

RESISTOR BUILT-IN TYPE NPN TRANSISTOR

FEATURES

- Compact package
- Resistors built-in type
- Complementary to FN4xxx

ORDERING INFORMATION

| PART NUMBER | PACKAGE |
|-------------|---------|
| FA4xxx | SC-59 |

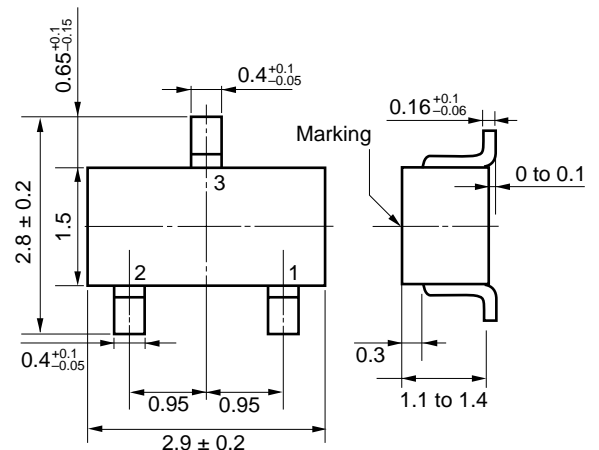
ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

| | | | |
|---|-----------------------|-------------|----|
| 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 | 0.2 | W |
| Junction Temperature | T _j | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

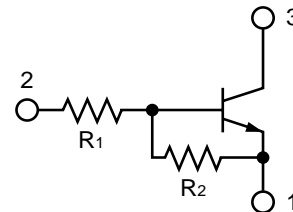
Note PW ≤ 10 ms, Duty Cycle ≤ 50%

| PART NUMBER | MARK | R ₁ | R ₂ | UNIT |
|-------------|------|----------------|----------------|------|
| FA4A4M | AA1 | 10.0 | 10.0 | kΩ |
| FA4F4M | AB1 | 22.0 | 22.0 | kΩ |
| FA4L4M | AC1 | 47.0 | 47.0 | kΩ |
| FA4L3M | AD1 | 4.7 | 4.7 | kΩ |
| FA4L3N | AE1 | 4.7 | 10.0 | kΩ |
| FA4L3Z | AF1 | 4.7 | | kΩ |
| FA4A3Q | AG1 | 1.0 | 10.0 | kΩ |
| FA4A4P | AH1 | 10.0 | 47.0 | kΩ |
| FA4F4N | AJ1 | 22.0 | 47.0 | kΩ |

★ PACKAGE DRAWING (Unit: mm)



★ EQUIVALENT CIRCUIT



★ PIN CONNECTION

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

| PART NUMBER | MARK | R ₁ | R ₂ | UNIT |
|-------------|------|----------------|----------------|------|
| FA4L4L | AK1 | 47.0 | 22.0 | kΩ |
| FA4A4Z | AL1 | 10.0 | | kΩ |
| FA4F4Z | AM1 | 22.0 | | kΩ |
| FA4L4Z | AN1 | 47.0 | | kΩ |
| FA4F3M | AP1 | 2.2 | 2.2 | kΩ |
| FA4F3P | AQ1 | 2.2 | 10.0 | kΩ |
| FA4F3R | AR1 | 2.2 | 47.0 | kΩ |
| FA4A4L | AS1 | 10.0 | 4.7 | kΩ |
| FA4L4K | AT1 | 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_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 | | | | Note1 |
| 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 | Note2 | | | V |
| Input Resistor | R ₁ | | Note3 | | | kΩ |
| Emitter to Base Resistor | R ₂ | | Note3 | | | kΩ |

Note 1

| PART NUMBER | h _{FE1} | | | h _{FE2} | | | UNIT |
|-------------|------------------|------|------|------------------|------|------|------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. | |
| FA4A4M | 35 | | 100 | 80 | | | - |
| FA4F4M | 60 | | 195 | 90 | | | - |
| FA4L4M | 85 | | 340 | 95 | | | - |
| FA4L3M | 20 | | 80 | 80 | | | - |
| FA4L3N | 35 | | 100 | 80 | | | - |
| FA4L3Z | 135 | | 600 | 100 | | | - |
| FA4A3Q | 35 | | 100 | 80 | | | - |
| FA4A4P | 85 | | 340 | 95 | | | - |
| FA4F4N | 85 | | 340 | 95 | | | - |
| FA4L4L | 60 | | 195 | 90 | | | - |
| FA4A4Z | 135 | | 600 | 100 | | | - |
| FA4F4Z | 135 | | 600 | 100 | | | - |
| FA4L4Z | 135 | | 600 | 100 | | | - |
| FA4F3M | 8 | | 50 | 50 | | | - |
| FA4F3P | 35 | | 100 | 80 | | | - |
| FA4F3R | 85 | | 340 | 95 | | | - |
| FA4A4L | 20 | | 80 | 80 | | | - |
| FA4L4K | 35 | | 100 | 80 | | | - |

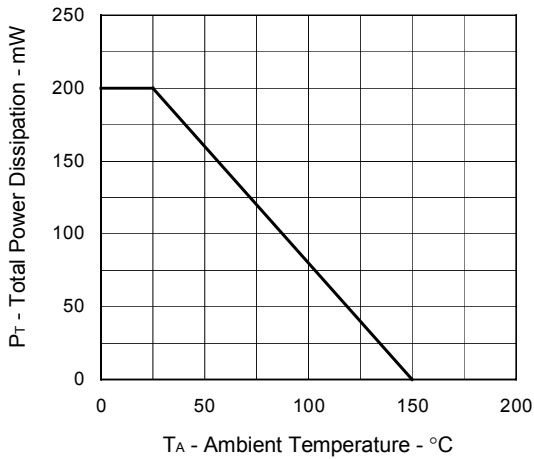
Note 2

| PART NUMBER | V _{IL} | | | V _{IH} | | | UNIT |
|-------------|-----------------|------|------|-----------------|------|------|------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. | |
| FA4A4M | | | 0.8 | 3.0 | | | V |
| FA4F4M | | | 0.8 | 4.0 | | | V |
| FA4L4M | | | 0.8 | 5.0 | | | V |
| FA4L3M | | | 0.8 | 3.0 | | | V |
| FA4L3N | | | 0.6 | 3.0 | | | V |
| FA4L3Z | | | 0.5 | 1.2 | | | V |
| FA4A3Q | | | 0.5 | 2.0 | | | V |
| FA4A4P | | | 0.5 | 3.0 | | | V |
| FA4F4N | | | 0.6 | 3.0 | | | V |
| FA4L4L | | | 0.9 | 6.0 | | | V |
| FA4A4Z | | | 0.5 | 2.0 | | | V |
| FA4F4Z | | | 0.5 | 3.0 | | | V |
| FA4L4Z | | | 0.5 | 4.0 | | | V |
| FA4F3M | | | 0.8 | 3.0 | | | V |
| FA4F3P | | | 0.5 | 2.0 | | | V |
| FA4F3R | | | 0.5 | 2.0 | | | V |
| FA4A4L | | | 0.9 | 6.0 | | | V |
| FA4L4K | | | 2.0 | 8.0 | | | V |

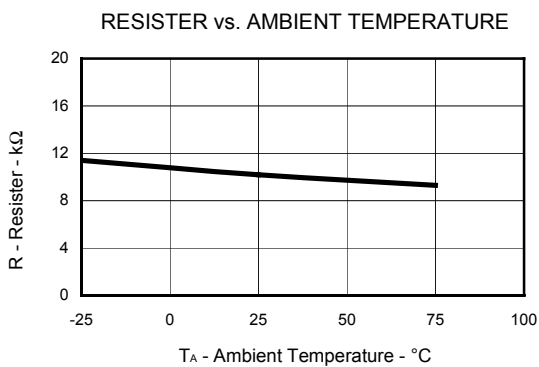
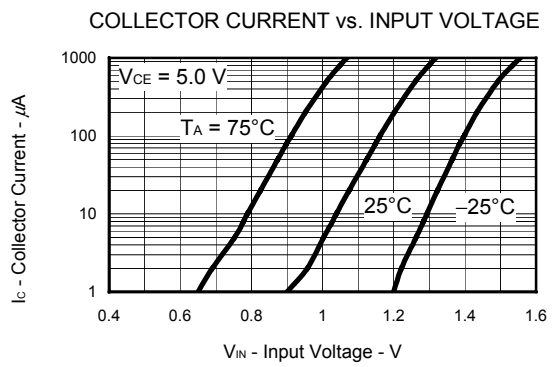
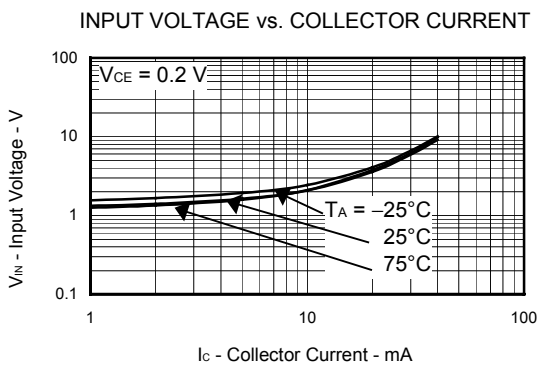
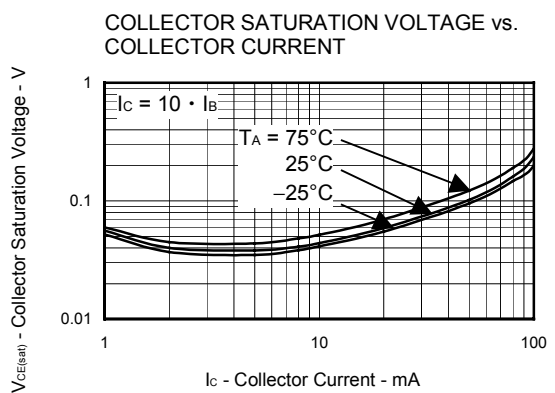
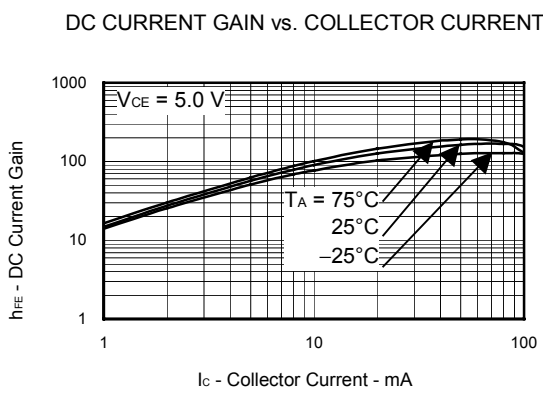
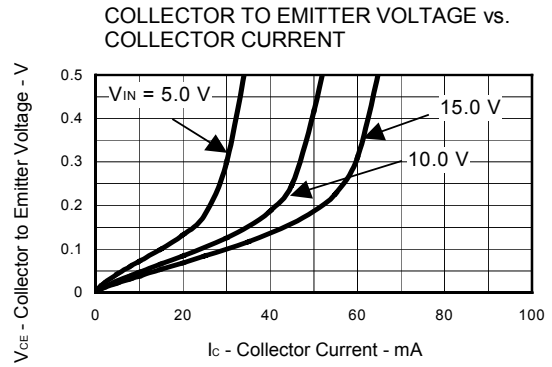
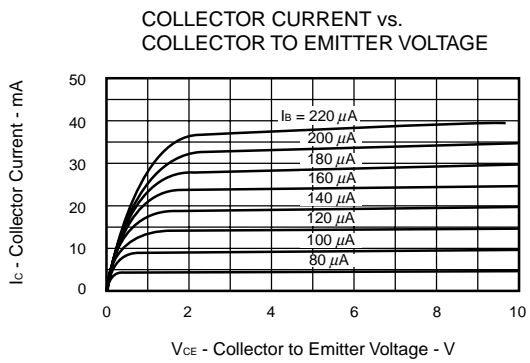
Note 3

| PART NUMBER | R ₁ | | | R ₂ | | | UNIT |
|-------------|----------------|-------|-------|----------------|-------|-------|------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. | |
| FA4A4M | 7.00 | 10.00 | 13.00 | 7.00 | 10.00 | 13.00 | kΩ |
| FA4F4M | 15.40 | 22.00 | 28.60 | 15.40 | 22.00 | 28.60 | kΩ |
| FA4L4M | 32.90 | 47.00 | 61.10 | 32.90 | 47.00 | 61.10 | kΩ |
| FA4L3M | 3.29 | 4.70 | 6.11 | 3.29 | 4.70 | 6.11 | kΩ |
| FA4L3N | 3.29 | 4.70 | 6.11 | 7.00 | 10.00 | 13.00 | kΩ |
| FA4L3Z | 3.29 | 4.70 | 6.11 | | | | kΩ |
| FA4A3Q | 0.70 | 1.00 | 1.30 | 7.00 | 10.00 | 13.00 | kΩ |
| FA4A4P | 7.00 | 10.00 | 13.00 | 32.90 | 47.00 | 61.10 | kΩ |
| FA4F4N | 15.40 | 22.00 | 28.60 | 32.90 | 47.00 | 61.10 | kΩ |
| FA4L4L | 32.90 | 47.00 | 61.10 | 15.40 | 22.00 | 28.60 | kΩ |
| FA4A4Z | 7.00 | 10.00 | 13.00 | | | | kΩ |
| FA4F4Z | 15.40 | 22.00 | 28.60 | | | | kΩ |
| FA4L4Z | 32.90 | 47.00 | 61.10 | | | | kΩ |
| FA4F3M | 1.54 | 2.20 | 2.86 | 1.54 | 2.20 | 2.86 | kΩ |
| FA4F3P | 1.54 | 2.20 | 2.86 | 7.00 | 10.00 | 13.00 | kΩ |
| FA4F3R | 1.54 | 2.20 | 2.86 | 32.90 | 47.00 | 61.10 | kΩ |
| FA4A4L | 7.00 | 10.00 | 13.00 | 3.29 | 4.70 | 6.11 | kΩ |
| FA4L4K | 32.90 | 47.00 | 61.10 | 7.00 | 10.00 | 13.00 | kΩ |

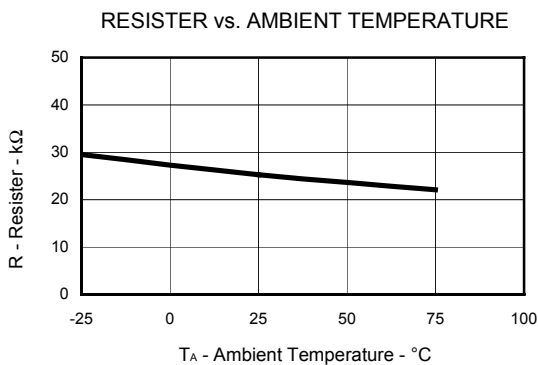
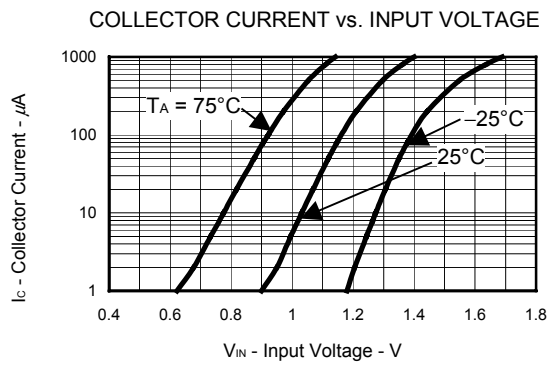
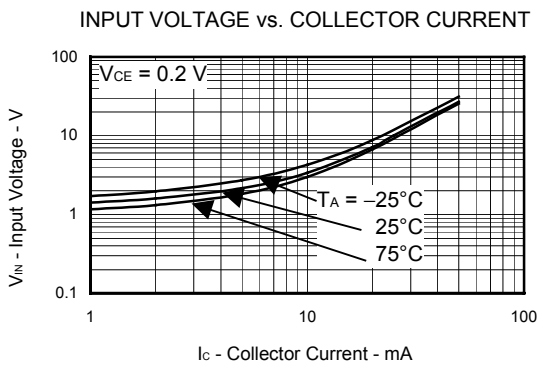
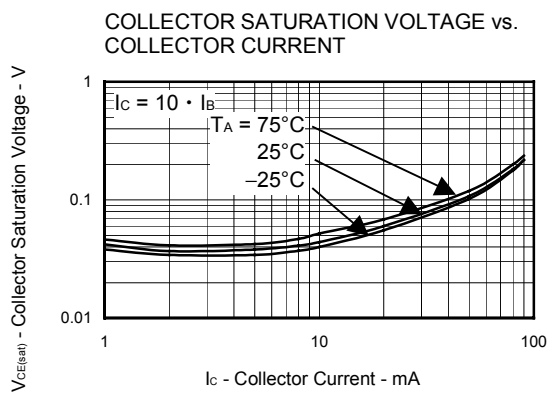
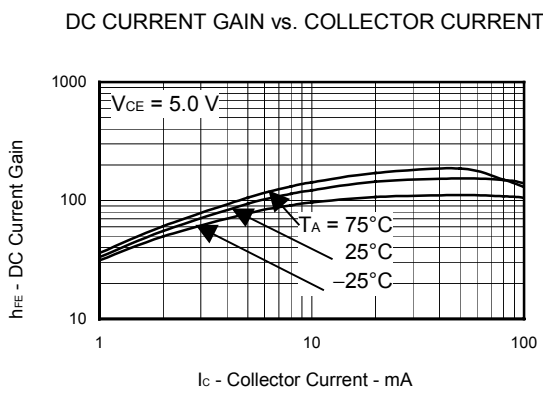
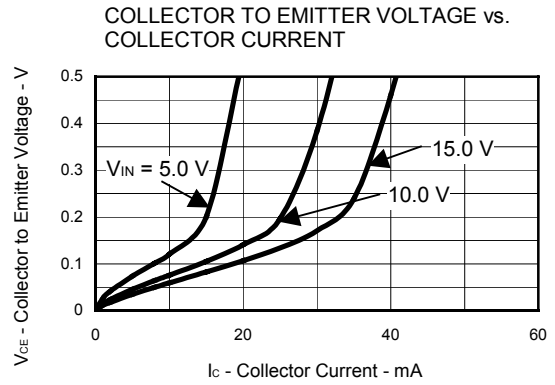
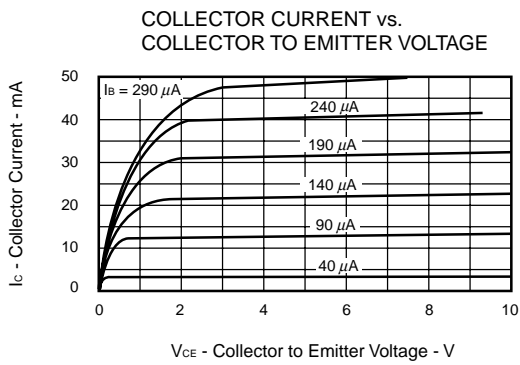
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



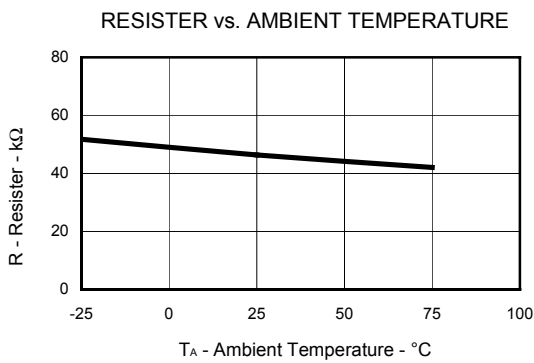
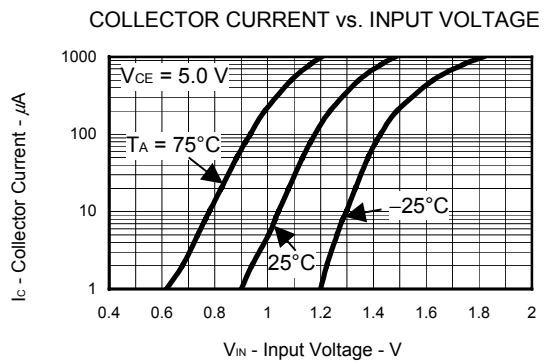
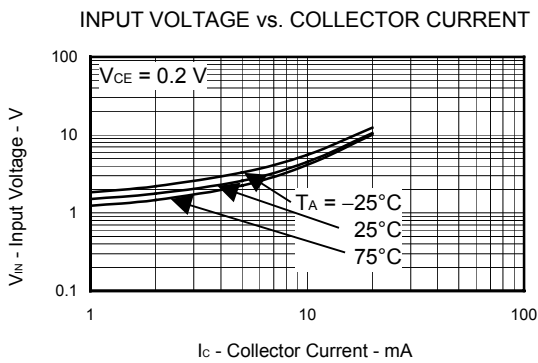
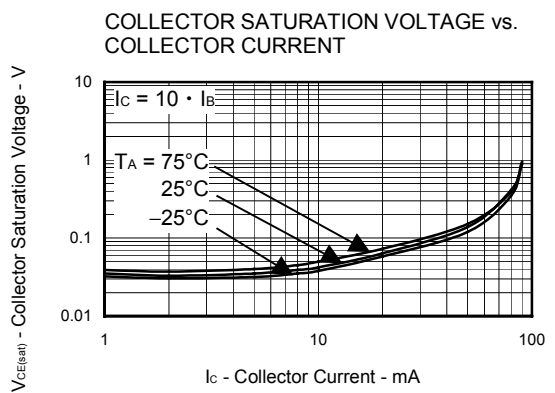
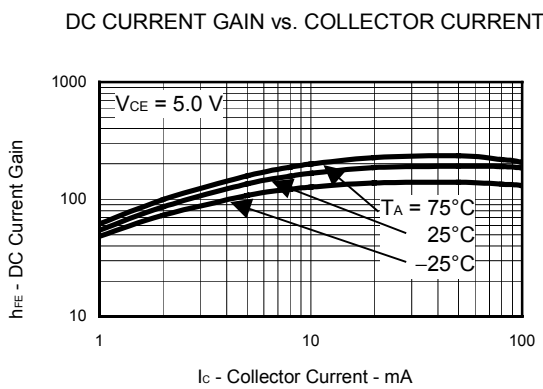
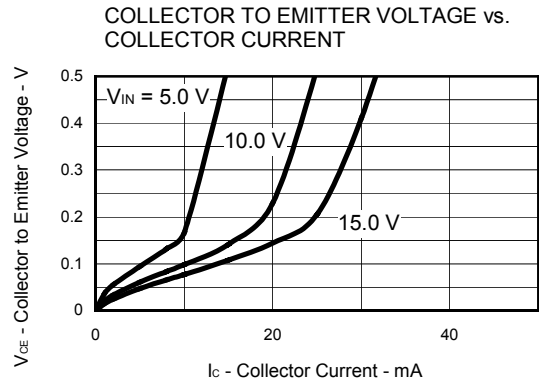
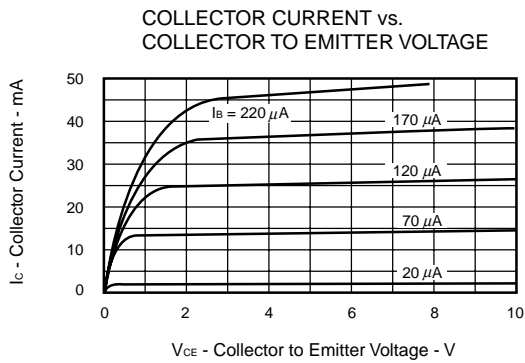
[FA4A4M]
TYPICAL CHARACTERISTICS (T_A = 25°C)



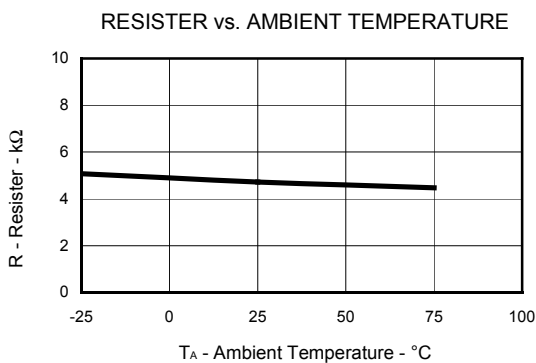
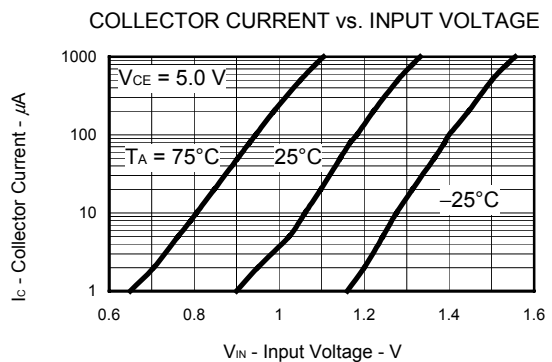
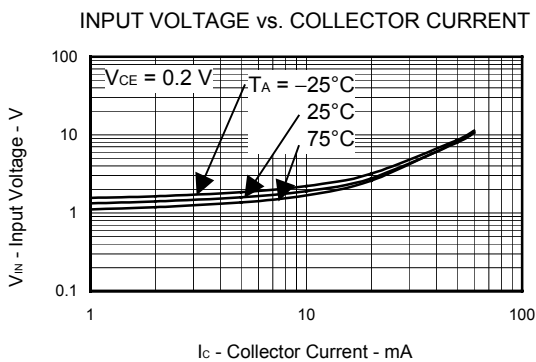
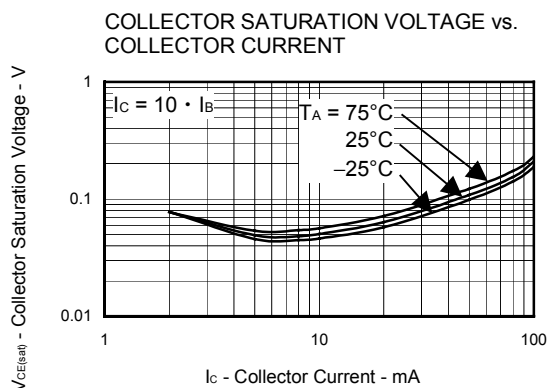
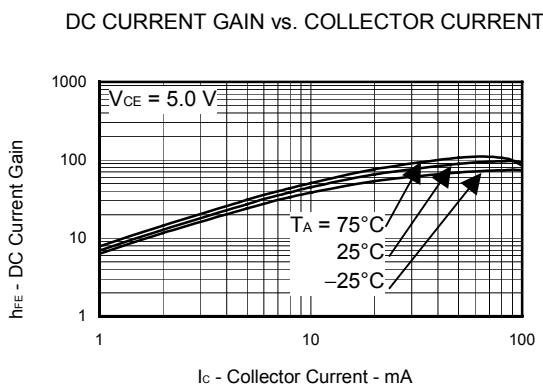
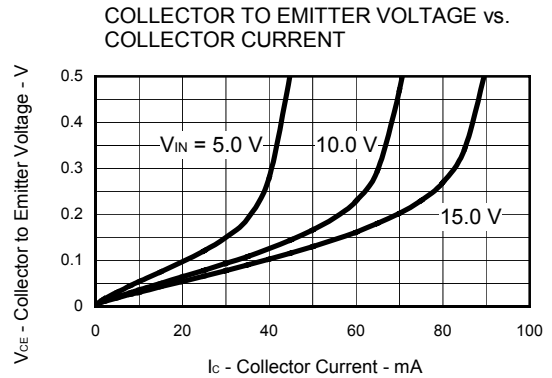
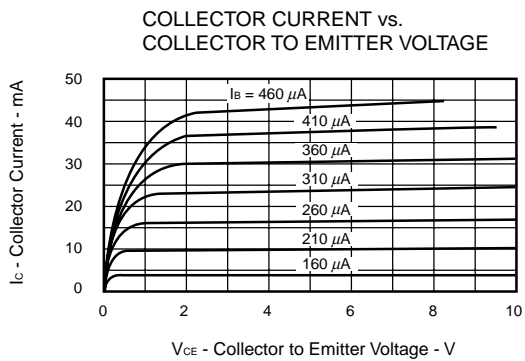
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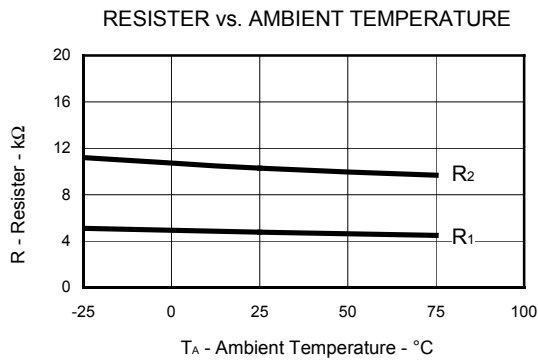
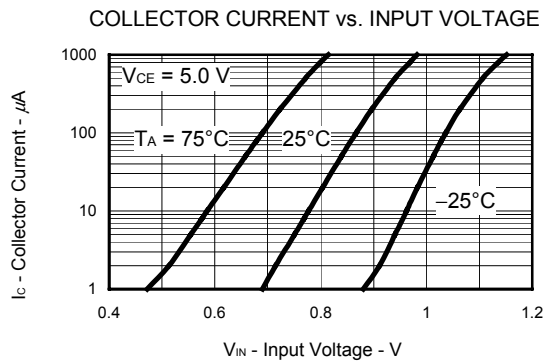
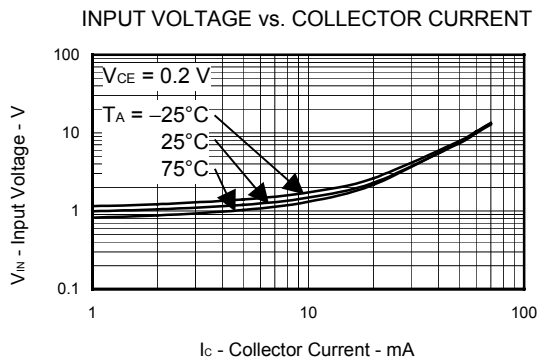
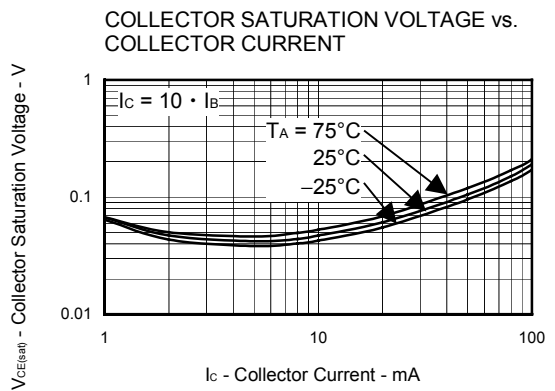
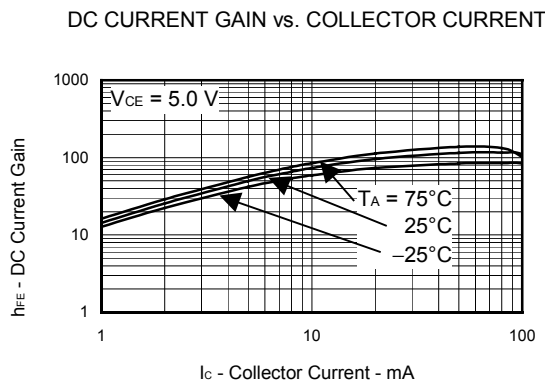
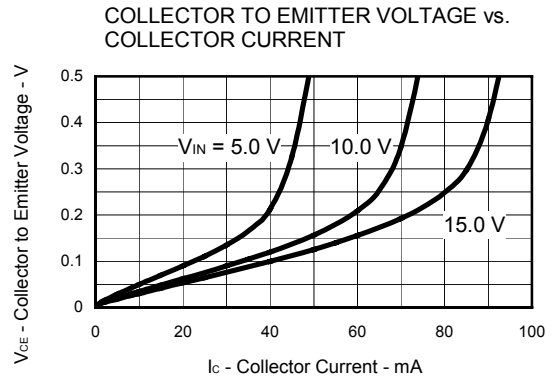
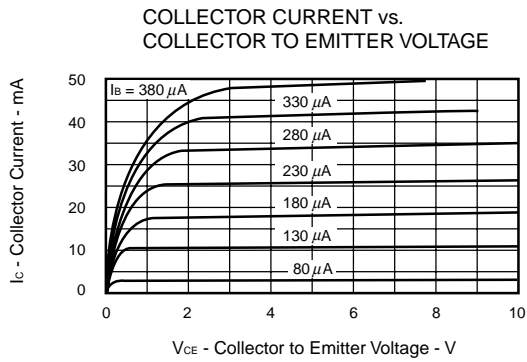
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TYPICAL CHARACTERISTICS (T_A = 25°C)



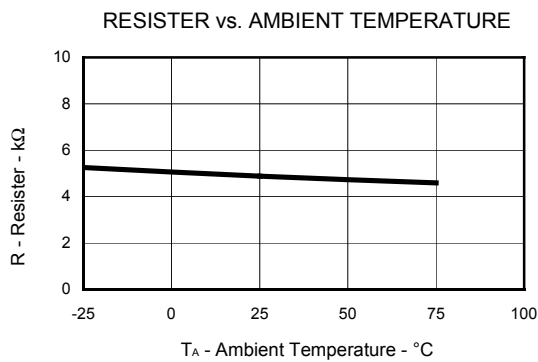
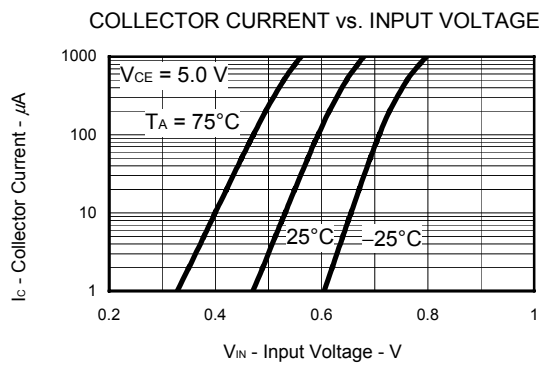
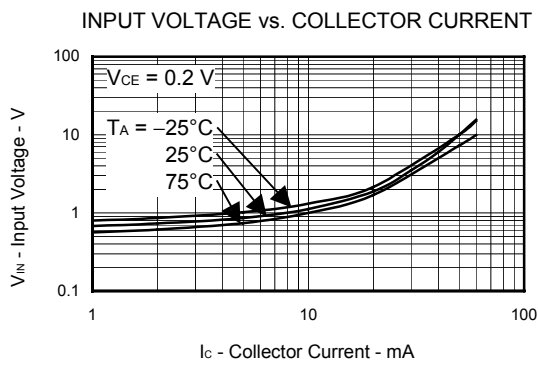
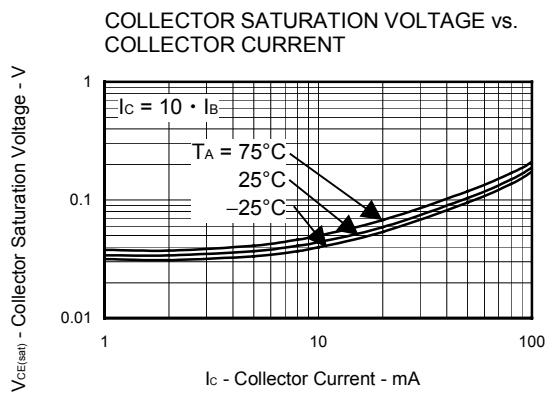
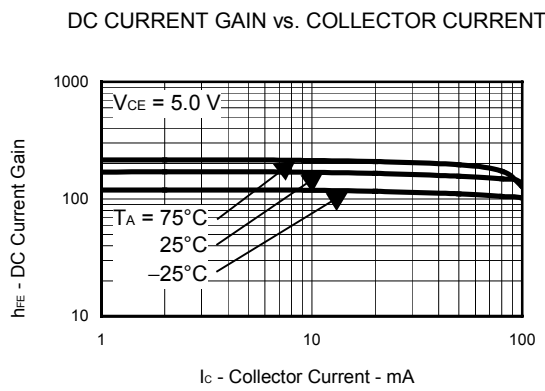
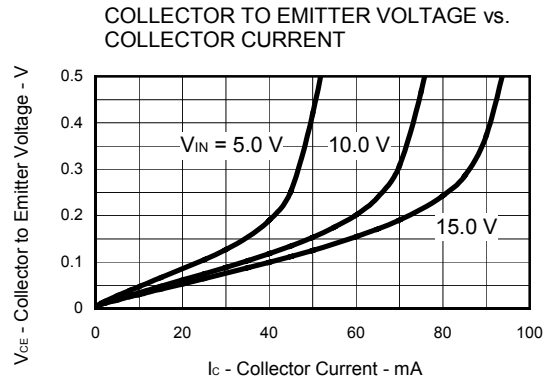
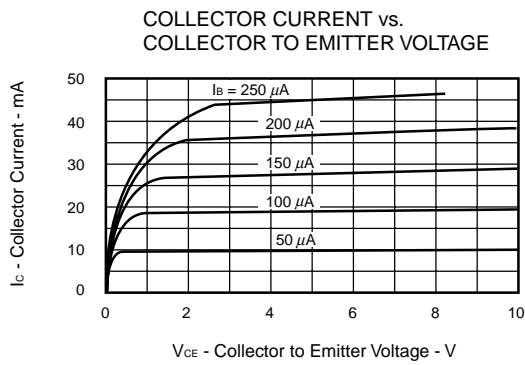
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TYPICAL CHARACTERISTICS (T_A = 25°C)



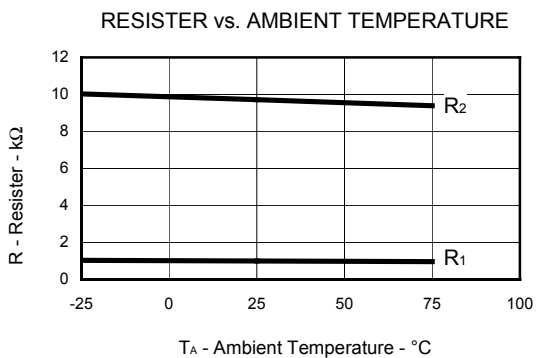
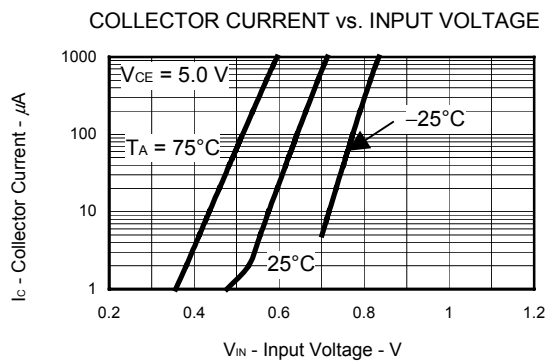
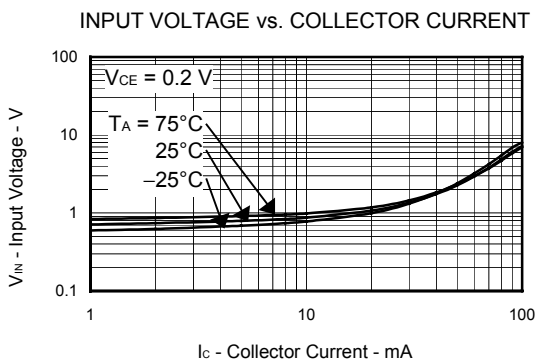
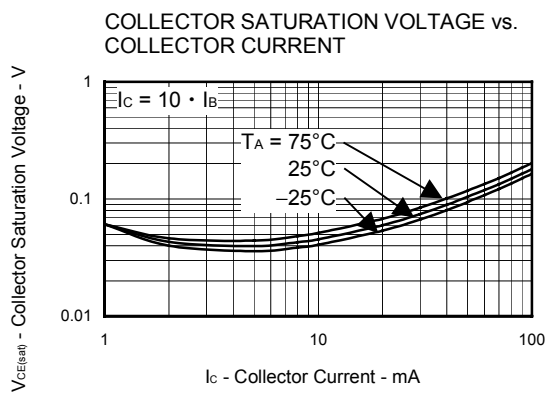
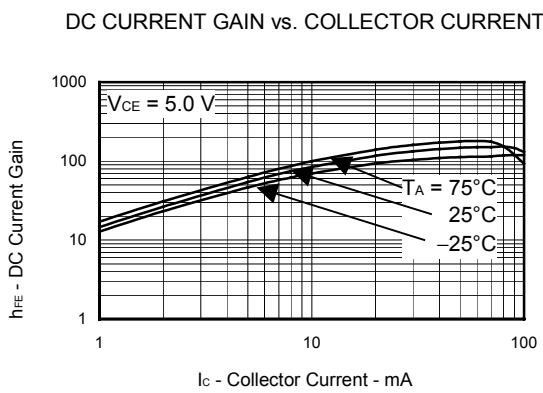
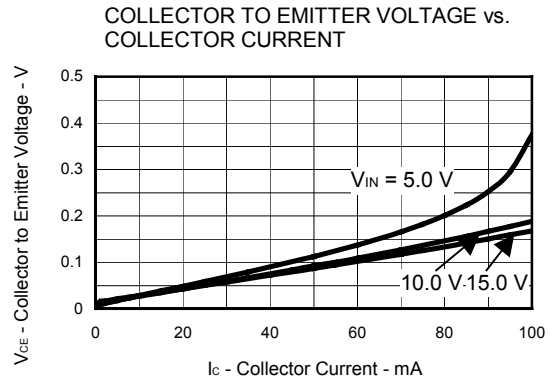
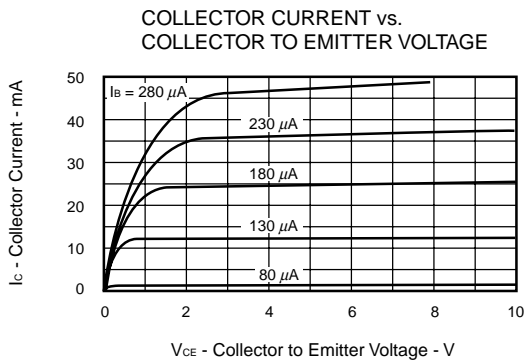
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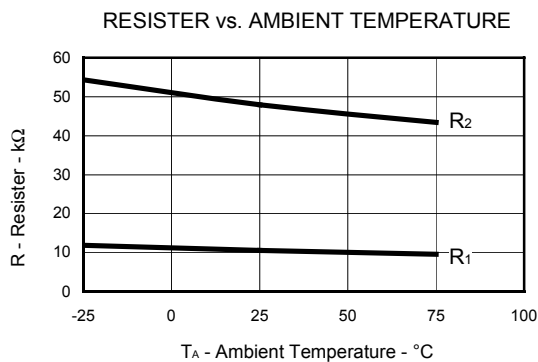
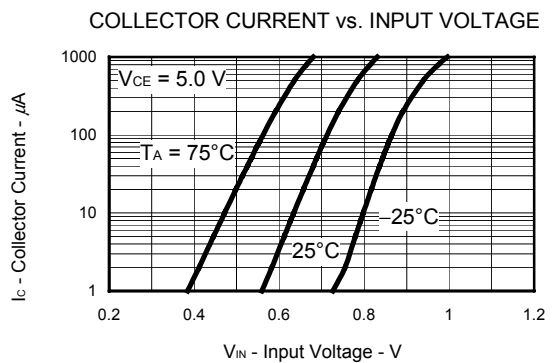
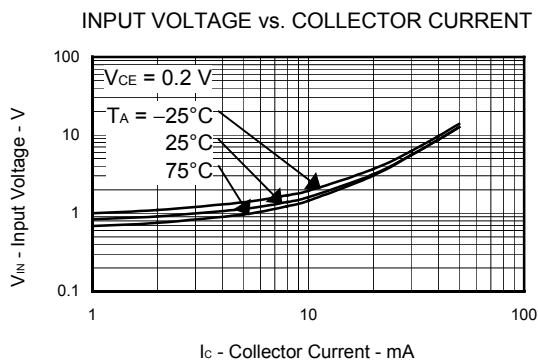
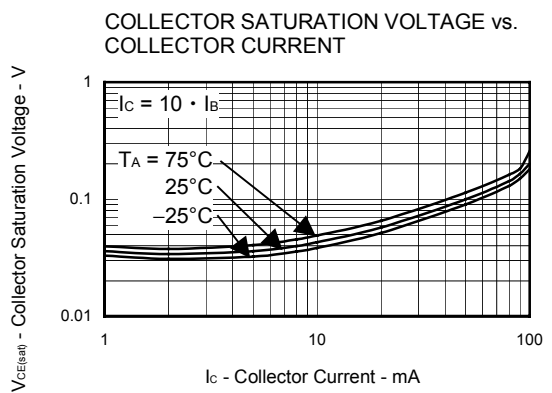
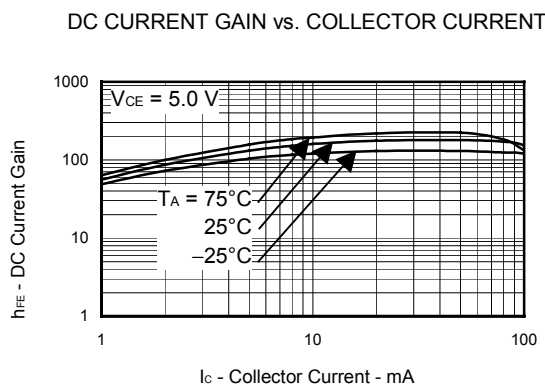
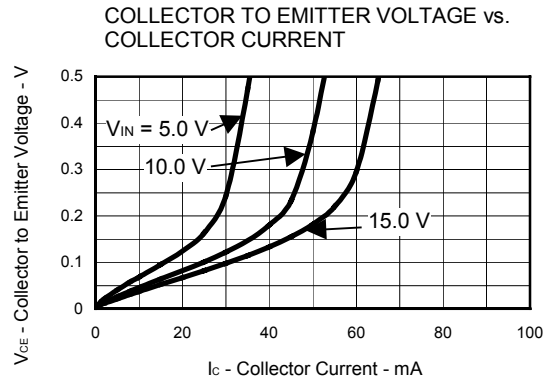
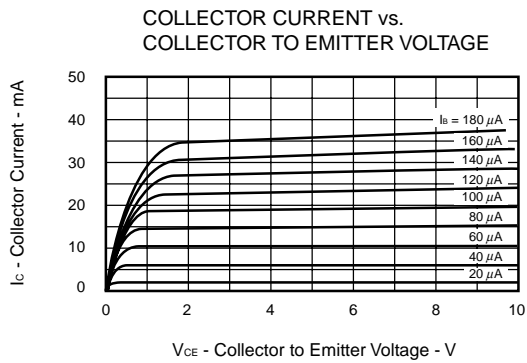
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TYPICAL CHARACTERISTICS (T_A = 25°C)



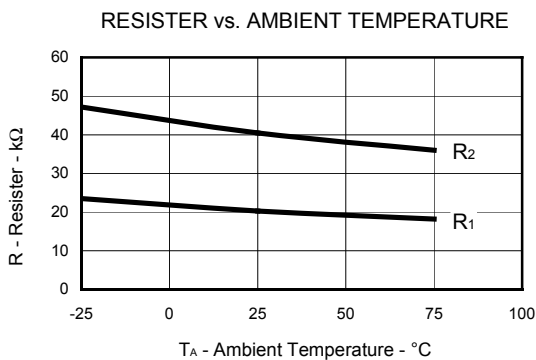
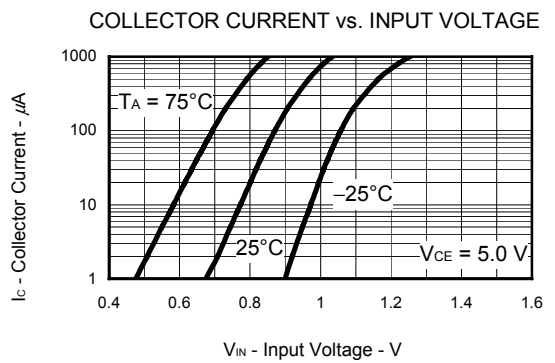
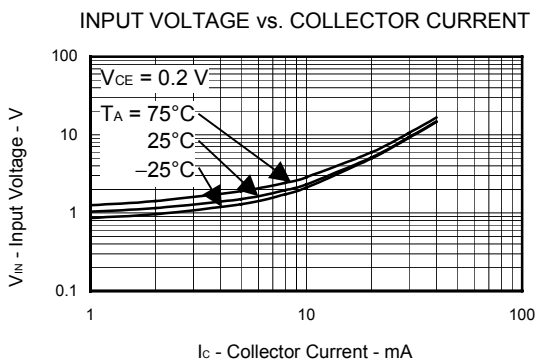
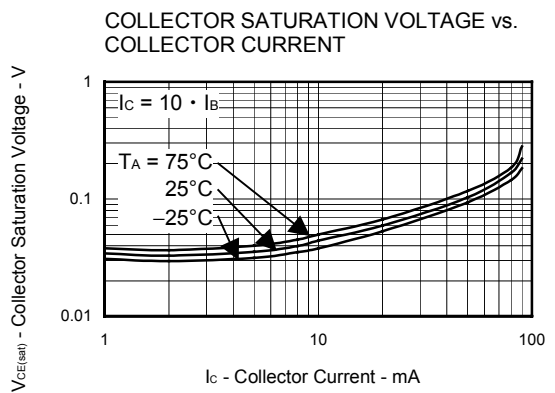
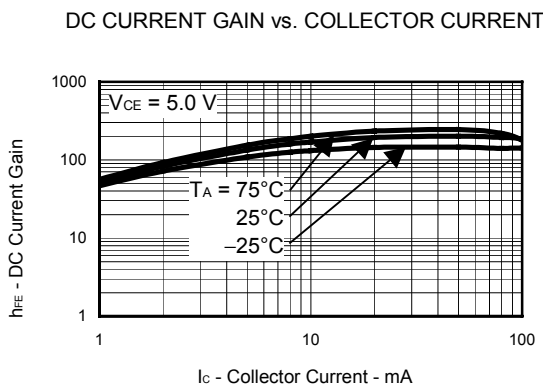
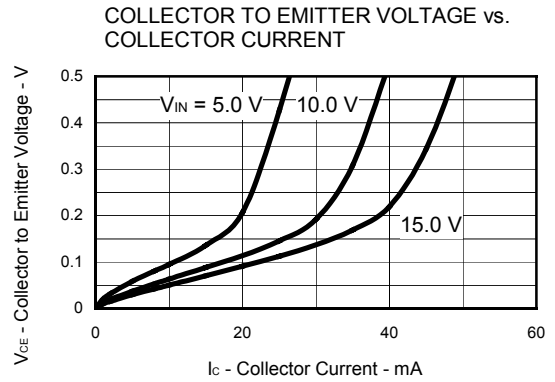
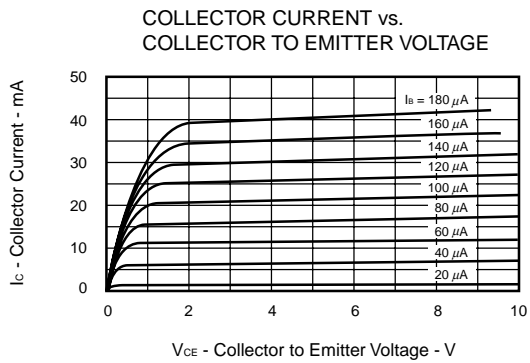
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TYPICAL CHARACTERISTICS (T_A = 25°C)



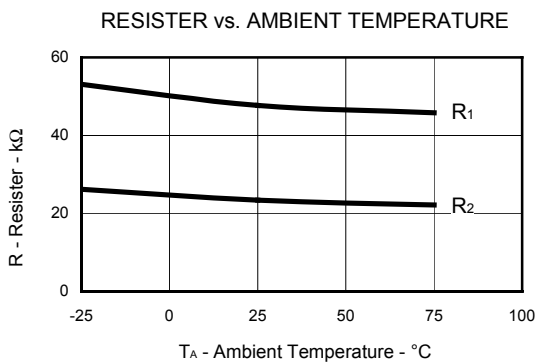
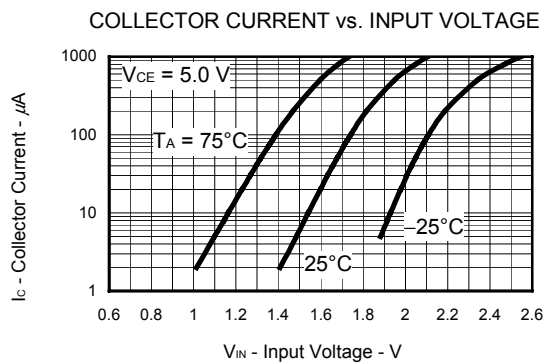
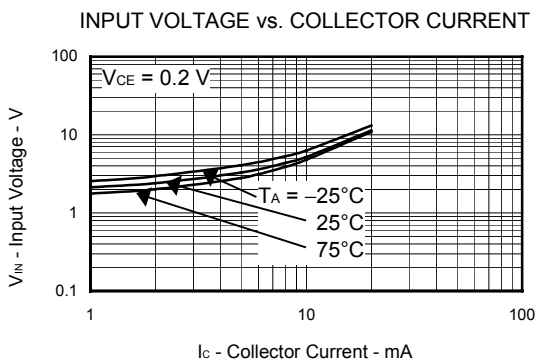
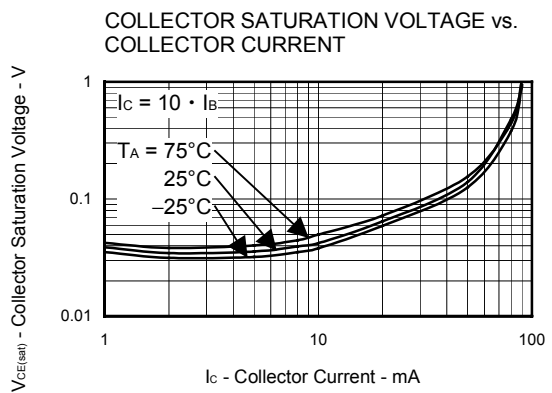
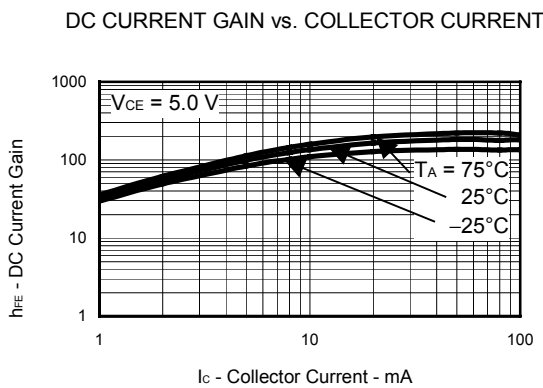
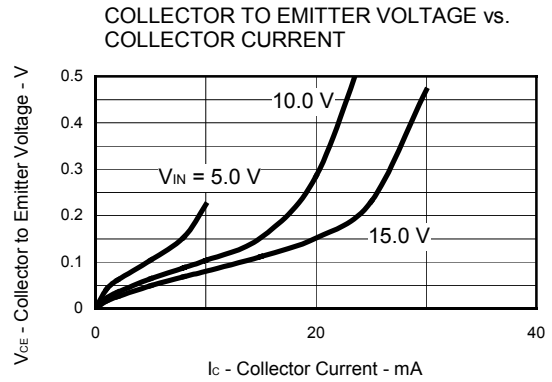
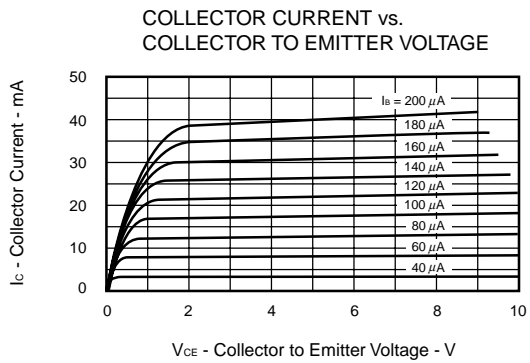
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TYPICAL CHARACTERISTICS (T_A = 25°C)



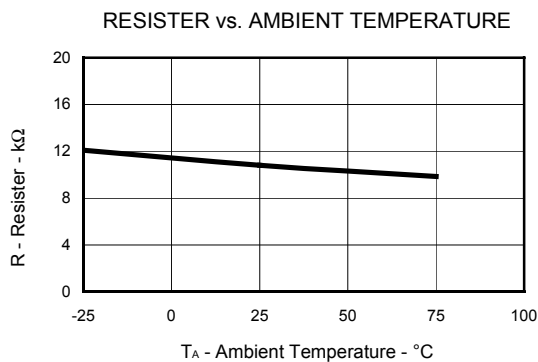
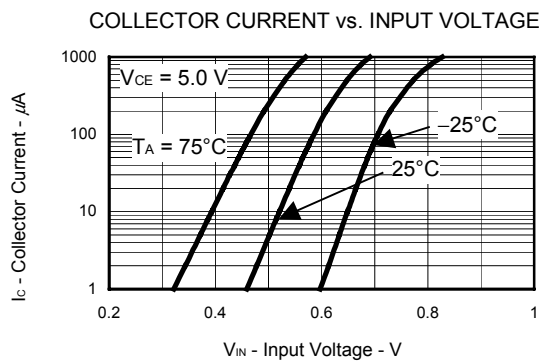
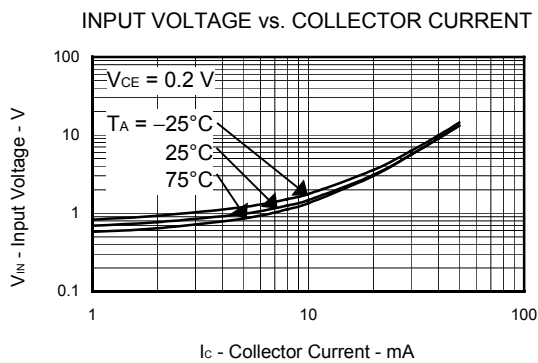
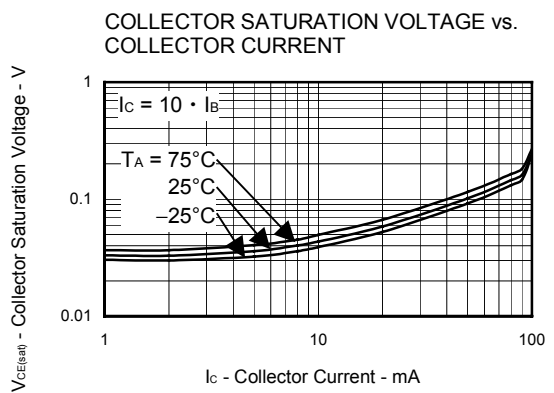
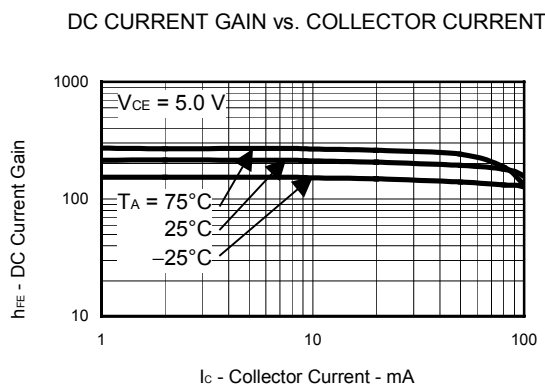
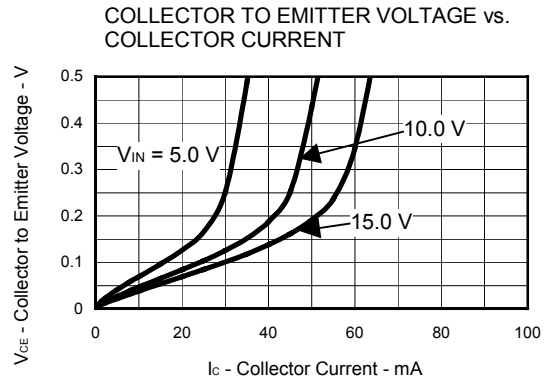
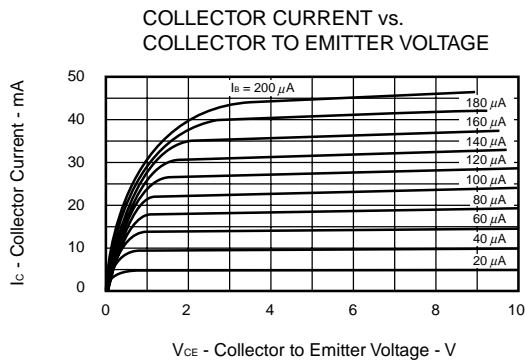
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TYPICAL CHARACTERISTICS (T_A = 25°C)



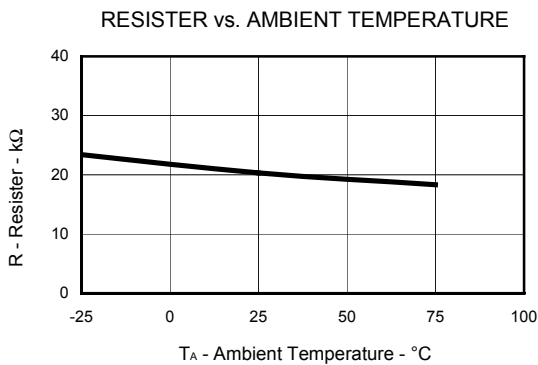
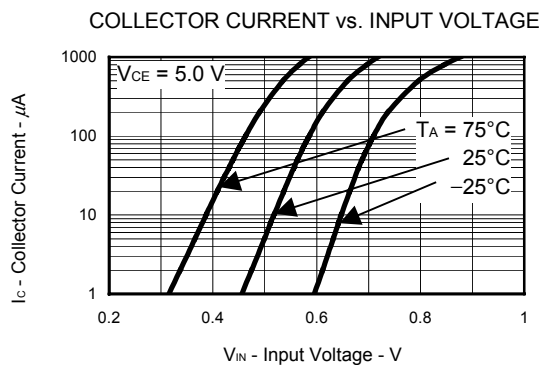
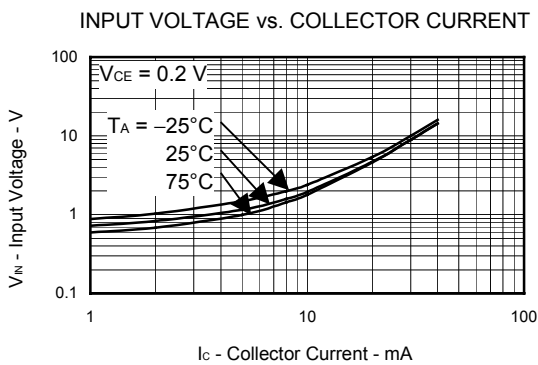
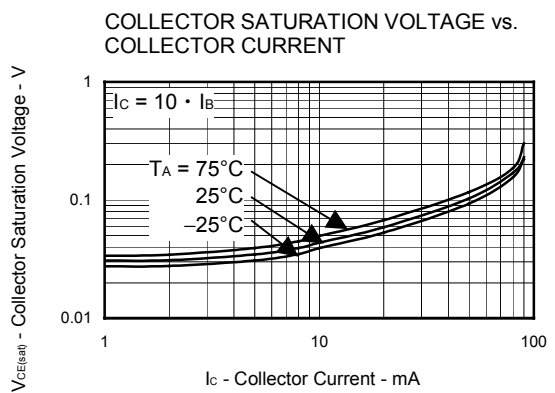
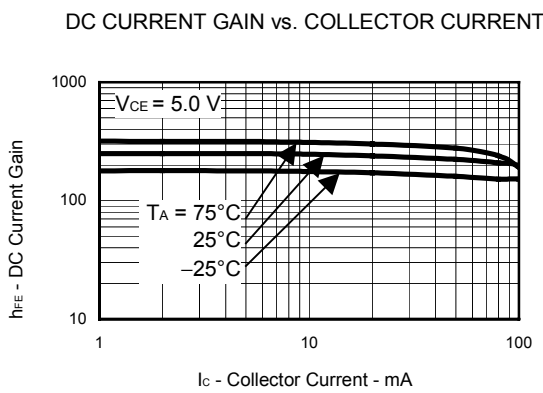
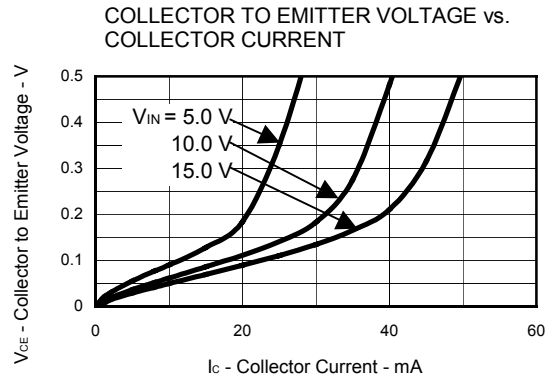
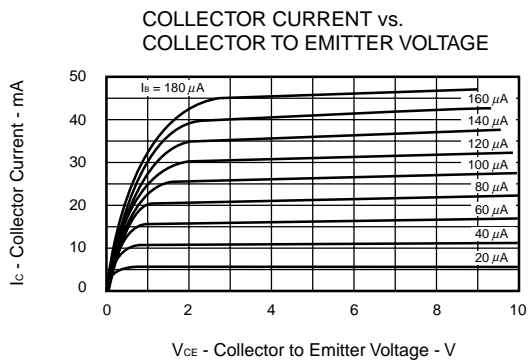
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TYPICAL CHARACTERISTICS (T_A = 25°C)



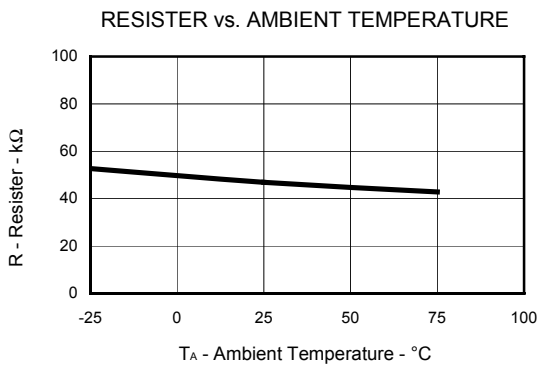
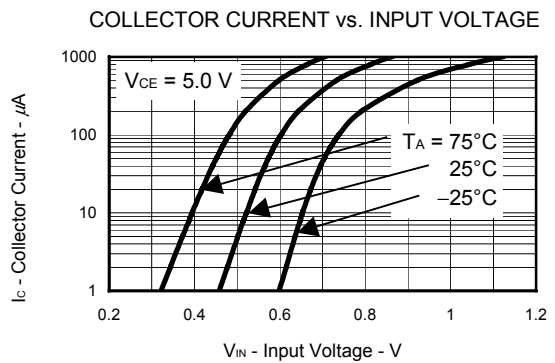
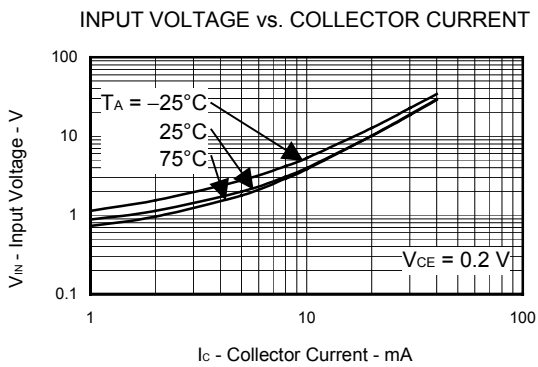
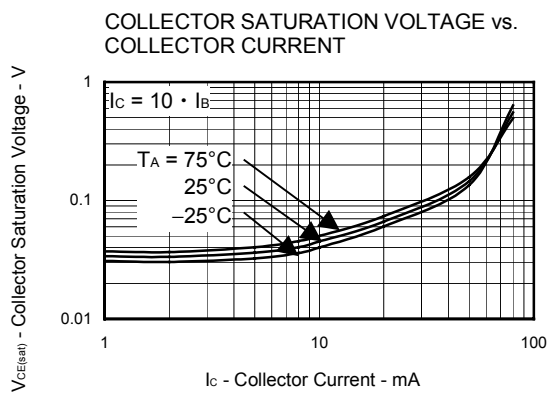
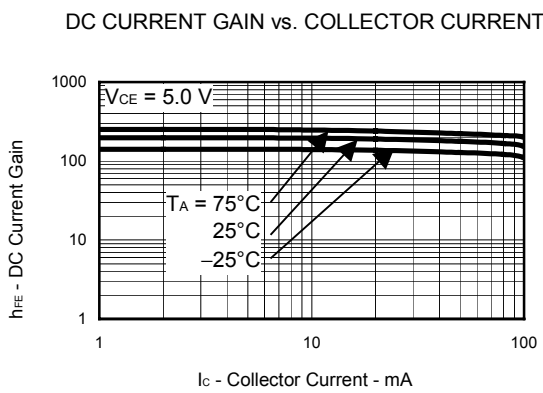
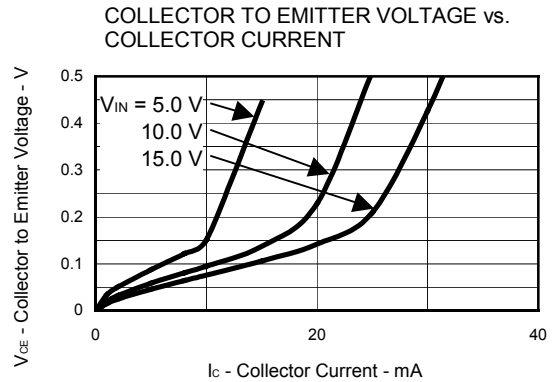
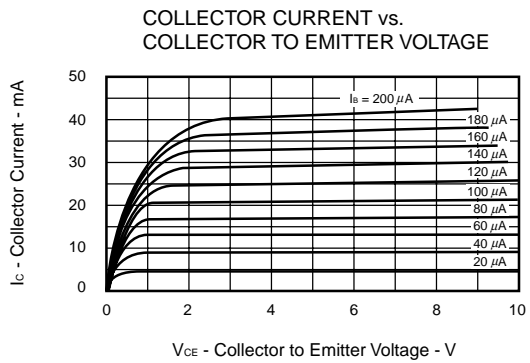
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TYPICAL CHARACTERISTICS (T_A = 25°C)



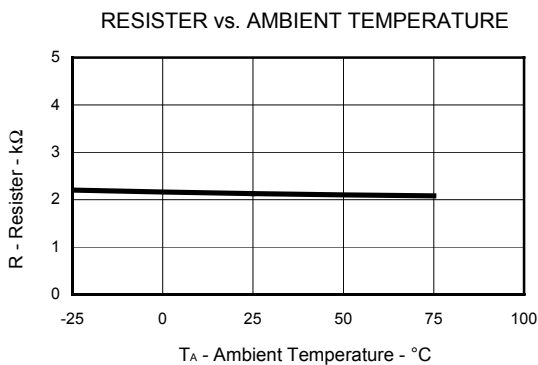
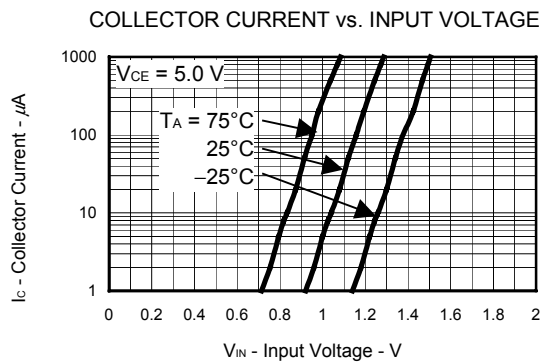
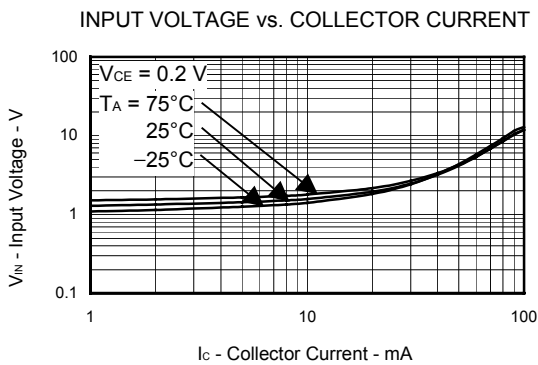
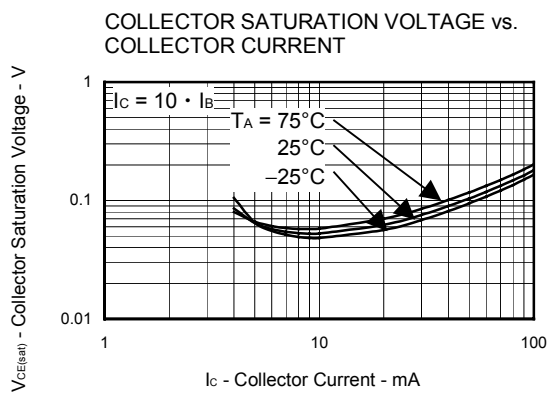
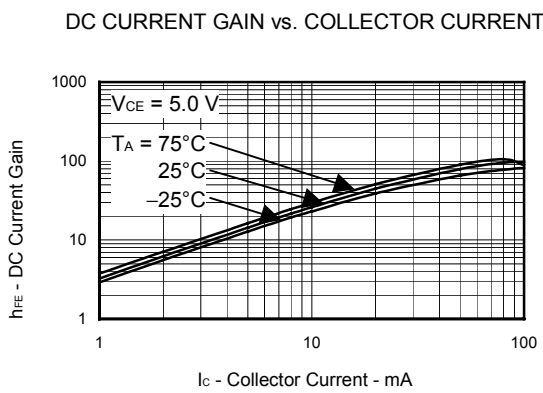
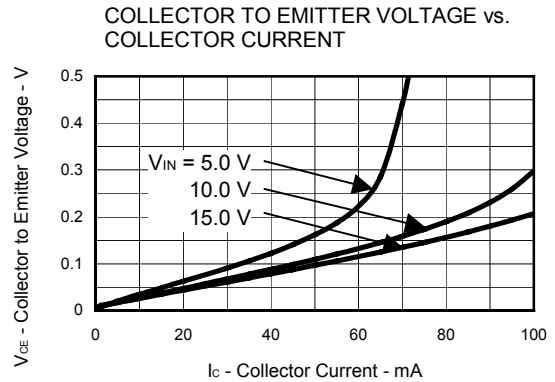
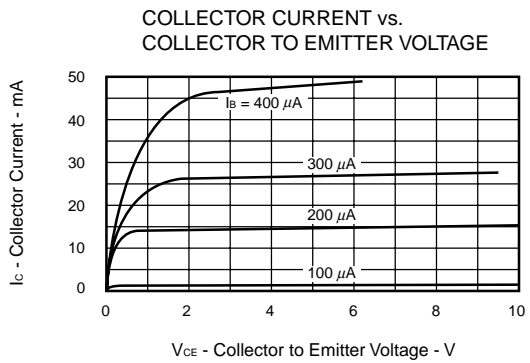
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TYPICAL CHARACTERISTICS (T_A = 25°C)



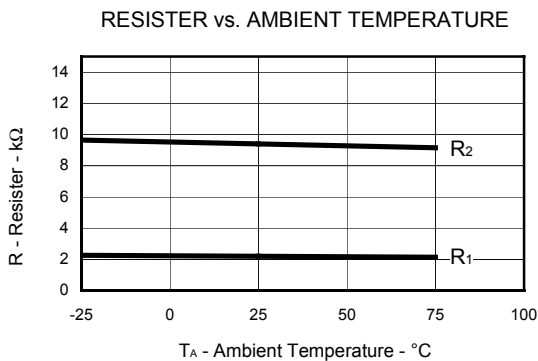
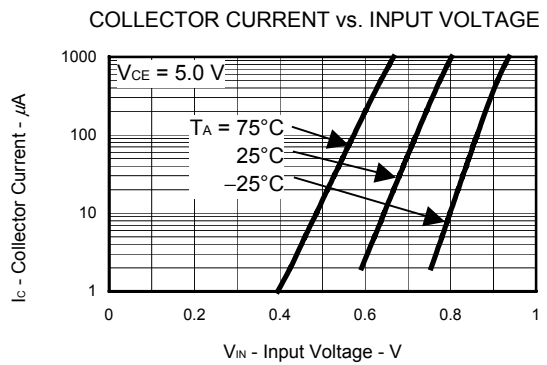
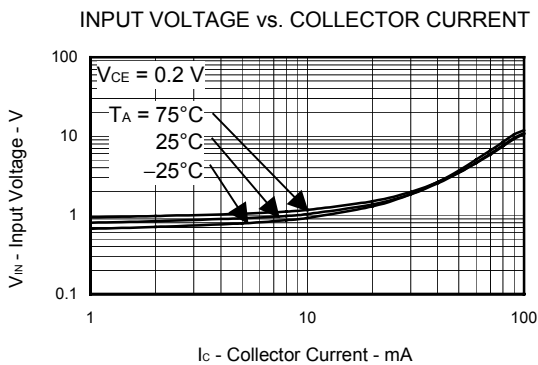
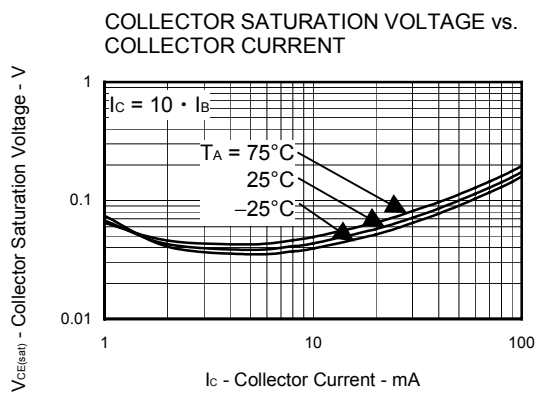
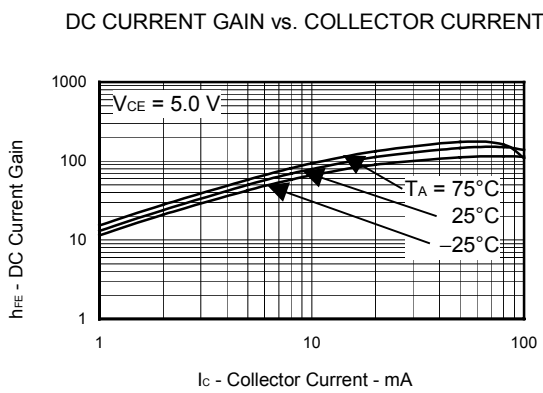
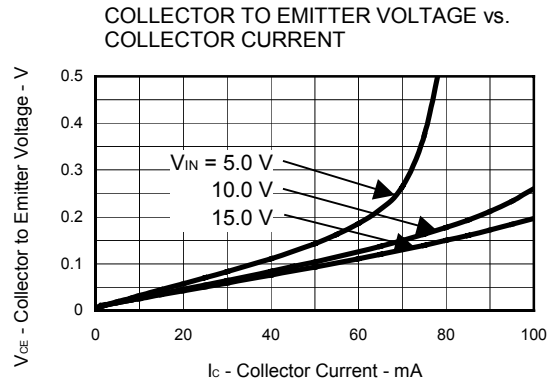
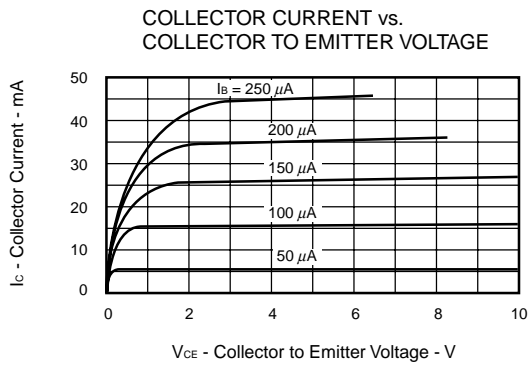
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TYPICAL CHARACTERISTICS (T_A = 25°C)



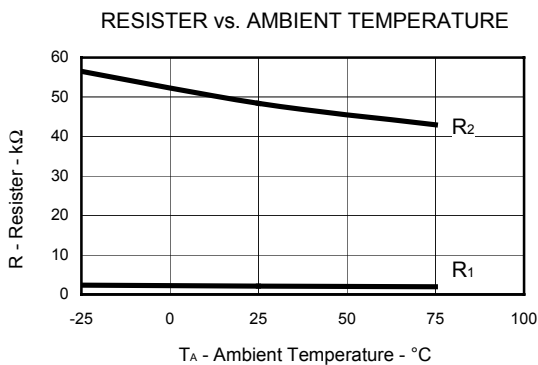
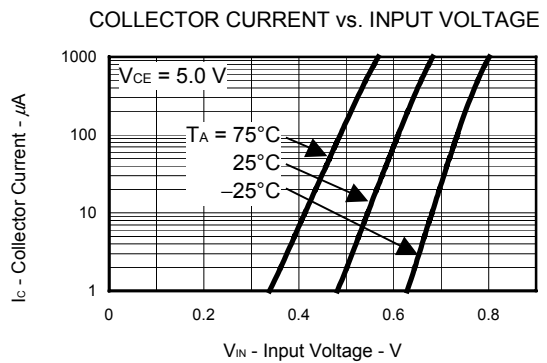
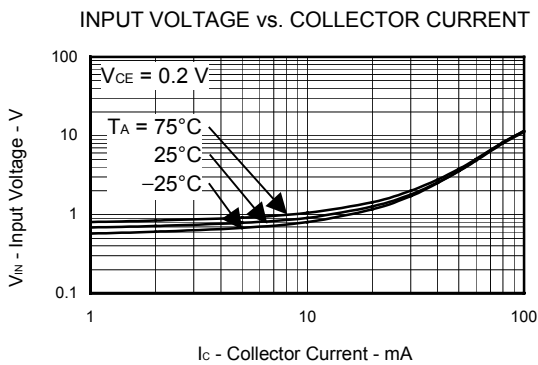
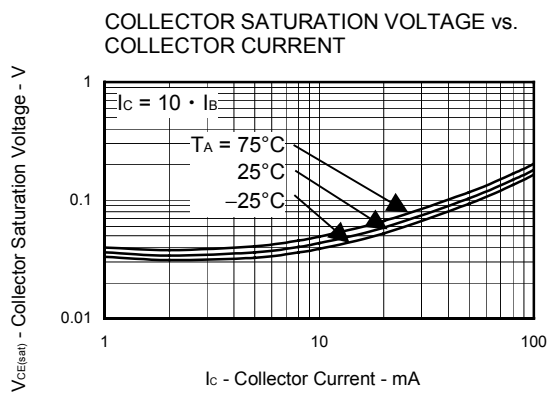
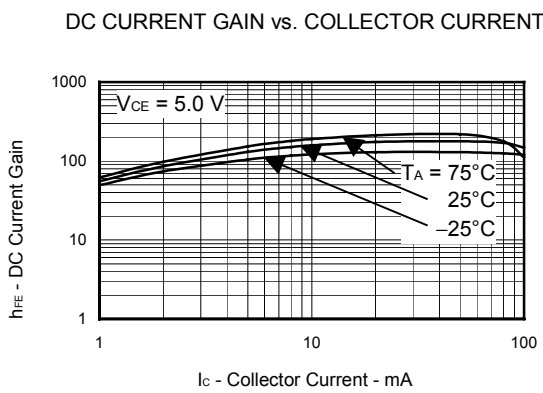
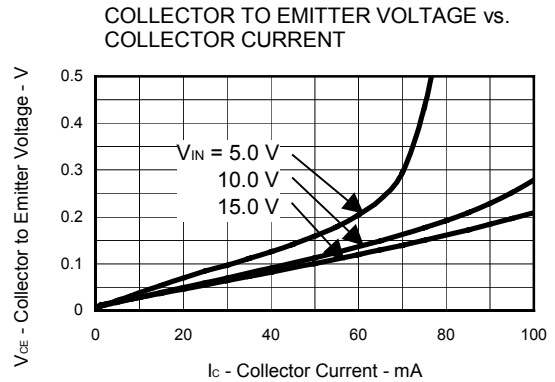
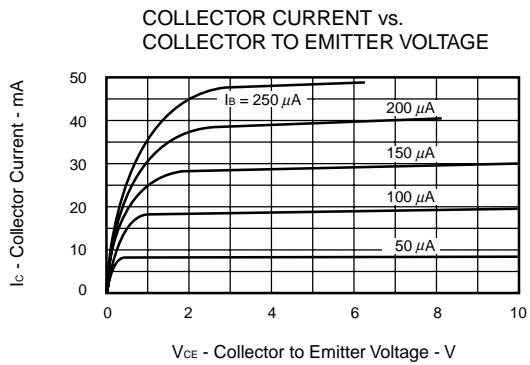
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TYPICAL CHARACTERISTICS (T_A = 25°C)



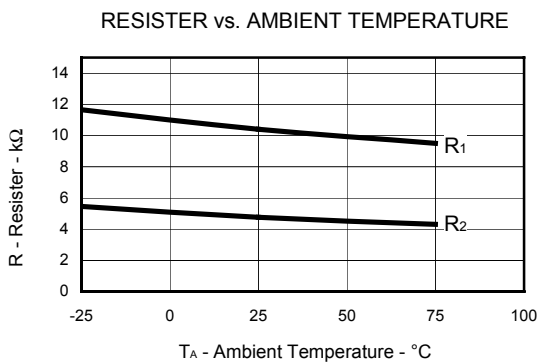
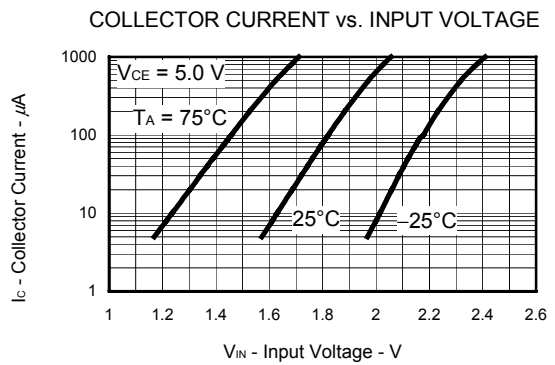
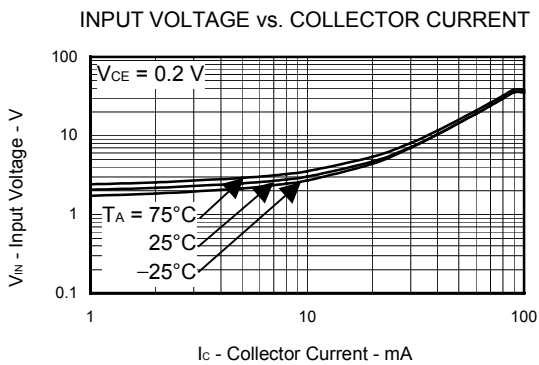
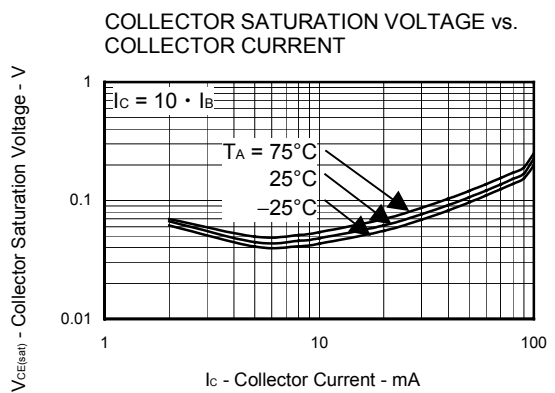
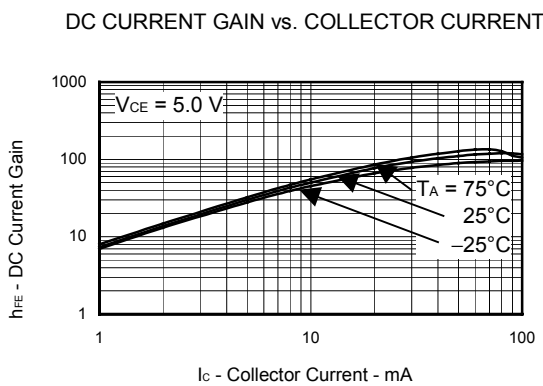
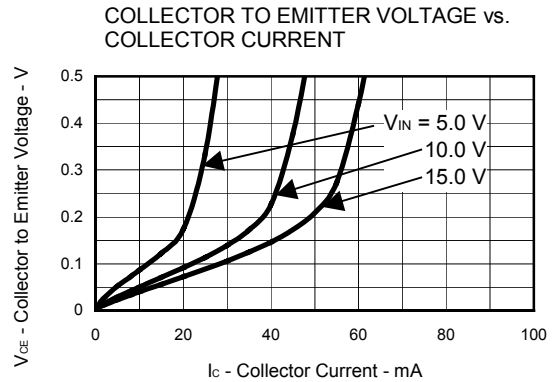
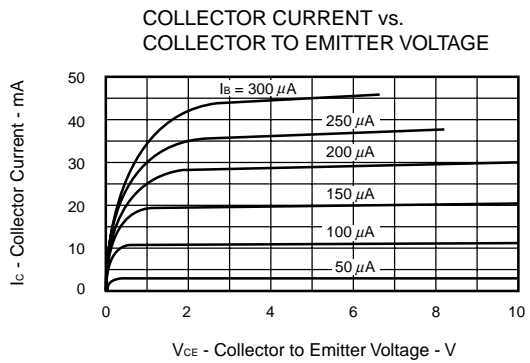
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TYPICAL CHARACTERISTICS (T_A = 25°C)



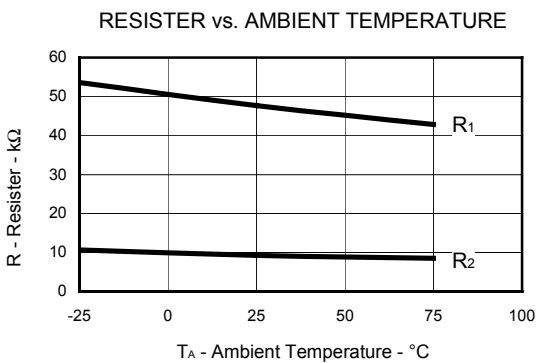
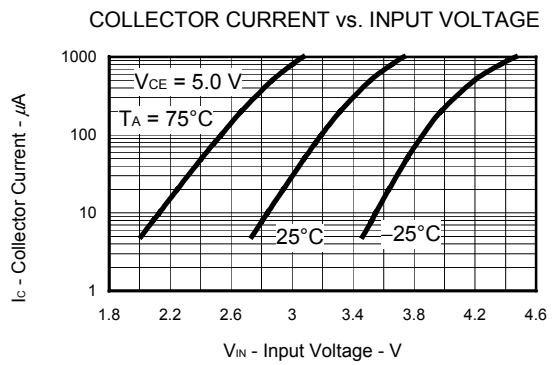
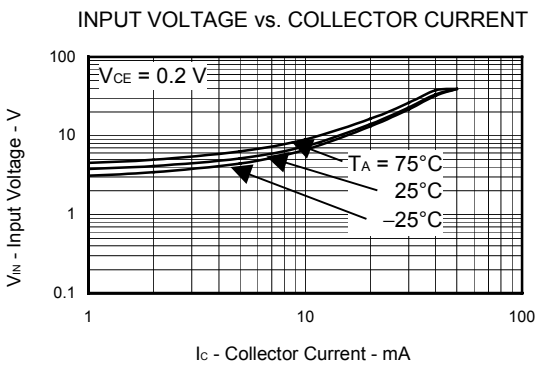
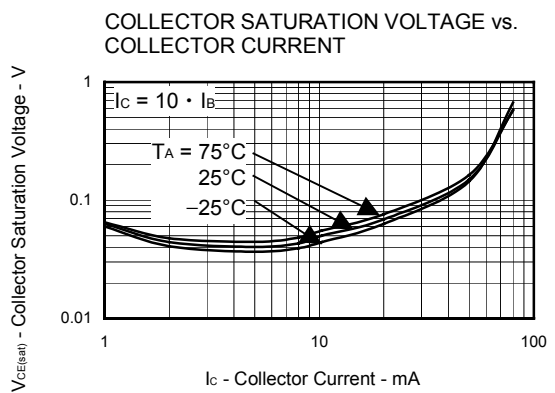
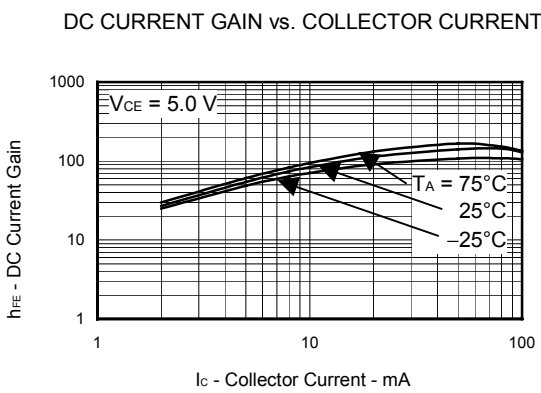
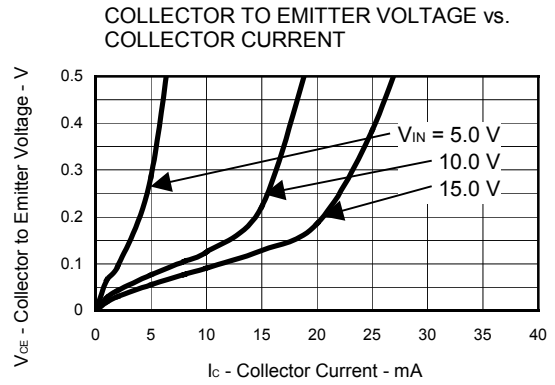
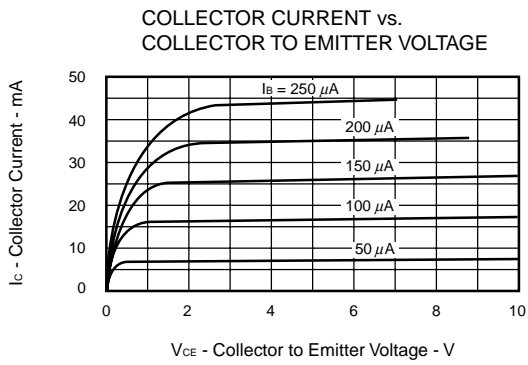
[FA4F3R]
TYPICAL CHARACTERISTICS (T_A = 25°C)



[FA4A4L]
TYPICAL CHARACTERISTICS (T_A = 25°C)



[FA4L4K]
TYPICAL CHARACTERISTICS (T_A = 25°C)



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