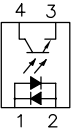


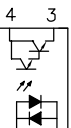
# Kingbright

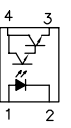
## Optoelectronic Components

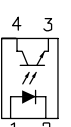
|                                |           |
|--------------------------------|-----------|
| <b>PHOTOCOUPPLERS</b>          | <b>87</b> |
| <b>PHOTO INTERRUPTERS</b>      | <b>91</b> |
| <b>PHOTO REFLECTIVE SENSOR</b> | <b>93</b> |

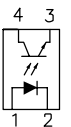


| Part Number | Pin Configuration                                                                 | Safety Standards                     | Features                                 | Absolute Maximum Ratings         |                                                | Electrical Characteristics   |      |                               |      |                                                                |    |
|-------------|-----------------------------------------------------------------------------------|--------------------------------------|------------------------------------------|----------------------------------|------------------------------------------------|------------------------------|------|-------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                   |                                      |                                          | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                       |      | V(sat) (V)                    |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                   |                                      |                                          |                                  |                                                | IF=±1mA, V <sub>CE</sub> =5V |      | IF=±20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                   |                                      |                                          |                                  |                                                | Min.                         | Max. | Typ.                          | Max. | Tr                                                             | Tf |
| KB814       |  | UL NO.E225308 & VDE0884. NO.40006364 | High isolation voltage AC input response | 5000                             | 35                                             | 20                           | 300  | 0.1                           | 0.2  | 4                                                              | 3  |

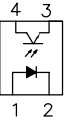
| Part Number | Pin Configuration                                                                 | Safety Standards                     | Features                                                  | Absolute Maximum Ratings         |                                                | Electrical Characteristics   |      |                               |      |                                                                 |    |
|-------------|-----------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------------------------|------------------------------------------------|------------------------------|------|-------------------------------|------|-----------------------------------------------------------------|----|
|             |                                                                                   |                                      |                                                           | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                       |      | V(sat) (V)                    |      | Response Time (μs) Typ.                                         |    |
|             |                                                                                   |                                      |                                                           |                                  |                                                | IF=±1mA, V <sub>CE</sub> =2V |      | IF=±20mA, I <sub>C</sub> =5mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =10mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                   |                                      |                                                           |                                  |                                                | Min.                         | Max. | Typ.                          | Max. | Tr                                                              | Tf |
| KB8141      |  | UL NO.E225308 & VDE0884. NO.40006364 | High isolation voltage High sensitivity AC input response | 5000                             | 35                                             | 600                          | 7500 | 0.8                           | 1    | 60                                                              | 53 |

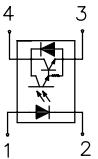
| Part Number | Pin Configuration                                                                   | Safety Standards                     | Features                                | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                 |    |
|-------------|-------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|-----------------------------------------------------------------|----|
|             |                                                                                     |                                      |                                         | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                         |    |
|             |                                                                                     |                                      |                                         |                                  |                                                | IF=1mA, V <sub>CE</sub> =2V |      | IF=20mA, I <sub>C</sub> =5mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =10mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                      |                                         |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                              | Tf |
| KB815       |  | UL NO.E225308 & VDE0884. NO.40006364 | High isolation voltage High sensitivity | 5000                             | 35                                             | 600                         | 7500 | 0.8                          | 1    | 60                                                              | 53 |

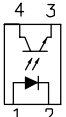
| Part Number | Pin Configuration                                                                   | Safety Standards                     | Features                                              | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                      |                                                       | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                      |                                                       |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                      |                                                       |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB816       |  | UL NO.E225308 & VDE0884. NO.40006364 | High isolation voltage High collector-emitter voltage | 5000                             | 70                                             | 50                          | 600  | 0.1                          | 0.2  | 4                                                              | 3  |

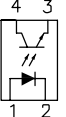
| Part Number | Pin Configuration                                                                   | Safety Standards                     | Features               | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|--------------------------------------|------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                      |                        | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                      |                        |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                      |                        |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB817       |  | UL NO.E225308 & VDE0884. NO.40006364 | High isolation voltage | 5000                             | 35                                             | 50                          | 600  | 0.1                          | 0.2  | 4                                                              | 3  |

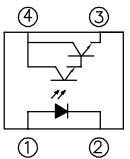


| Part Number | Pin Configuration                                                                 | Safety Standards        | Features                       | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-----------------------------------------------------------------------------------|-------------------------|--------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                   |                         |                                | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                   |                         |                                |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                   |                         |                                |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB851       |  | VDE0884.<br>NO.40006364 | High collector-emitter Voltage | 5000                             | 350                                            | -                           | -    | 0.1                          | 0.3  | 4                                                              | 3  |

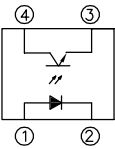
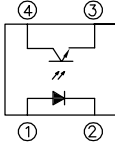
| Part Number | Pin Configuration                                                                 | Safety Standards        | Features                                           | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |       |                                |      |                                                                  |    |
|-------------|-----------------------------------------------------------------------------------|-------------------------|----------------------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|-------|--------------------------------|------|------------------------------------------------------------------|----|
|             |                                                                                   |                         |                                                    | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |       | V(sat) (V)                     |      | Response Time (μs) Typ.                                          |    |
|             |                                                                                   |                         |                                                    |                                  |                                                | IF=1mA, V <sub>CE</sub> =2V |       | IF=20mA, I <sub>C</sub> =100mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =20mA, R <sub>L</sub> =1000Ω |    |
|             |                                                                                   |                         |                                                    |                                  |                                                | Min.                        | Max.  | Typ.                           | Max. | Tr                                                               | Tf |
| KB852       |  | VDE0884.<br>NO.40006364 | High collector-emitter voltage<br>High sensitivity | 5000                             | 350                                            | 1000                        | 15000 | -                              | 1.2  | 100                                                              | 20 |

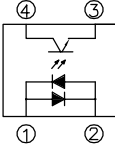
| Part Number | Pin Configuration                                                                   | Safety Standards                              | Features                           | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                               |                                    | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                               |                                    |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                               |                                    |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB817-B     |  | UL NO.E225308<br>&<br>VDE0884.<br>NO.40006364 | High isolation voltage<br>SMD Type | 5000                             | 35                                             | 50                          | 600  | 0.1                          | 0.2  | 4                                                              | 3  |

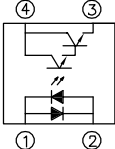
| Part Number | Pin Configuration                                                                   | Safety Standards                              | Features               | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|-----------------------------------------------|------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                               |                        | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                               |                        |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                               |                        |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB817-M     |  | UL NO.E225308<br>&<br>VDE0884.<br>NO.40006364 | High isolation voltage | 5000                             | 35                                             | 50                          | 600  | 0.1                          | 0.2  | 4                                                              | 3  |

| Part Number | Pin Configuration                                                                   | Safety Standards                              | Features                                          | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                               |                                                   | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                               |                                                   |                                  |                                                | IF=1mA, V <sub>CE</sub> =2V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                               |                                                   |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB355NT     |  | UL NO.E225308<br>&<br>VDE0884.<br>NO.40017614 | High current transfer ratio<br>Small package size | 3750                             | 35                                             | 600                         | 7500 | 0.8                          | 1.0  | 60                                                             | 53 |



| Part Number | Pin Configuration                                                                 | Safety Standards                     | Features                                          | Absolute Maximum Ratings         |                                                | Electrical Characteristics  |      |                              |      |                                                                |    |
|-------------|-----------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------|----------------------------------|------------------------------------------------|-----------------------------|------|------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                   |                                      |                                                   | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                      |      | V(sat) (V)                   |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                   |                                      |                                                   |                                  |                                                | IF=5mA, V <sub>CE</sub> =5V |      | IF=20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                   |                                      |                                                   |                                  |                                                | Min.                        | Max. | Typ.                         | Max. | Tr                                                             | Tf |
| KB356NT     |  | UL NO.E225308 & VDE0884. NO.40017614 | High collector-emitter Voltage Small package size | 3750                             | 80                                             | 50                          | 600  | 0.1                          | 0.2  | 6                                                              | 8  |
| KB357NT     |  |                                      | Small package size                                | 3750                             | 35                                             | 50                          | 600  | -                            | 0.2  | 4                                                              | 3  |

| Part Number | Pin Configuration                                                                   | Safety Standards                     | Features                             | Absolute Maximum Ratings         |                                                | Electrical Characteristics   |      |                               |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|----------------------------------|------------------------------------------------|------------------------------|------|-------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                      |                                      | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                       |      | V(sat) (V)                    |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                      |                                      |                                  |                                                | IF=±1mA, V <sub>CE</sub> =5V |      | IF=±20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                      |                                      |                                  |                                                | Min.                         | Max. | Typ.                          | Max. | Tr                                                             | Tf |
| KB354NT     |  | UL NO.E225308 & VDE0884. NO.40017614 | AC.input response Small package size | 3750                             | 35                                             | 20                           | 400  | 0.1                           | 0.2  | 4                                                              | 3  |

| Part Number | Pin Configuration                                                                   | Safety Standards                     | Features                                              | Absolute Maximum Ratings         |                                                | Electrical Characteristics   |      |                               |      |                                                                |    |
|-------------|-------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------|----------------------------------|------------------------------------------------|------------------------------|------|-------------------------------|------|----------------------------------------------------------------|----|
|             |                                                                                     |                                      |                                                       | Isolation Voltage(AC) Viso(Vrms) | Collector Emitter Voltage V <sub>CEO</sub> (V) | CTR(%)                       |      | V(sat) (V)                    |      | Response Time (μs) Typ.                                        |    |
|             |                                                                                     |                                      |                                                       |                                  |                                                | IF=±1mA, V <sub>CE</sub> =2V |      | IF=±20mA, I <sub>C</sub> =1mA |      | V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω |    |
|             |                                                                                     |                                      |                                                       |                                  |                                                | Min.                         | Max. | Typ.                          | Max. | Tr                                                             | Tf |
| KB3541NT    |  | UL NO.E225308 & VDE0884. NO.40017614 | AC.input response High sensitivity Small package size | 3750                             | 35                                             | 450                          | 7400 | 0.8                           | 1.0  | 60                                                             | 53 |

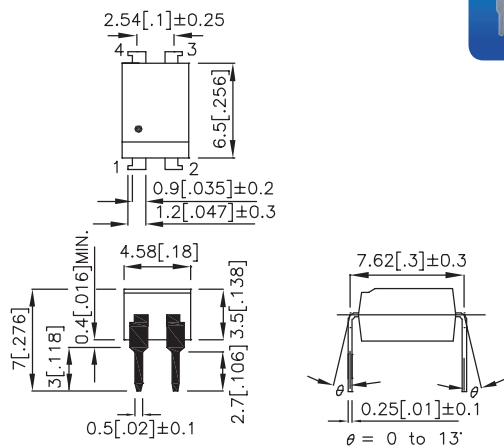




KB814, KB8141, KB815, KB816, KB817, KB851, KB852



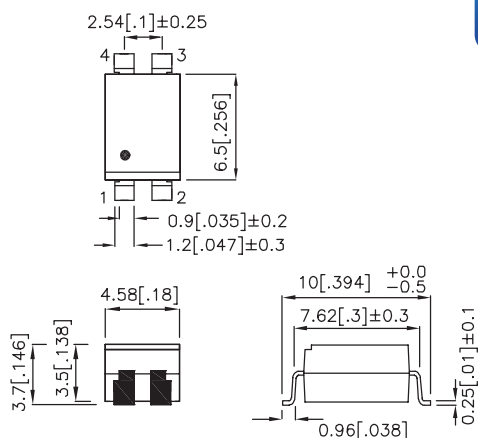
KB814



KB817-B



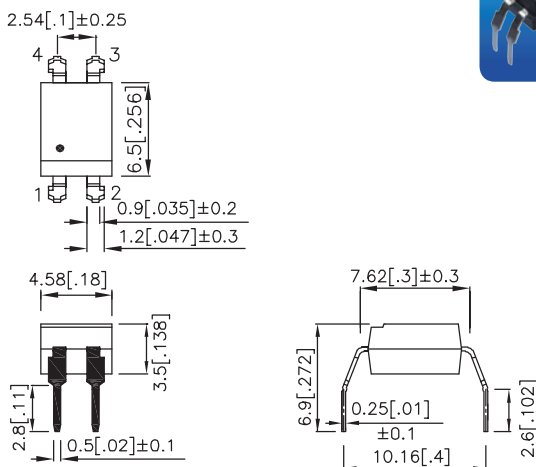
KB817-B



KB817-M



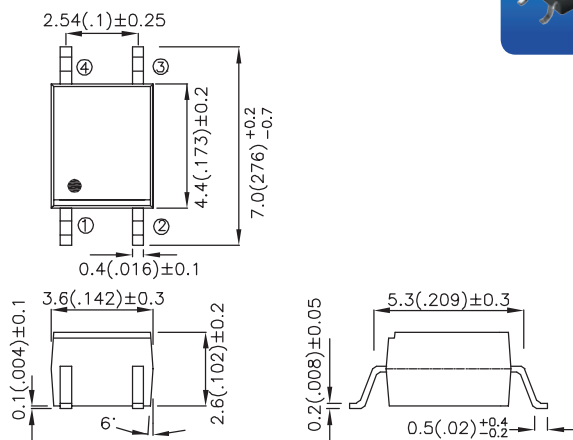
KB817-M



KB355NT, KB356NT, KB357NT, KB354NT, KB3541NT



KB355NT

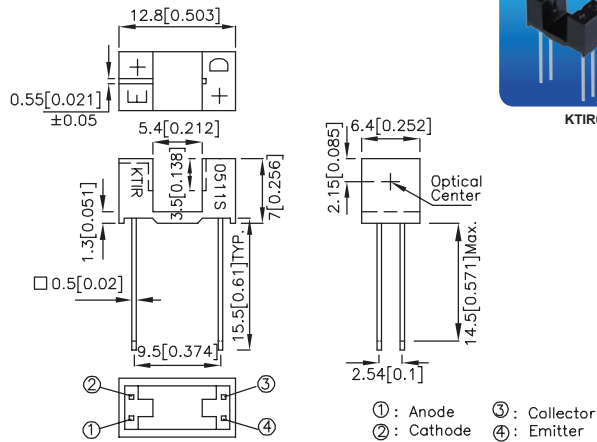


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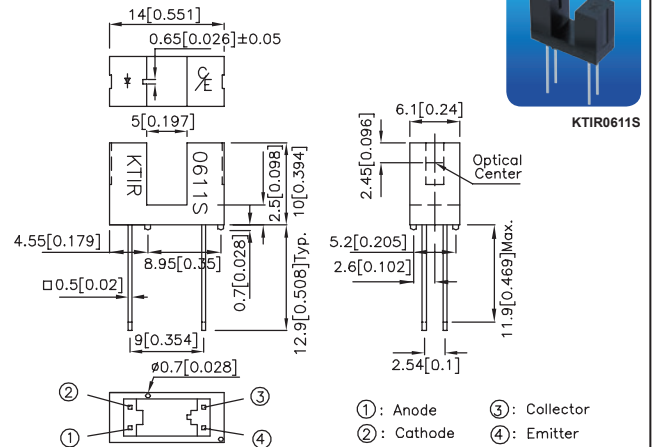


| Part Number | Pin Configuration | Material | $\lambda_P$ (nm) | CTR    |             |         | $V_{CE(SAT)}$ |        |         | Rise Time ( $\mu s$ ) | Fall Time ( $\mu s$ ) |
|-------------|-------------------|----------|------------------|--------|-------------|---------|---------------|--------|---------|-----------------------|-----------------------|
|             |                   |          |                  | IF(mA) | $V_{CE(V)}$ | Typ.(%) | IF(mA)        | IC(mA) | Max.(V) | Typ.                  | Typ.                  |
| KTIR0511S   |                   | GaAs/SiC | 940              | 20     | 5           | 10      | 40            | 1      | 0.4     | 5                     | 4                     |
| KTIR0611S   |                   | GaAs/SiC | 940              | 20     | 5           | 14      | 40            | 1      | 0.4     | 5                     | 4                     |
| KTIR0311S   |                   | GaAs/SiC | 940              | 20     | 5           | 38      | 40            | 1      | 0.4     | 5                     | 4                     |
| KTIR0411S   |                   | GaAs/SiC | 940              | 20     | 5           | 38      | 40            | 1      | 0.4     | 5                     | 4                     |

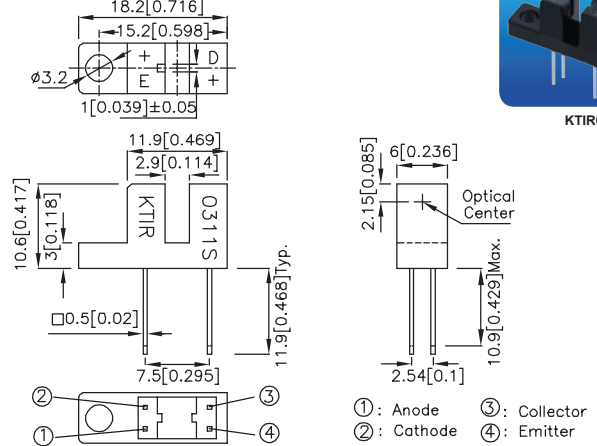
KTIR0511S



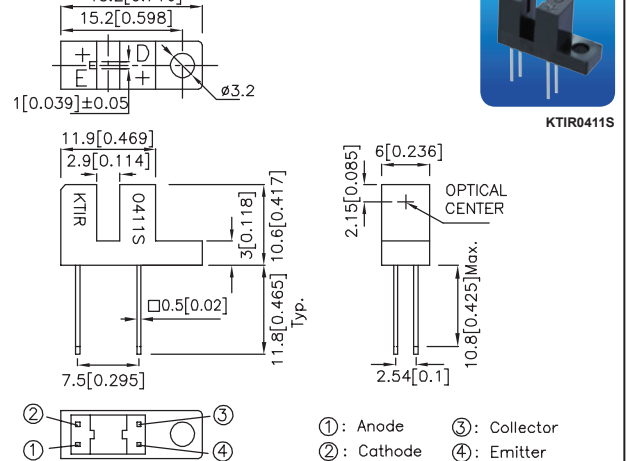
KTIR0611S



KTIR0311S

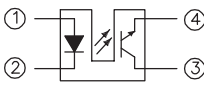
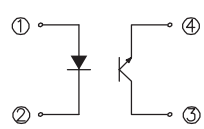


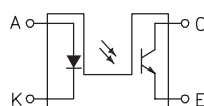
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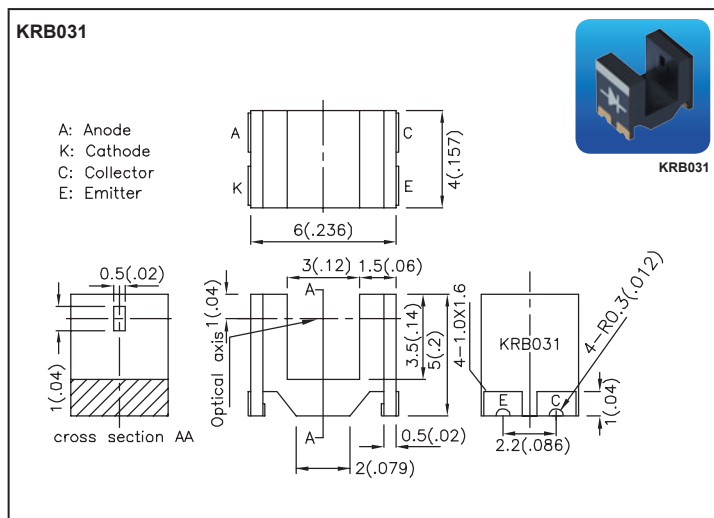
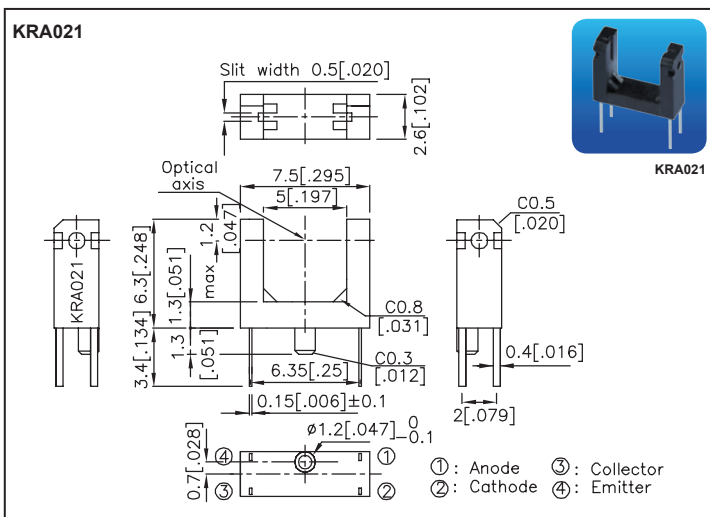
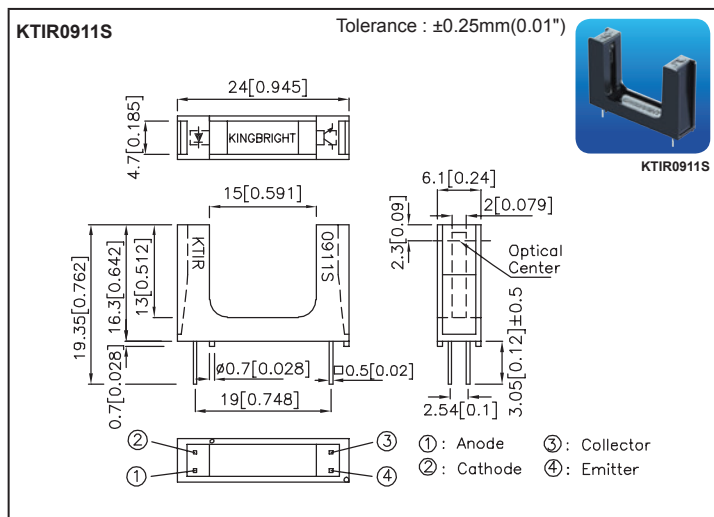


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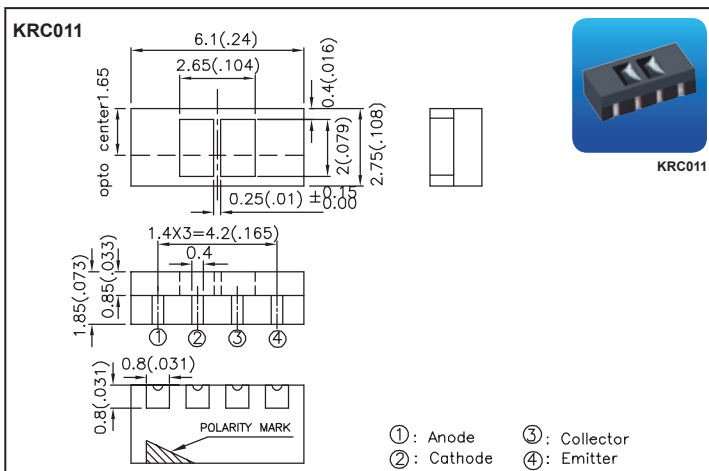
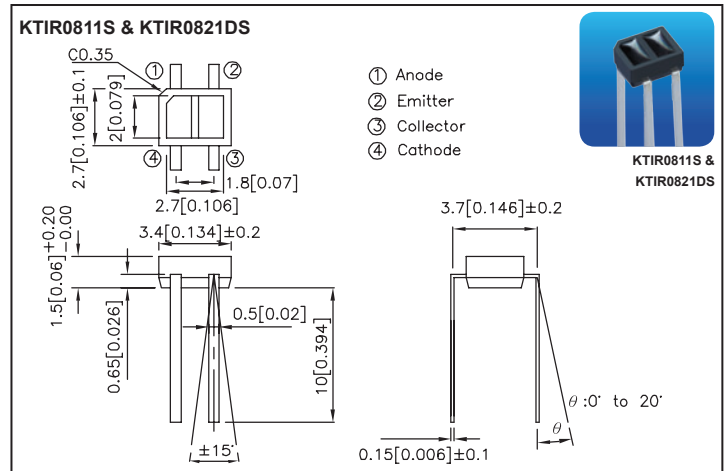
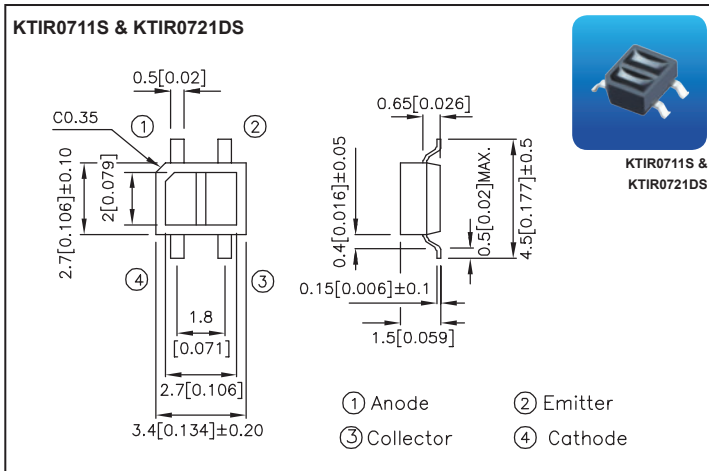
| Part Number | Pin Configuration                                                                 | Material | $\lambda P$<br>(nm) | CTR    |             |         | $V_{CE(SAT)}$ |        |         | Rise Time ( $\mu s$ ) | Fall Time ( $\mu s$ ) |
|-------------|-----------------------------------------------------------------------------------|----------|---------------------|--------|-------------|---------|---------------|--------|---------|-----------------------|-----------------------|
|             |                                                                                   |          |                     | IF(mA) | $V_{CE(V)}$ | Typ.(%) | IF(mA)        | IC(mA) | Max.(V) | Typ.                  | Typ.                  |
| KTIR0911S   |  | GaAs/SiC | 940                 | 20     | 5           | 9.5     | 40            | 1      | 0.4     | 5                     | 4                     |
| KRA021      |  | GaAs/SiC | 940                 | 10     | 2           | 18      | 20            | 0.25   | 0.4     | 15                    | 15                    |

| Part Number | Pin Configuration | Material | $\lambda$ P<br>(nm) | IC ( $\mu$ A )       | $V_{CE(SAT)}$                                                                     |          |                                                                                       | Rise Time ( $\mu$ s ) | Fall Time ( $\mu$ s ) |        |
|-------------|-------------------|----------|---------------------|----------------------|-----------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|-----------------------|-----------------------|--------|
|             |                   |          |                     | $V_{CE}=5V, I_F=5mA$ |                                                                                   |          |                                                                                       | Typ.                  | IF(mA)                | IC(mA) |
|             |                   |          |                     | KRB031               |  | GaAs/SiC |  940 | 150                   | 20                    | 0.05   |



| Part Number | Pin Configuration | Material | $\lambda$ P (nm) | IC ( $\mu$ A )       |      |      | $V_{CE(SAT)}$ |           |         | Rise Time ( $\mu$ s ) | Fall Time ( $\mu$ s ) |
|-------------|-------------------|----------|------------------|----------------------|------|------|---------------|-----------|---------|-----------------------|-----------------------|
|             |                   |          |                  | $V_{CE}=2V, I_F=4mA$ |      |      |               |           |         |                       |                       |
|             |                   |          |                  | Min.                 | Typ. | Max. | $I_F(mA)$     | $I_C(mA)$ | Max.(V) | Typ.                  | Typ.                  |
| KTIR0711S   |                   | GaAs/SiC | 940              | 10                   | -    | 400  | -             | -         | -       | 20                    | 20                    |
| KTIR0721DS  |                   | GaAs/SiC | 940              | -                    | 3000 | -    | -             | -         | -       | 80                    | 70                    |
| KTIR0811S   |                   | GaAs/SiC | 940              | 10                   | -    | 400  | -             | -         | -       | 20                    | 20                    |
| KTIR0821DS  |                   | GaAs/SiC | 940              | -                    | 3000 | -    | -             | -         | -       | 80                    | 70                    |

| Part Number | Pin Configuration                                                                 | Material | $\lambda$ P (nm)                                                                      | IC ( $\mu$ A )        |      |      | $V_{CE}(SAT)$ |           |         | Rise Time ( $\mu$ s ) | Fall Time ( $\mu$ s ) |
|-------------|-----------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------|-----------------------|------|------|---------------|-----------|---------|-----------------------|-----------------------|
|             |                                                                                   |          |                                                                                       | $V_{CE}=5V, I_F=20mA$ |      |      |               |           |         |                       |                       |
|             |                                                                                   |          |                                                                                       | Min.                  | Typ. | Max. | $I_F(mA)$     | $I_C(mA)$ | Max.(V) | Typ.                  | Typ.                  |
| KRC011      |  | GaAs/SiC |  940 | 10                    | -    | 300  | -             | -         | -       | 20                    | 20                    |



NOTES:

