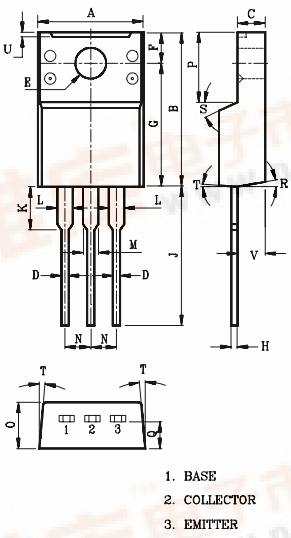
KEL
KOREA ELECTRONICS CO.,LTD.

# SEMICONDUCTOR
TECHNICAL DATA

# KTD1413
EPITAXIAL PLANAR NPN TRANSISTOR

HIGH POWER SWITCHING APPLICATIONS.
HAMMER DRIVER, PULSE MOTOR DRIVER APPLICATIONS.

FEATURES
- High DC Current Gain : $h_{FE}$=2000(Min.) at $V_{CE}$=2V, $I_C$=3A.
- Low Saturation Voltage : $V_{CE(sat)}$=1.5V(Max.) at $I_C$=3A.



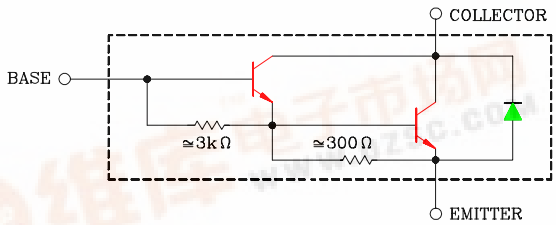

| DIM | MILLIMETERS |
|---|---|
| A | 10.30 MAX |
| B | 15.30 MAX |
| C | 2.70±0.30 |
| D | 0.85 MAX |
| E | ø3.20±0.20 |
| F | 3.00±0.30 |
| G | 12.30 MAX |
| H | 0.75 MAX |
| J | 13.60±0.50 |
| K | 3.90 MAX |
| L | 1.20 |
| M | 1.30 |
| N | 2.54 |
| O | 4.50±0.20 |
| P | 6.80 |
| Q | 2.60±0.20 |
| R | 10° |
| S | 25° |
| T | 5° |
| U | 0.5 |
| V | 2.60±0.15 |

TO-220IS

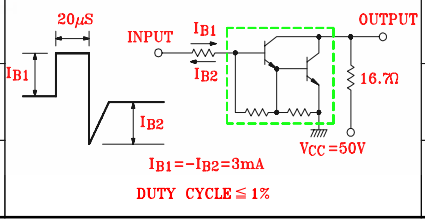
MAXIMUM RATINGS (Ta=25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 150 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 100 | V |
| Emitter-Base Voltage | $V_{EB0}$ | 7 | V |
| Collector Current | $I_C$ | 5 | A |
| Base Current | $I_B$ | 0.5 | A |
| Collector Power Dissipation (Tc=25℃) | $P_C$ | 25 | W |
| Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -55~150 | ℃ |

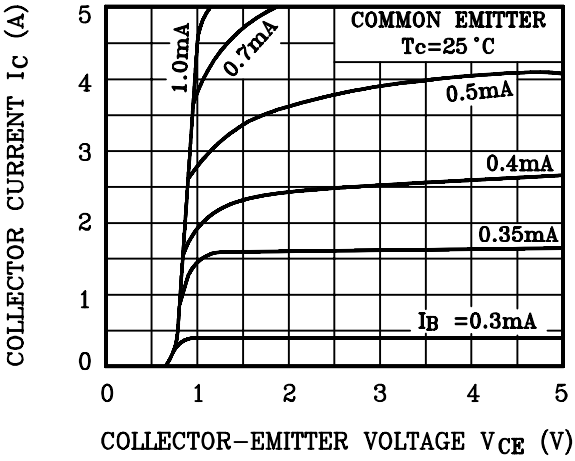
EQUIVALENT CIRCUIT



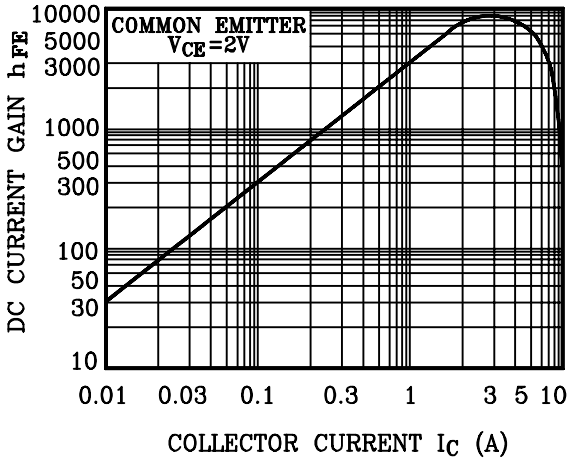

ELECTRICAL CHARACTERISTICS (Ta=25℃)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Collector Cut-off Current | | $I_{CBO}$ | $V_{CB}$=100V, $I_E$=0 | - | - | 1 | mA |
| Collector-Emitter Breakdown Voltage | | $V_{(BR)CEO}$ | $I_C$=10mA, $I_B$=0 | 100 | - | - | V |
| DC Current Gain | | $h_{FE}(1)$ | $V_{CE}$=2V, $I_C$=3A | 2000 | 6000 | 15000 | |
| | | $h_{FE}(2)$ | $V_{CE}$=2V, $I_C$=5A | 500 | - | - | |
| Saturation Voltage | Collector-Emitter | $V_{CE(sat)}$ | $I_C$=3A, $I_B$=3mA | - | 0.9 | 1.5 | V |
| | Base-Emitter | $V_{BE(sat)}$ | $I_C$=3A, $I_B$=3mA | - | 1.6 | 2.0 | |
| Switching Time | Turn-on Time | $t_{on}$ |  | - | 1.0 | - | μS |
| | Storage Time | $t_{stg}$ | | - | 3.5 | - | |
| | Fall Time | $t_f$ | | - | 1.2 | - | |

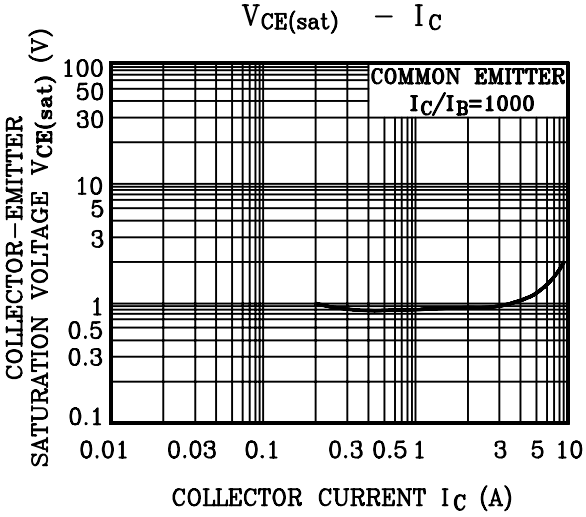
$I_C$ – $V_{CE}$



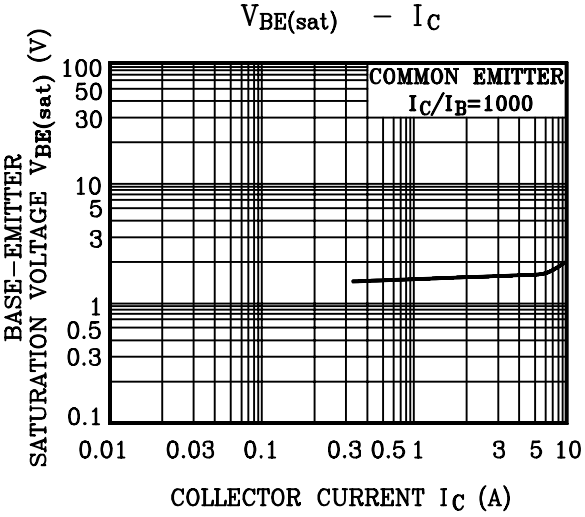

$h_{FE}$ – $I_C$



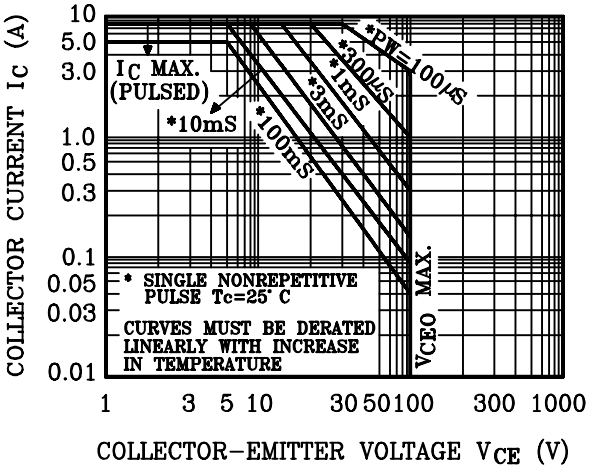

$V_{CE(sat)}$ – $I_C$




$V_{BE(sat)}$ – $I_C$




SAFE OPERATING AREA




$P_C$ – Ta