

## Epitaxial Planar NPN Transistor

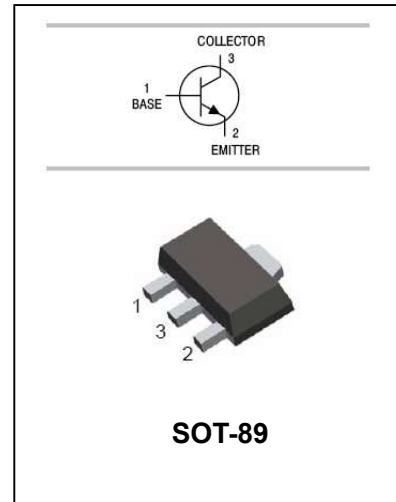
**KTC4378**

### FEATURES

- High Voltage:  $V_{CEO}=60V(\text{Min})$
- High Current:  $I_C(\text{Max})=1A$
- Wide Area of Safe Operation



Lead-free



### ORDERING INFORMATION

| Type No. | Marking | Package Code |
|----------|---------|--------------|
| KTC4378  | TY/TGR  | SOT-89       |

### MAXIMUM RATING @ $T_a=25^{\circ}\text{C}$ unless otherwise specified

| Symbol    | Parameter                   | Value       | Units              |
|-----------|-----------------------------|-------------|--------------------|
| $V_{CBO}$ | Collector-Base Voltage      | 80          | V                  |
| $V_{CEO}$ | Collector-Emitter Voltage   | 60          | V                  |
| $V_{EBO}$ | Emitter-Base Voltage        | 5           | V                  |
| $I_C$     | Collector Current DC        | 1           | A                  |
| $I_{CP}$  | Collector Current Pulse     | 2           | A                  |
| $P_C$     | Collector Power Dissipation | 500         | mW                 |
| $P_C^*$   |                             | 1           | W                  |
| $T_j$     | Junction Temperature        | 150         | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage Temperature         | -55 to +150 | $^{\circ}\text{C}$ |

$P_C^*$ : KTC4378 mounted on ceramic substrate(250mm<sup>2</sup>x0.8t)

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### ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Parameter                            | Symbol        | Test conditions             | MIN | TYP  | MAX | UNIT |
|--------------------------------------|---------------|-----------------------------|-----|------|-----|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=100\mu A, I_E=0$       | 80  |      |     | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1mA, I_B=0$            | 60  |      |     | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=100\mu A, I_C=0$       | 5   |      |     | V    |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=50V, I_E=0$         |     |      | 100 | nA   |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=4V, I_C=0$          |     |      | 100 | nA   |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=2V, I_C=50mA$       | 100 |      | 320 |      |
|                                      | $h_{FE(2)}$   | $V_{CE}=2V, I_C=1A$         | 30  |      |     |      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=500mA, I_B=50mA$       |     | 0.15 | 0.5 | V    |
| Base-emitter v saturation voltage    | $V_{BE(sat)}$ | $I_C=500mA, I_B=50mA$       |     | 0.85 | 1.2 | V    |
| Transition frequency                 | $f_T$         | $V_{CE}=10V, I_C=50mA$      |     | 150  |     | MHz  |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10V, I_E=0, f=1MHz$ |     | 12   |     | pF   |

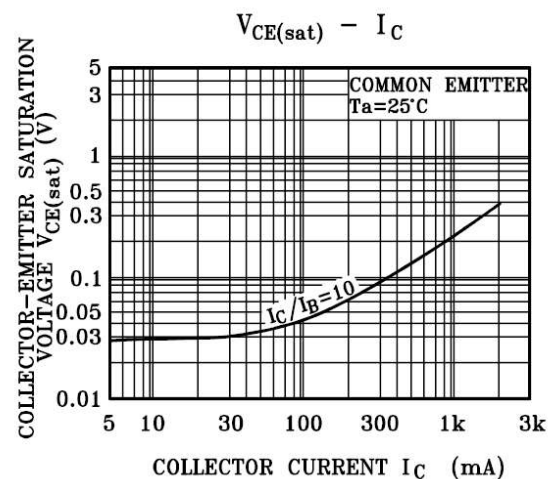
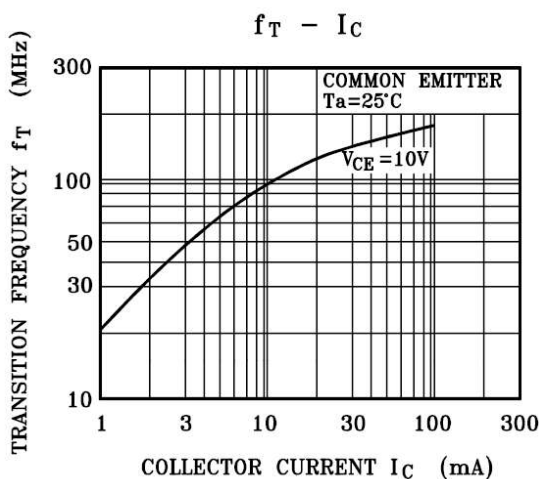
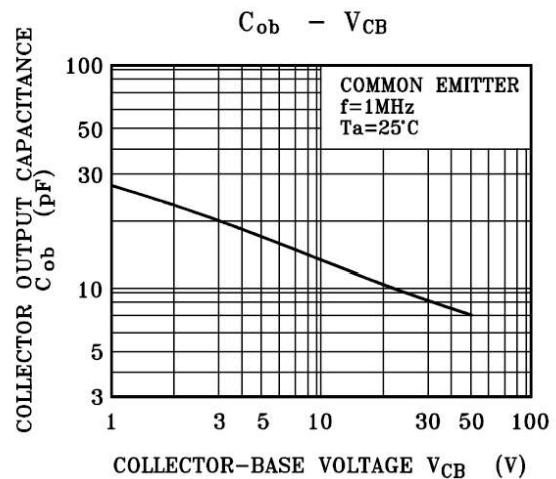
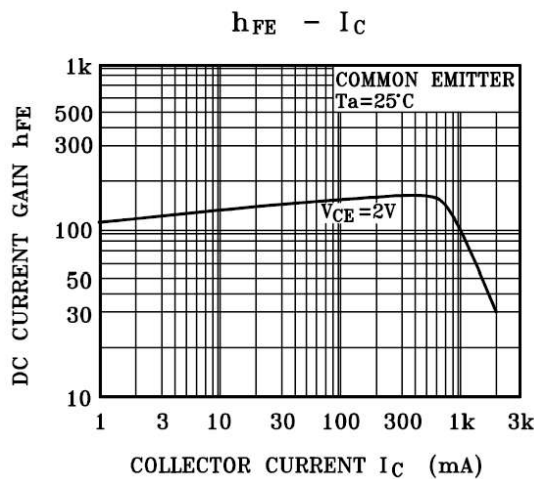
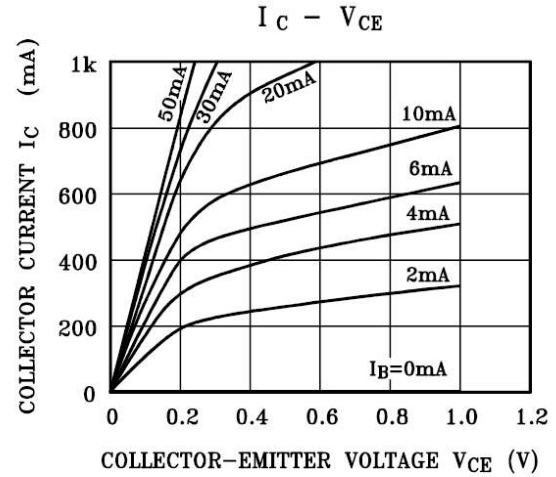
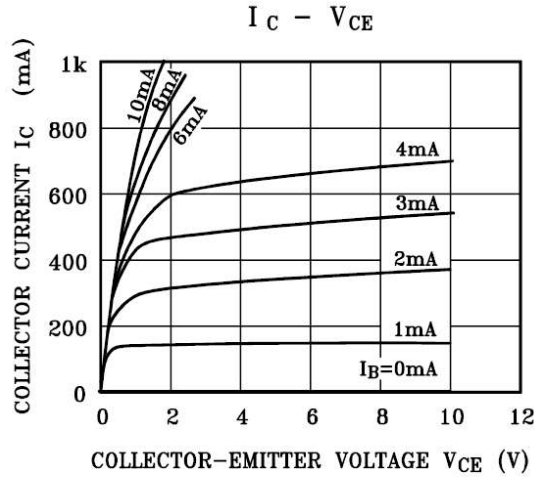
### CLASSIFICATION OF $h_{FE(1)}$

|         |         |         |
|---------|---------|---------|
| Rank    | Y       | GR      |
| Range   | 100-200 | 160-320 |
| MARKING | TY      | TGR     |

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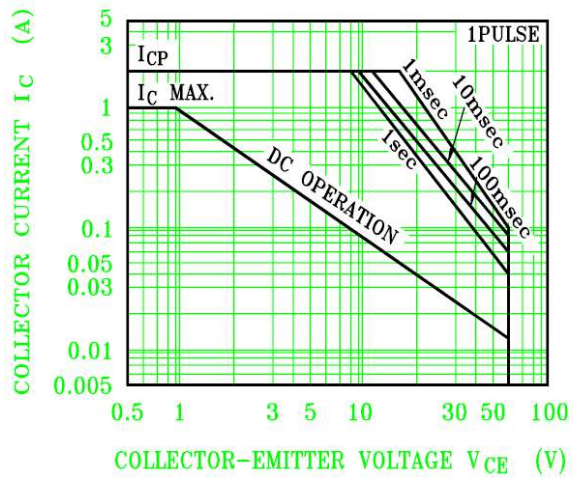
TYPICAL CHARACTERISTICS @  $T_a=25^\circ\text{C}$  unless otherwise specified



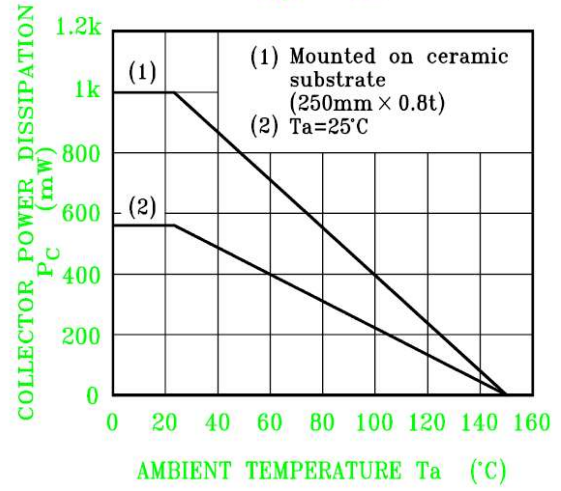
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SAFE OPERATING AREA



$P_C - T_a$



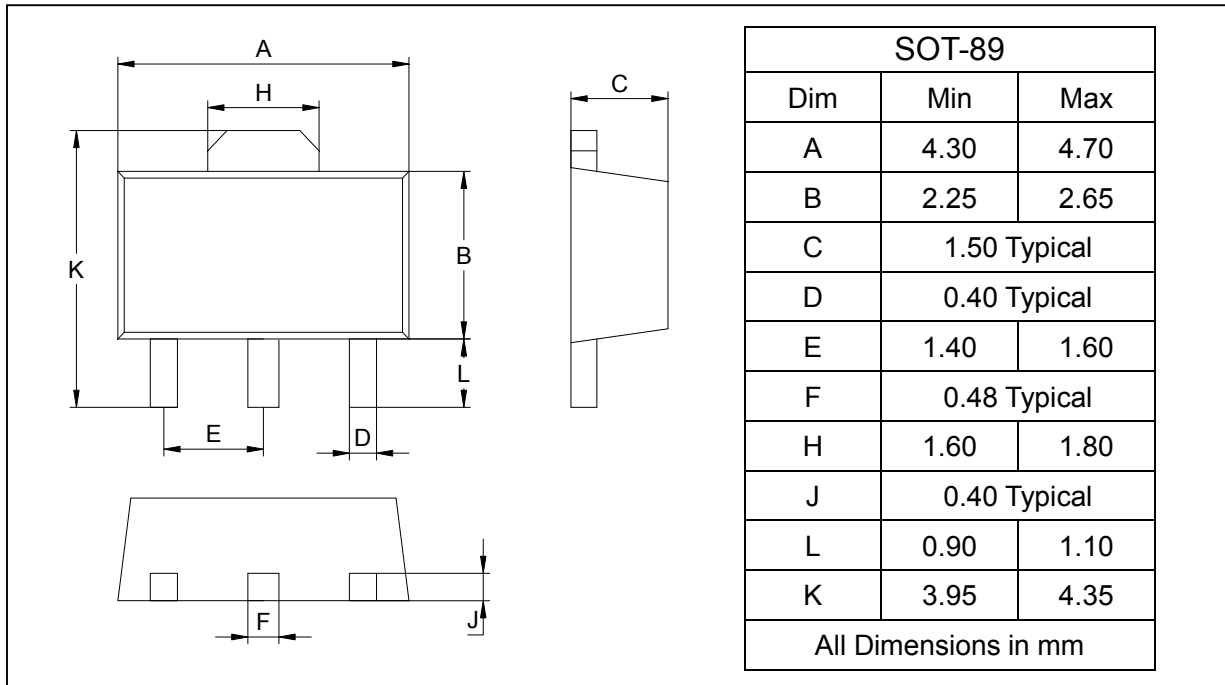
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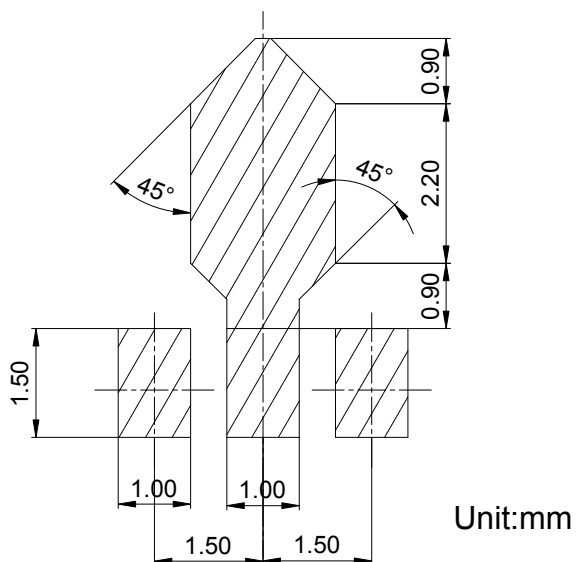
### PACKAGE OUTLINE

Plastic surface mounted package

SOT-89



### SOLDERING FOOTPRINT



### PACKAGE INFORMATION

| Device  | Package | Shipping       |
|---------|---------|----------------|
| KTC4378 | SOT-89  | 1000/Tape&Reel |