

Kingtronics®

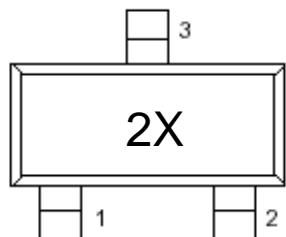
CDS4401-ME

SWITCHING TRANSISTOR

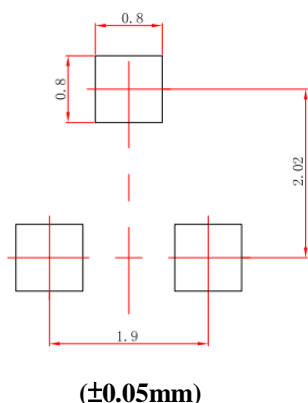
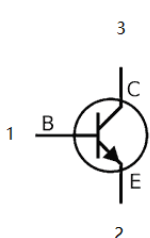
Marking: 2X

Suggested Layout

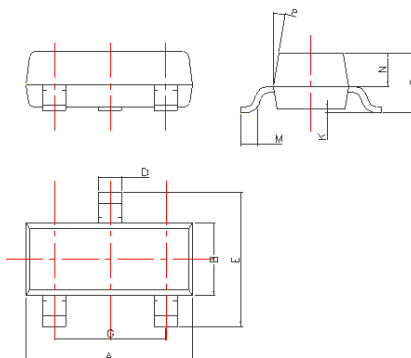
SOT-23



Top view



Dimension



| DIM | Millimeters |
|-----|-------------|
| A | 2.85~3.04 |
| B | 1.30±0.10 |
| C | 1.00±0.10 |
| D | 0.45±0.05 |
| E | 2.25~2.55 |
| G | 1.90±0.1 |
| K | 0.00-0.10 |
| M | 0.20 min |
| N | 0.60±0.10 |
| P | 7±2° |

MAXIMUM RATINGS (Ta=25°C)

| Characteristic | Symbol | Rating | Unit |
|--------------------------------|-----------|--------|------|
| Collector-Emitter Voltage | V_{CEO} | 40 | Vdc |
| Collector-Base Voltage | V_{CBO} | 60 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 6 | Vdc |
| Collector Current - Continuous | I_C | 600 | mAdc |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|----------------------|----------------------|-------|
| Total Device Dissipation FR-5 Board (1) (Ta=25°C) | P_D | 225 | mW |
| Derate above 25°C | | 1.8 | mW/°C |
| Thermal Resistance Junction to Ambient | R_{JA} | 556 | °C/W |
| Total Device Dissipation Alumina Substrate, (2) Ta=25°C | P_D | 300 | mW |
| Derate above 25°C | | 2.4 | mW/°C |
| Thermal Resistance Junction to Ambient | R_{JA} | 417 | °C/W |
| Junction and Storage Temperature | T_J , T_{stg} | 150 , -55 to +150 | °C |

Kingtronics® International Company

Website: www.kingtronics.com Email: info@kingtronics.com Tel: (852) 8106 7033 Fax: (852) 8106 7099

Kingtronics®**CDS4401-ME****ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)**

| Characteristic | Symbol | Test Condition | Min | Type | Max | Unit |
|--|---------------|--|------|------|------|------------------|
| Collector Cutoff Current | I_{CEX} | VCE=35Vdc, VEB=0.4Vdc | -- | -- | 100 | nAdc |
| Base Cutoff Current | I_{BEX} | VCE=35Vdc, VEB=0.4Vdc | -- | -- | 100 | nAdc |
| Collector-Emitter Breakdown Voltage (3) | $V_{(BR)CEO}$ | Ic=1.0 mAdc, IB=0 | 40 | -- | -- | Vdc |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | Ic=100μAdc, IE=0 | 60 | -- | -- | Vdc |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | IE=100μAdc, IC=0 | 6 | -- | -- | Vdc |
| DC Current Gain | h_{FE} | Ic=0.1mAdc, VCE=1.0Vdc | 20 | -- | -- | -- |
| | | Ic=1.0mAdc, VCE=1.0Vdc | 40 | -- | -- | |
| | | Ic=10mAdc, VCE=1.0Vdc | 80 | -- | -- | |
| | | Ic=150mAdc, VCE=2.0Vdc | 100 | -- | 300 | |
| | | Ic=500mAdc, VCE=2.0Vdc | 40 | -- | -- | |
| Collector-Emitter Saturation Voltage (3) | $V_{CE(sat)}$ | Ic=150mAdc, IB=15mAdc | -- | -- | 0.4 | Vdc |
| | | Ic=500mAdc, IB=50mAdc | -- | -- | 0.75 | |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | Ic=150mAdc, IB=15mAdc | 0.75 | -- | 0.95 | Vdc |
| | | Ic=500mAdc, IB=50mAdc | -- | -- | 1.2 | |
| Current-Gain-Bandwidth Product | f_T | Ic=20mAdc, VCE=10Vdc, f=100MHz | 250 | -- | -- | MHz |
| Output Capacitance | C_{obo} | VCB=5.0Vdc, IE=0, f=1.0MHz | -- | -- | 6.5 | pF |
| Input Capacitance | C_{ibo} | VEB=0.5Vdc, IC=0, f=1.0MHz | -- | -- | 30 | pF |
| Input Impedance | h_{ie} | VCE=10Vdc, IC=1.0mAdc, f=1.0KHz | 1.0 | -- | 15 | kΩ |
| Voltage Feedback Ratio | h_{re} | VCE=10Vdc, IC=1.0mAdc, f=1.0KHz | 0.5 | -- | 8.0 | $\times 10^{-4}$ |
| Small-Signal Current Gain | h_{fe} | VCE=10Vdc, IC=1.0mAdc, f=1.0KHz | 100 | -- | 500 | -- |
| Output Admittance | h_{oe} | VCE=10Vdc, IC=1.0mAdc, f=1.0KHz | 1.0 | -- | 100 | μmhos |
| Delay Time | t_d | VCC=30Vdc, VBE=2.0Vdc, IC=150mAdc, IB1=15mAdc | -- | -- | 15 | nS |
| Rise Time | t_r | | -- | -- | 20 | |
| Storage Time | t_s | | -- | -- | 225 | nS |
| Fall Time | t_f | | -- | -- | 30 | |

- FR-5=1.0x0.75x0.062in.
- Alumina=0.4x0.3x0.024in, 99.5% alumina.
- Pulse Width ≤300μS; Duty Cycle ≤2.0%.

Kingtronics® International CompanyWebsite: www.kingtronics.comEmail: info@kingtronics.com

Tel: (852) 8106 7033

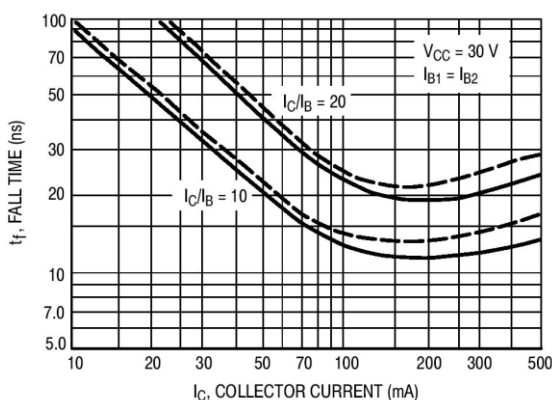
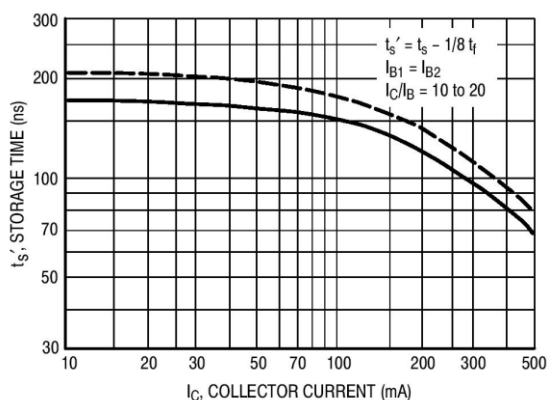
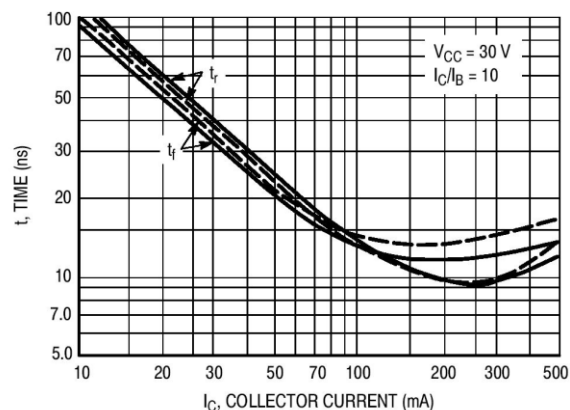
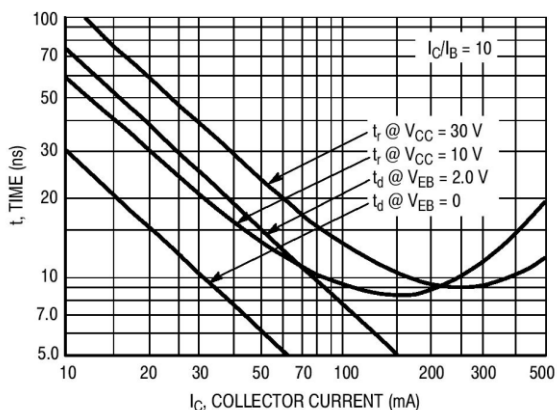
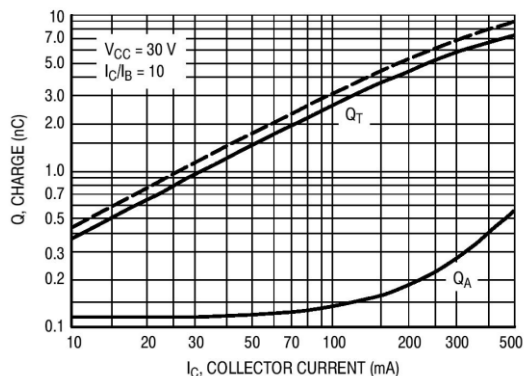
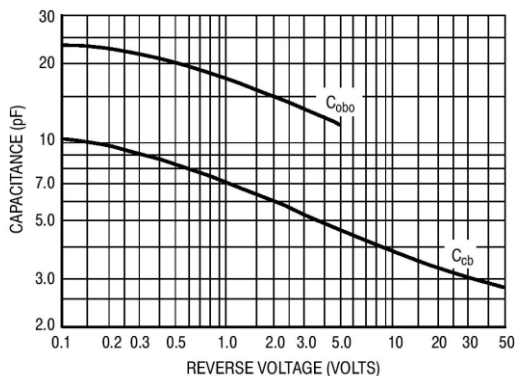
Fax: (852) 8106 7099



Typical Performance Characteristics

TRANSIENT CHARACTERISTICS

— 25°C - - - 100°C



Kingtronics® International Company

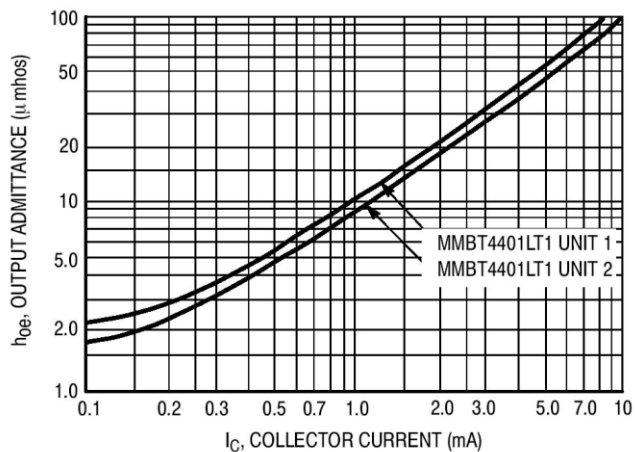
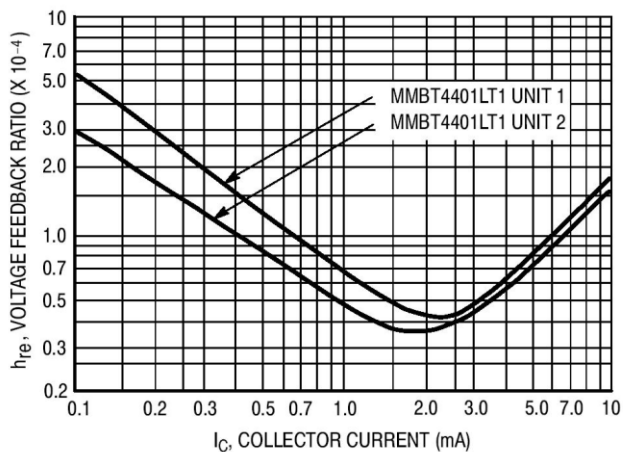
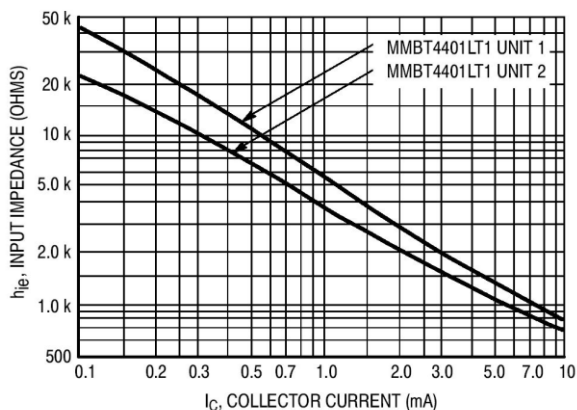
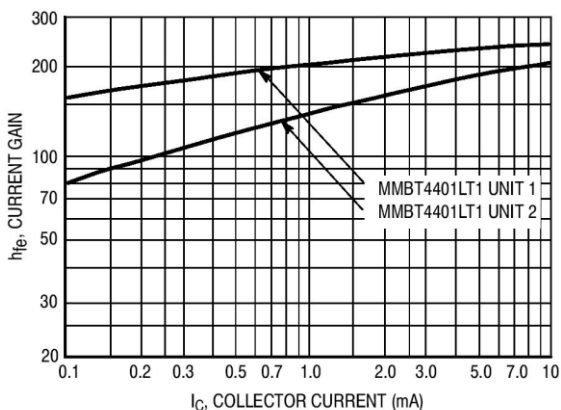
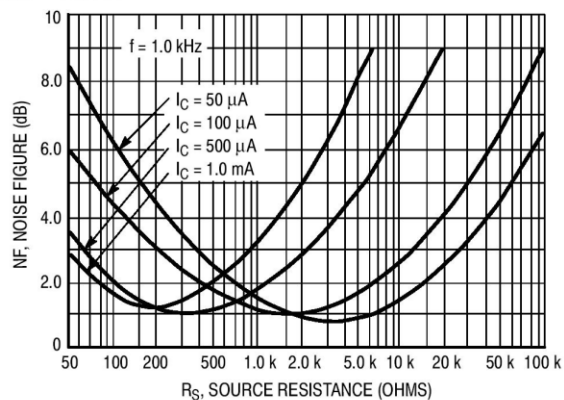
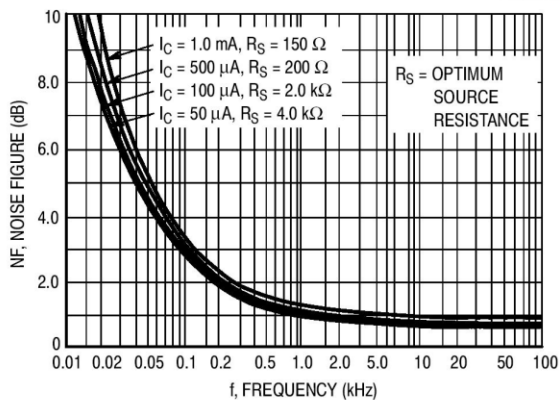
Website: www.kingtronics.com Email: info@kingtronics.com Tel: (852) 8106 7033 Fax: (852) 8106 7099

SMALL-SIGNAL CHARACTERISTICS

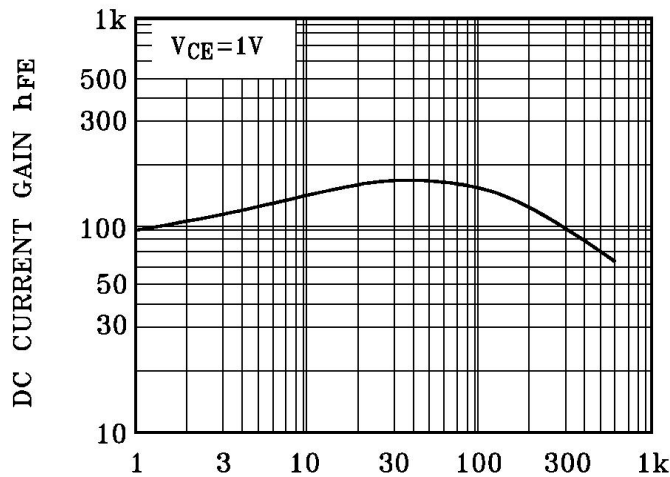
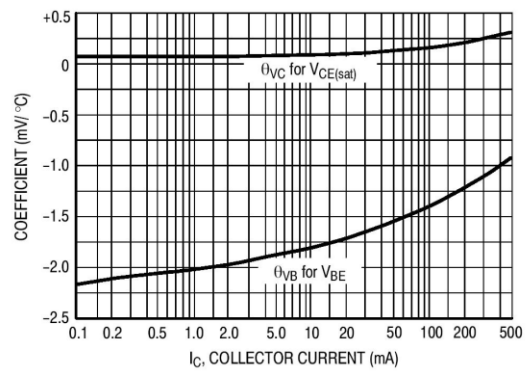
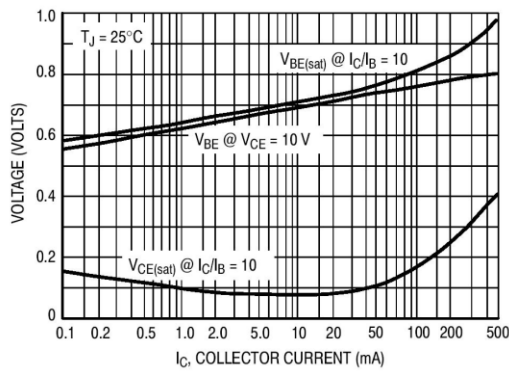
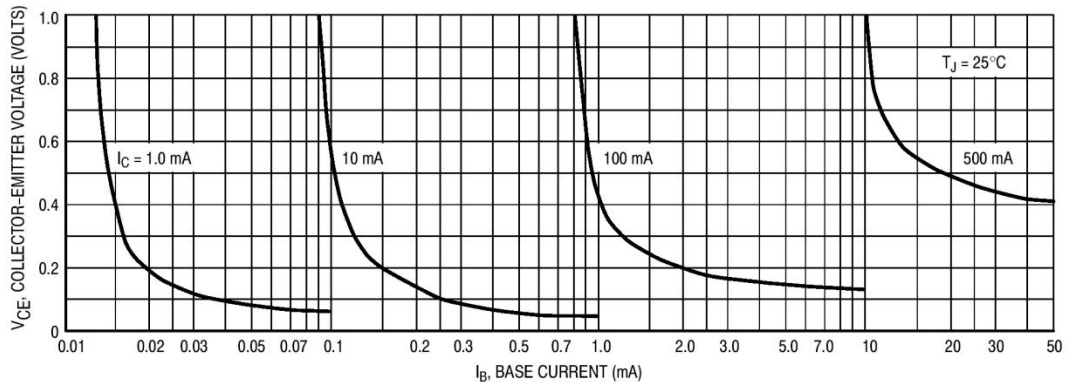
NOISE FIGURE

$V_{CE} = 10 \text{ Vdc}$, $T_A = 25^\circ\text{C}$

Bandwidth = 1.0 Hz



Kingtronics®



Note: Specifications are subject to change without notice.

Kingtronics® International Company

Website: www.kingtronics.com Email: info@kingtronics.com Tel: (852) 8106 7033 Fax: (852) 8106 7099