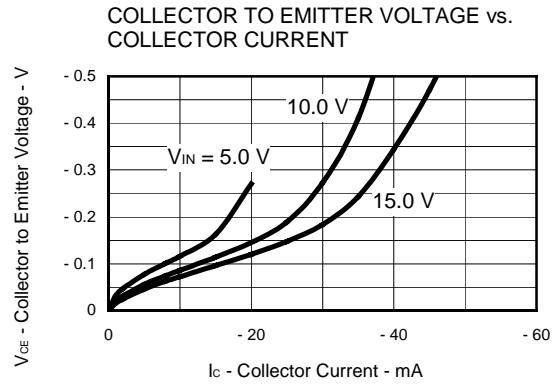
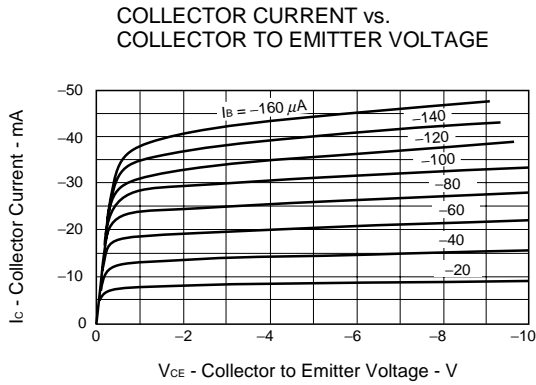
[KN4A4Z]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



[KN4F4Z]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

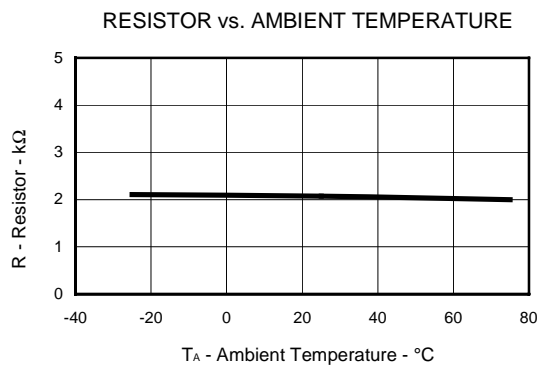
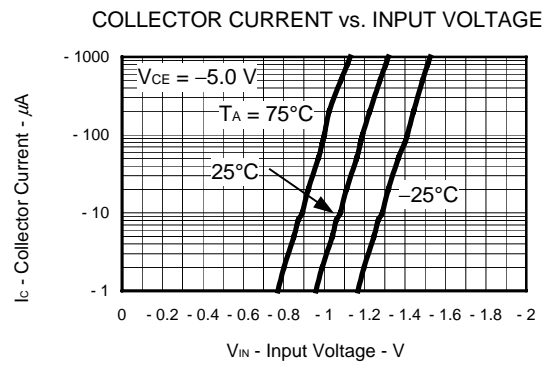
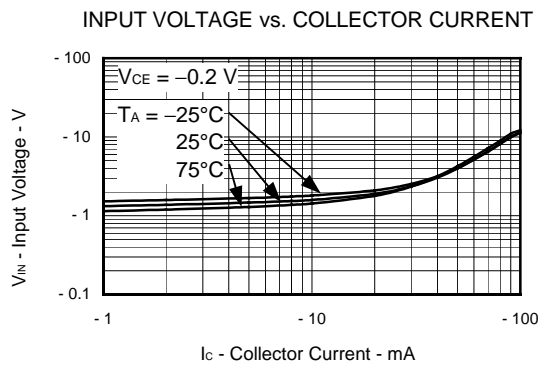
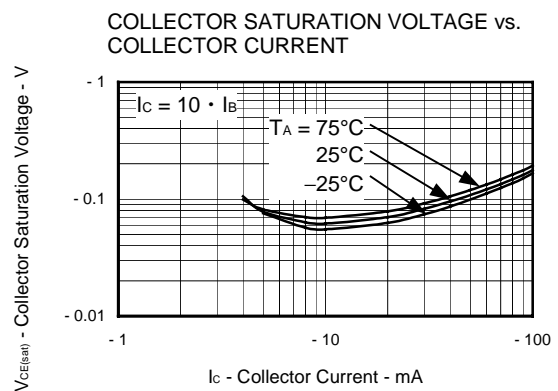
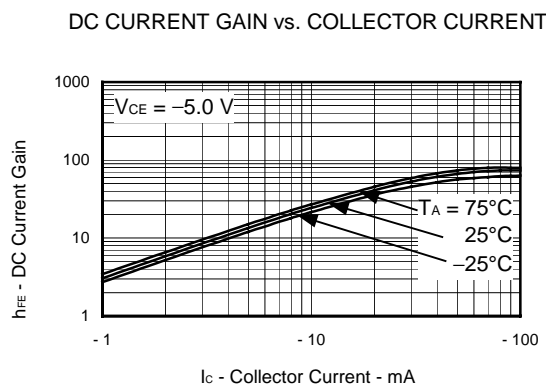
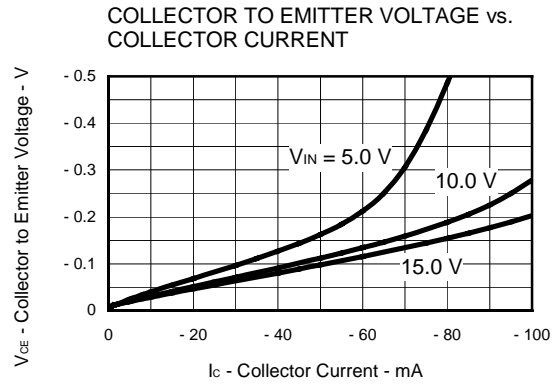
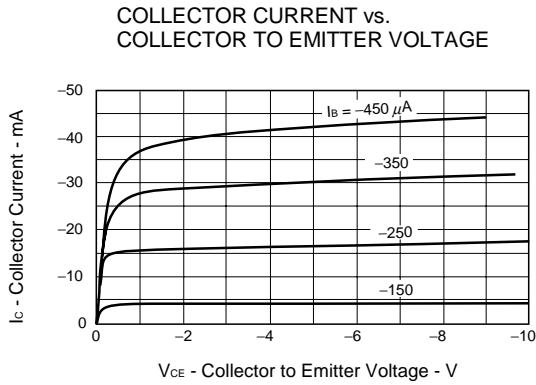


[KN4L4Z]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

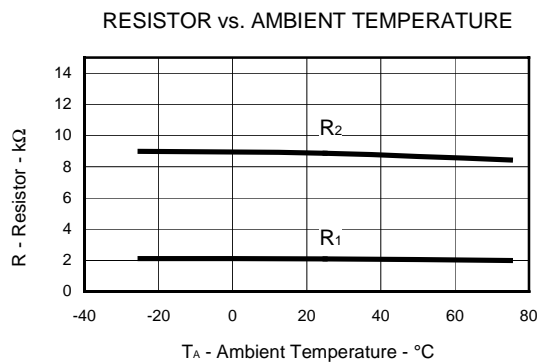
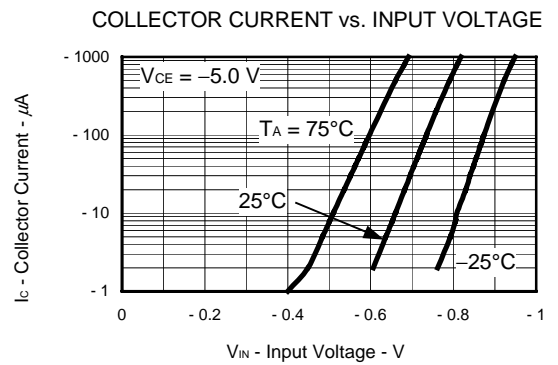
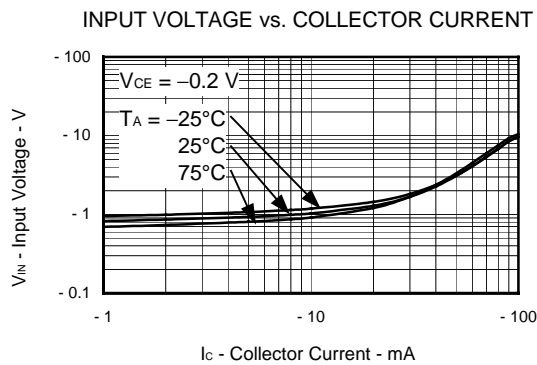
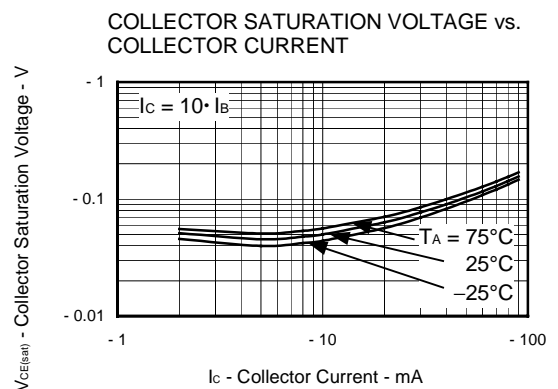
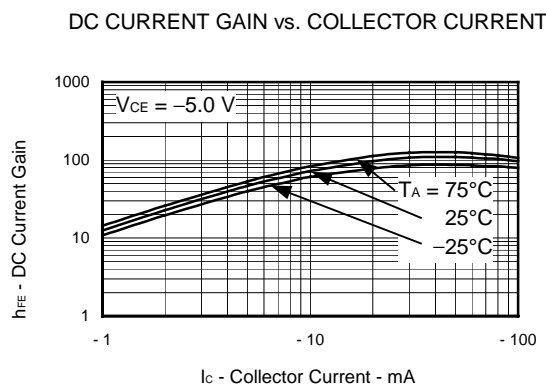
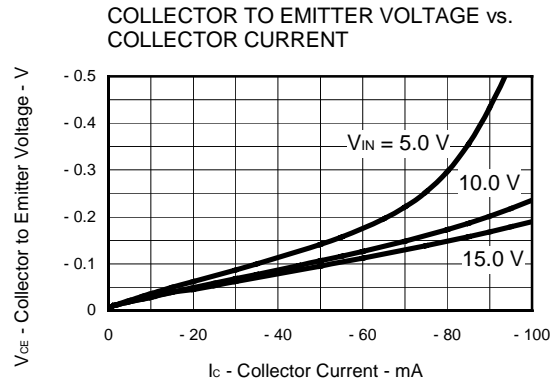
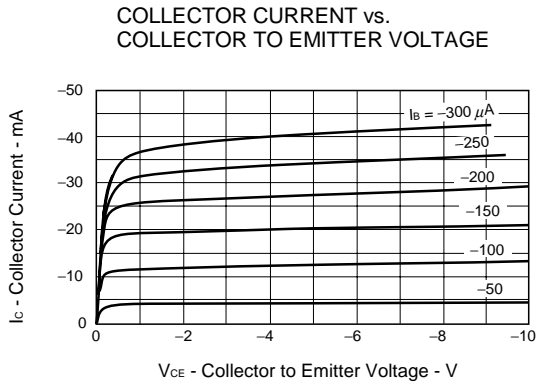




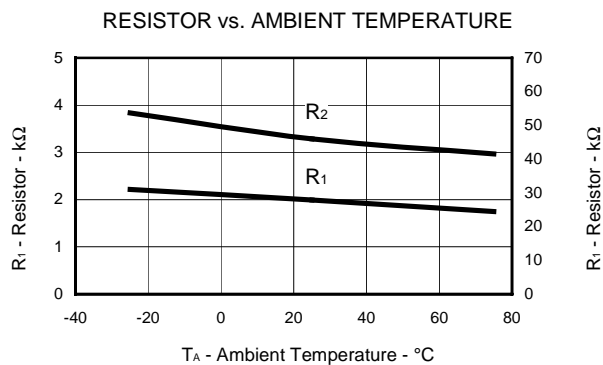
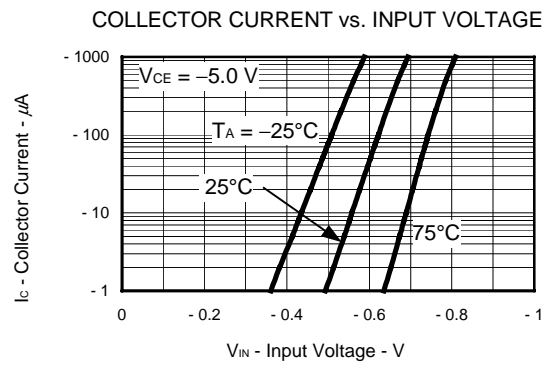
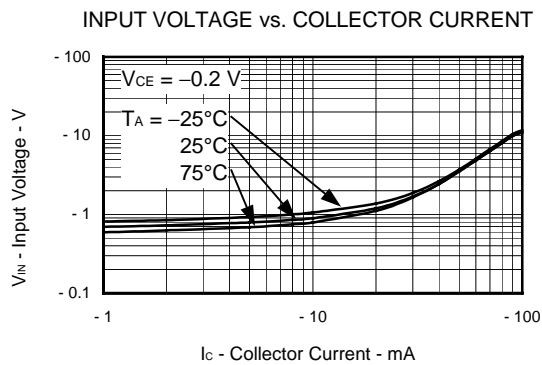
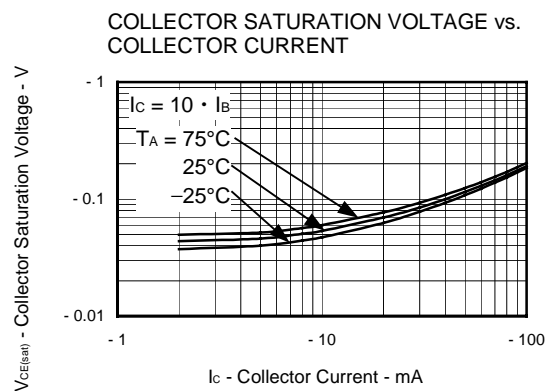
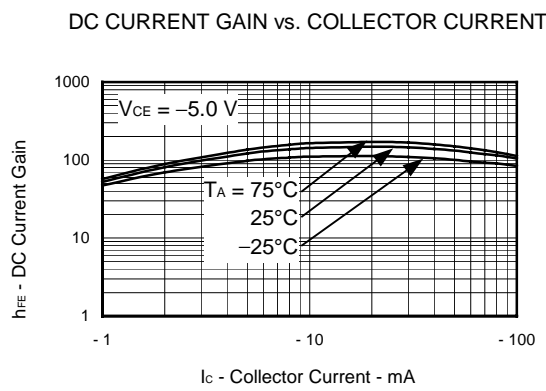
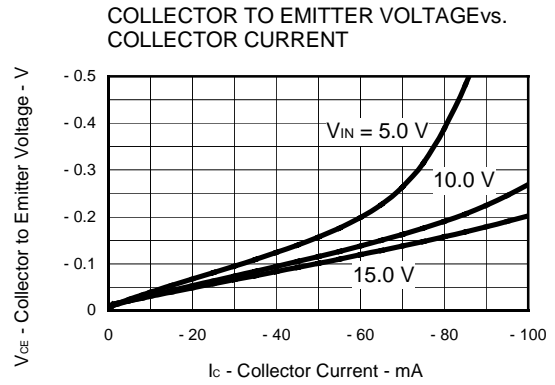
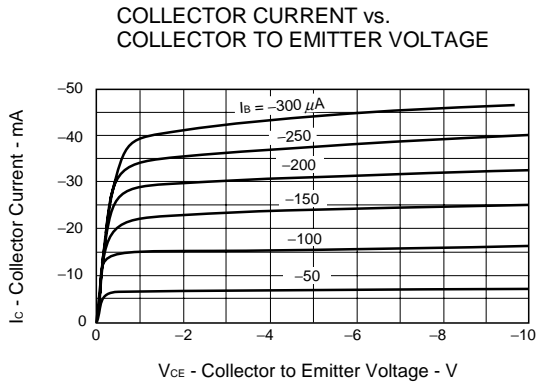
**[KN4F3M]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



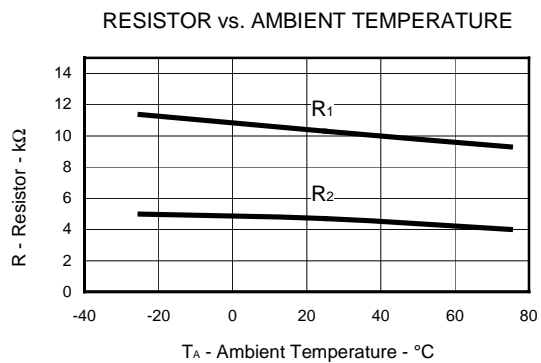
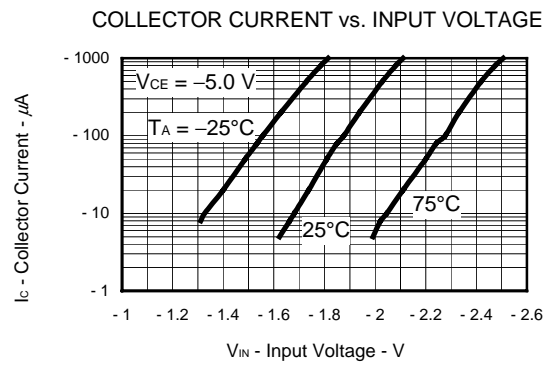
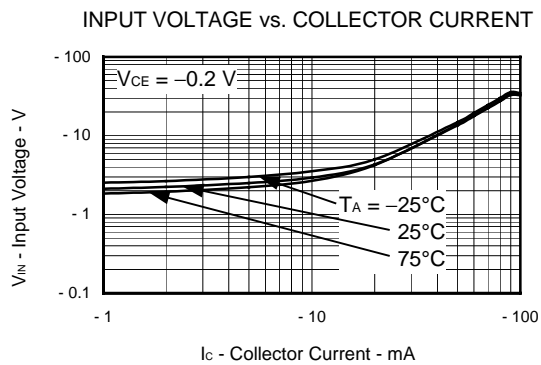
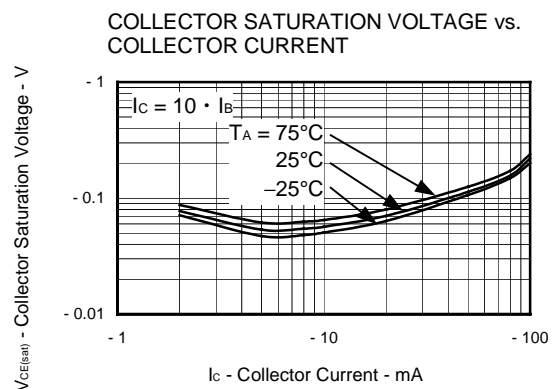
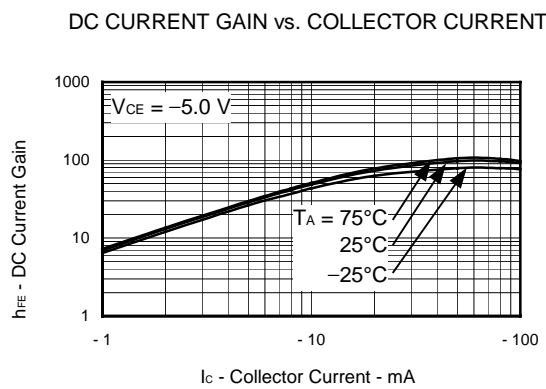
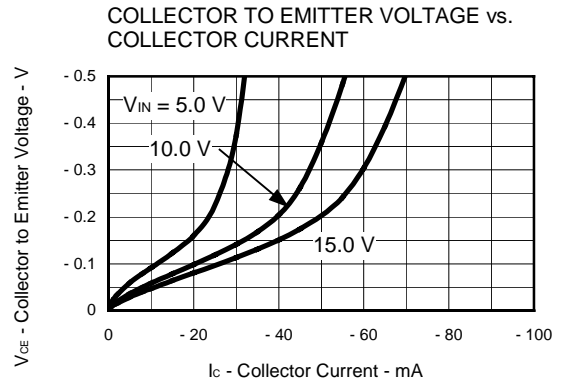
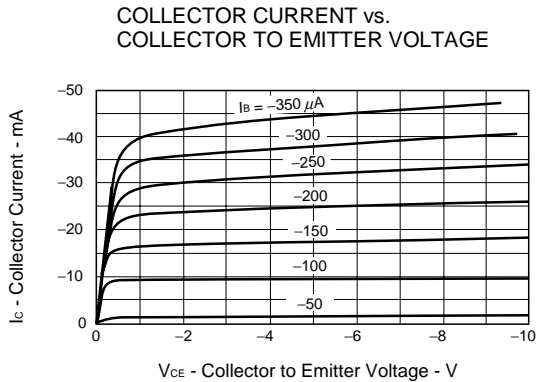
**[KN4F3P]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



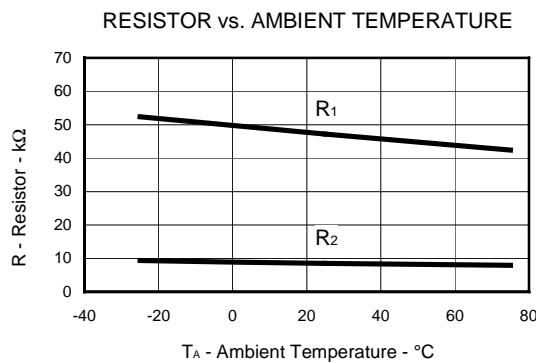
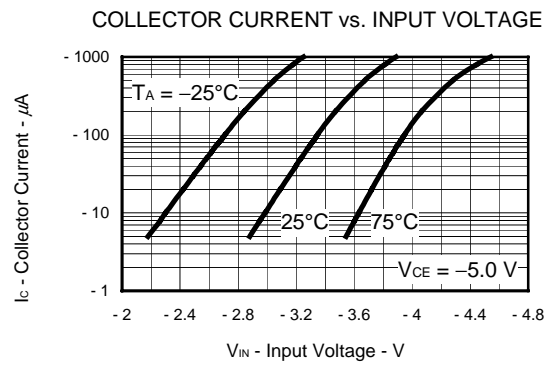
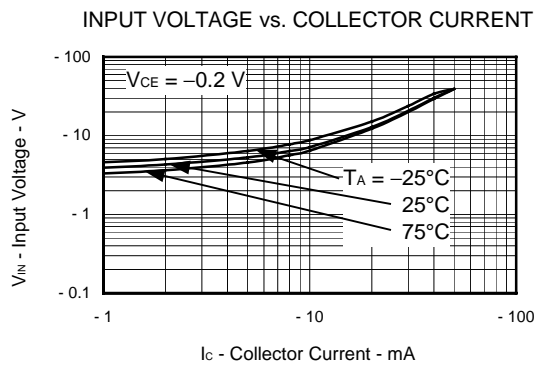
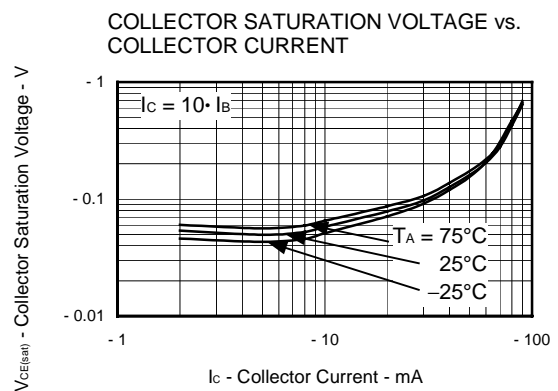
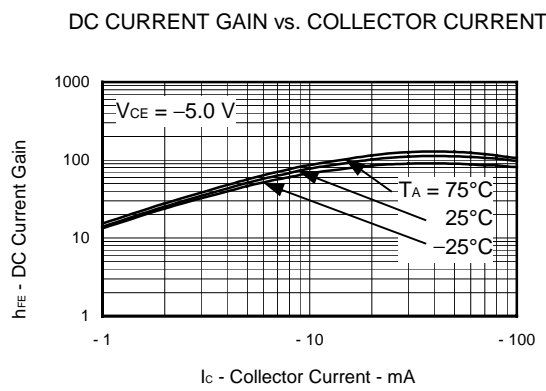
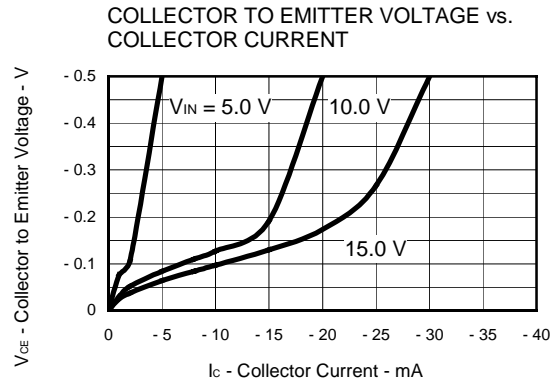
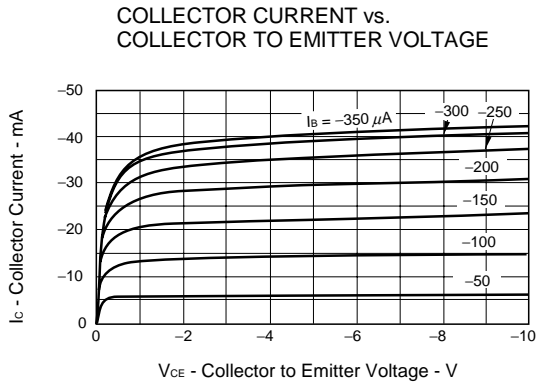
**[KN4F3R]**  
**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**



[KN4A4L]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



[KN4L4K]  
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



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