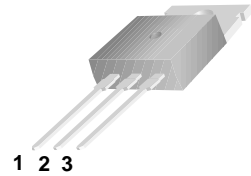


# 13005A

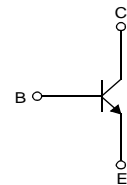
## Features

- Wide Safe Operating Area
- Built-in Free Wheeling diode
- Suitable for Electronic Ballast Application
- Small Variance in Storage Time

TO-220



Equivalent Circuit



1.Base 2.Collector 3.Emitter

## Absolute Maximum Ratings\* T = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CBO</sub>	Collector-Base Voltage	700	V
V <sub>CEO</sub>	Collector-Emitter Voltage	400	V
V <sub>EBO</sub>	Emitter-Base Voltage	12	V
I <sub>C</sub>	Collector Current (DC)	4	A
I <sub>CP</sub>	Collector Current (Pulse)	8	A
I <sub>B</sub>	Base Current	2	A
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	70	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C

## Electrical Characteristics T<sub>C</sub> = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 1mA, I <sub>E</sub> = 0	700			V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0	400			V
BV <sub>EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 1mA, I <sub>C</sub> = 0	12			V
I <sub>CES</sub>	Collector Cut-off Current	V <sub>CE</sub> = 700V, V <sub>EB</sub> = 0			100	mA
I <sub>CEO</sub>	Collector Cut-off Current	V <sub>CE</sub> = 400V, I <sub>B</sub> = 0			250	mA
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> = 12V, I <sub>C</sub> = 0			100	mA
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA V <sub>CE</sub> = 5V, I <sub>C</sub> = 2A	10 8		40	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 0.5A, I <sub>B</sub> = 0.1A I <sub>C</sub> = 1A, I <sub>B</sub> = 0.2A I <sub>C</sub> = 2.5A, I <sub>B</sub> = 0.5A			0.7 1.0 1.5	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 0.5A, I <sub>B</sub> = 0.1A I <sub>C</sub> = 1A, I <sub>B</sub> = 0.2A I <sub>C</sub> = 2.5A, I <sub>B</sub> = 0.5A			1.1 1.2 1.3	V
V <sub>f</sub>	Internal Diode Forward Voltage Drop	I <sub>F</sub> = 2A			2.5	V

\* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%

## Thermal Characteristics

Symbol	Parameter	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.78	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	62.5	°C/W

Typical Performance Characteristics

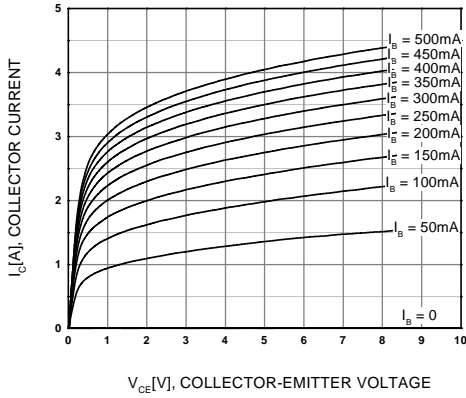


Figure 1. Static Characteristic

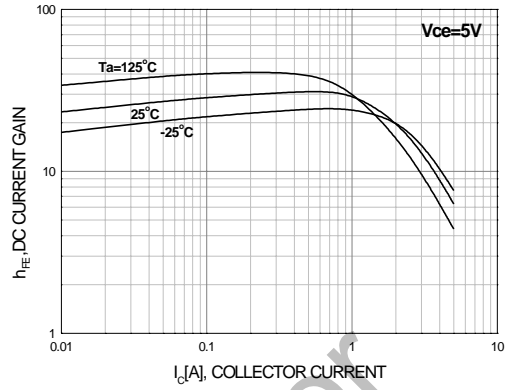


Figure 2. DC Current Gain

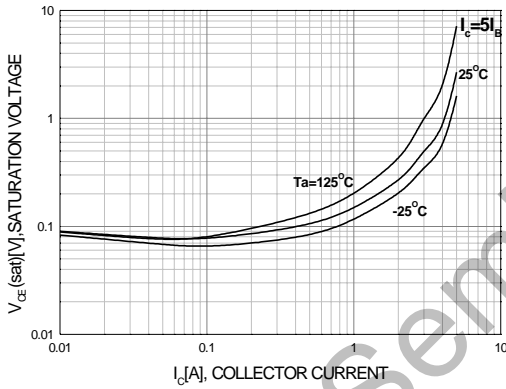


Figure 3. Collector-Emitter Saturation Voltage

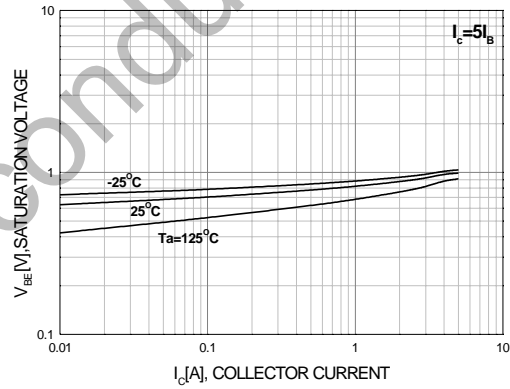


Figure 4. Base-Emitter Saturation Voltage

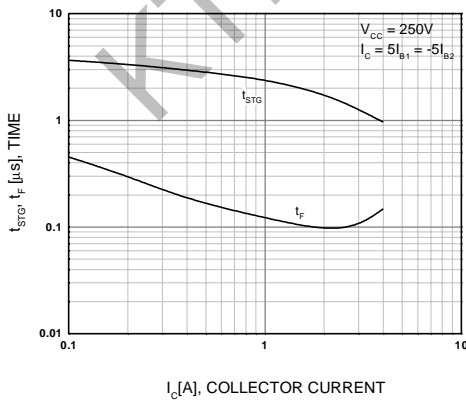


Figure 5. Resistive Load Switching Time

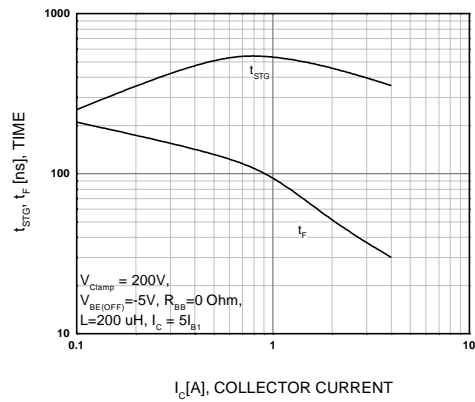


Figure 6. Inductive Load Switching Time

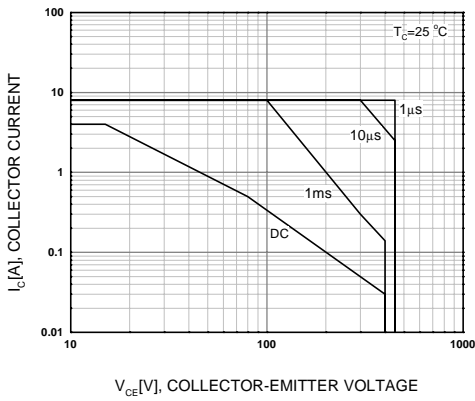


Figure 7. Forward Bias Safe Operating Area

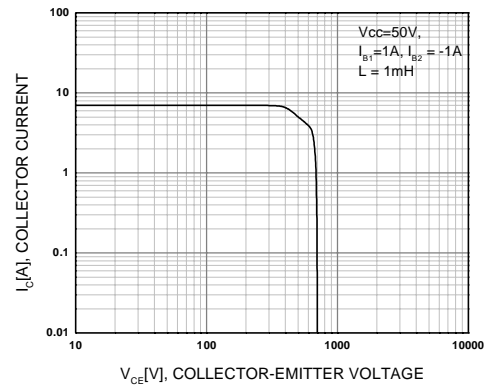


Figure 8. Reverse Bias Safe Operating Area

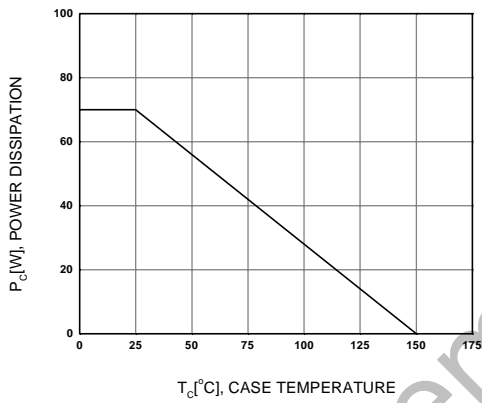
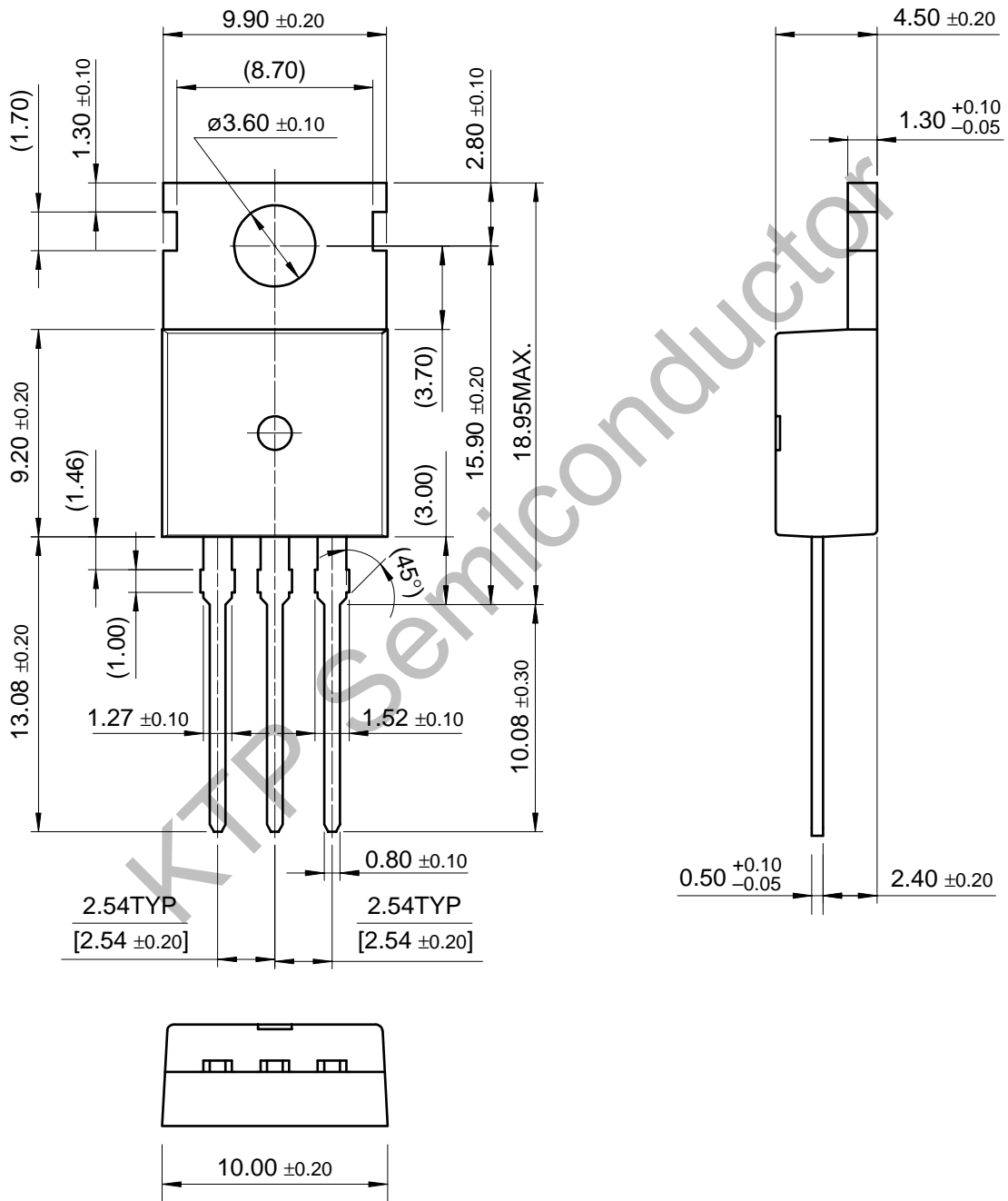


Figure 9. Power Derating

KTP Semiconductor

Package Dimension

**TO-220**



Dimensions in Millimeters