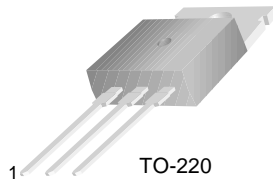


## E13007

### High Voltage Fast-Switching NPN Power Transistor

- High Voltage Capability
- High Switching Speed
- Suitable for Electronic Ballast and Switching Mode Power Supply



1.Base 2.Collector 3.Emitter

#### Absolute Maximum Ratings T<sub>C</sub> = 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	9	V
I <sub>C</sub>	Collector Current (DC)	8	A
I <sub>CP</sub>	Collector Current (Pulse)	16	A
I <sub>B</sub>	Base Current	4	A
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	80	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65 ~ 150	°C

## Electrical Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}, I_B = 0$	400			V
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			1	mA
$h_{FE1}$ $h_{FE2}$	DC Current Gain *	$V_{CE} = 5\text{V}, I_C = 2\text{A}$ $V_{CE} = 5\text{V}, I_C = 5\text{A}$	8 5		60 30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$ $I_C = 5\text{A}, I_B = 1\text{A}$ $I_C = 8\text{A}, I_B = 2\text{A}$			1.0 2.0 3.0	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$ $I_C = 5\text{A}, I_B = 1\text{A}$			1.2 1.6	V V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$	4			MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, f = 0.1\text{MHz}$		110		pF
$t_{ON}$	Turn On Time	$V_{CC} = 125\text{V}, I_C = 5\text{A}$			1.6	$\mu\text{s}$
$t_{STG}$	Storage Time	$I_{B1} = -I_{B2} = 1\text{A}$ $R_L = 25\Omega$			3.0	$\mu\text{s}$
$t_F$	Fall Time				0.7	$\mu\text{s}$

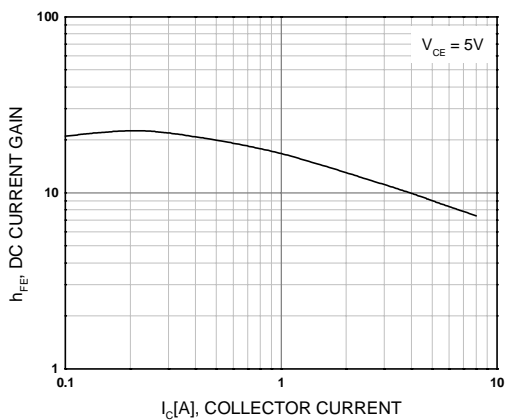
\* Pulse Test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

## $h_{FE}$ Classification

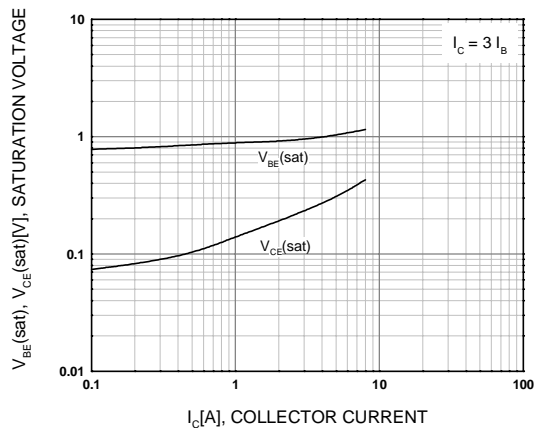
Classification	H1	H2
$h_{FE1}$	15 ~ 28	26 ~ 39

## Typical Performance Characteristics

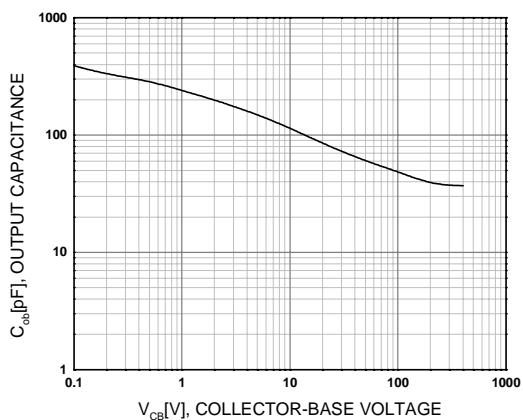
**Figure 1. DC Current Gain**



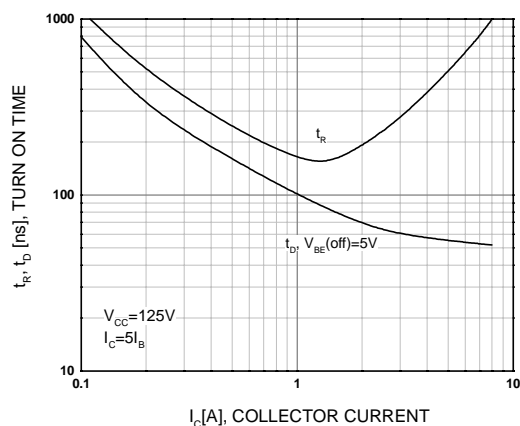
**Figure 2. Saturation Voltage**



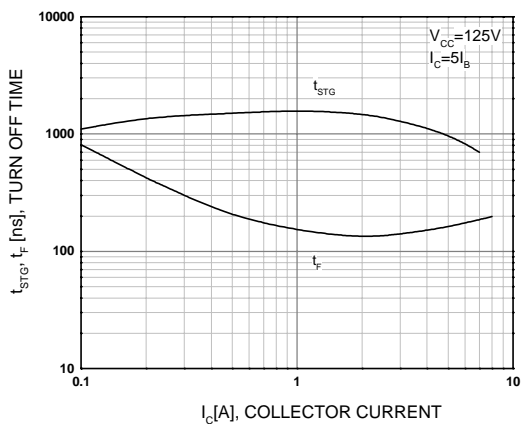
**Figure 3. Collector Output Capacitance**



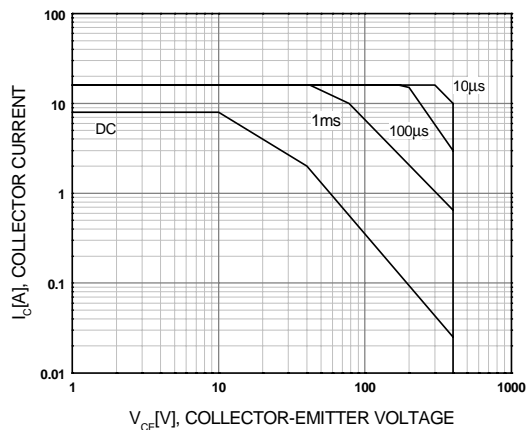
**Figure 4. Turn On Time**



**Figure 5. Turn Off Time**

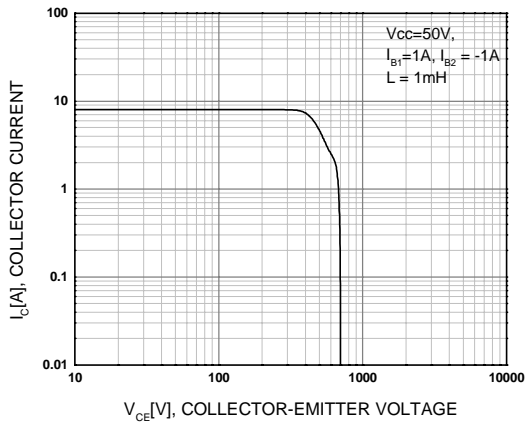


**Figure 6. Forward Biased Safe Operating Area**

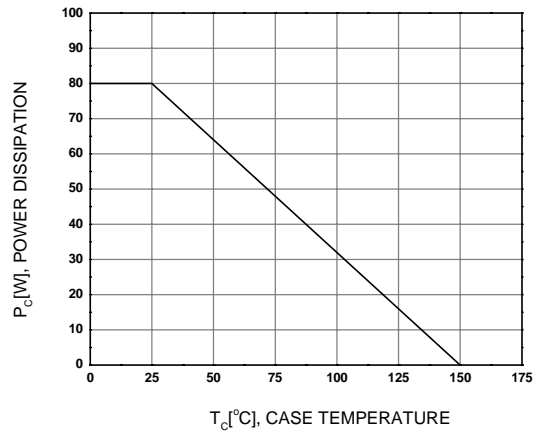


# Typical Performance Characteristics (Continued)

### Figure 7. Reverse Biased Safe Operating Area

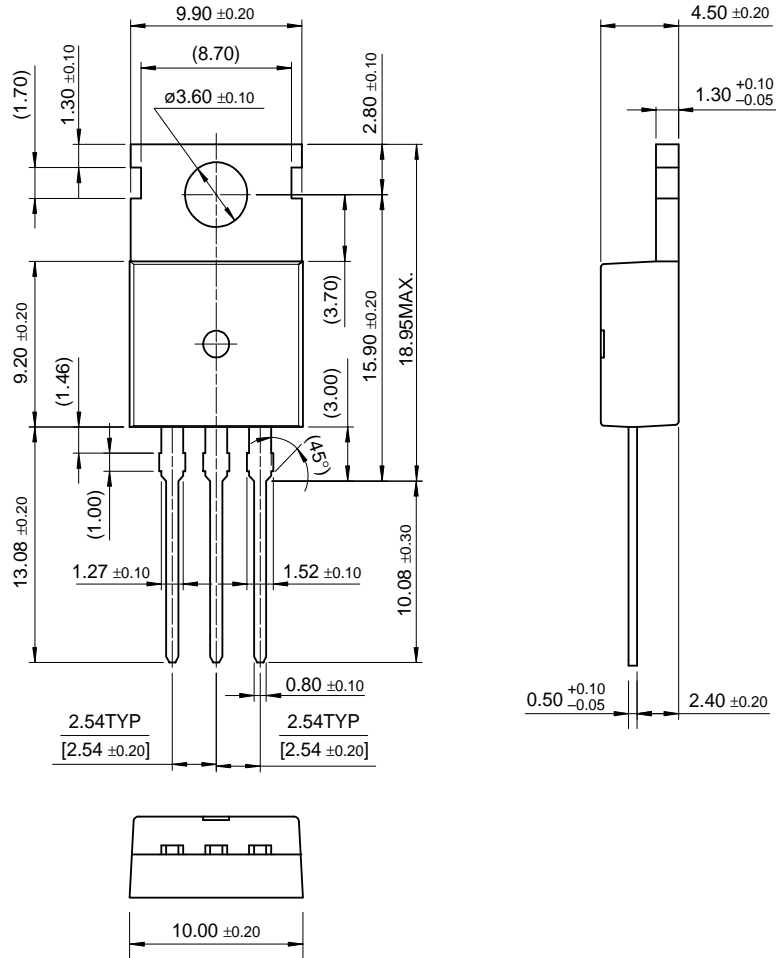


### Figure 8. Power Derating



Mechanical Dimensions

TO-220



Dimensions in Millimeters