

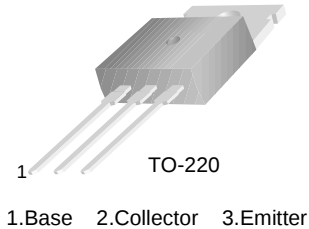
深圳市晶泰源电子有限公司

E13004/13005

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High Voltage Switch Mode Application

- High Speed Switching
- Suitable for Switching Regulator and Motor Control



NPN Silicon Transistor

Absolute Maximum Ratings $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units	
V _{CBO}	Collector-Base Voltage	: E13004	600	V
		: E13005	700	V
V _{CEO}	Collector-Emitter Voltage	: E13004	300	V
		: E13005	400	V
V _{EBO}	Emitter-Base Voltage		9	V
I _C	Collector Current (DC)		4	A
I _{CP}	Collector Current (Pulse)		8	A
I _B	Base Current		2	A
P _C	Collector Dissipation (T _C =25°C)		75	W
T _J	Junction Temperature		150	°C
T _{STG}	Storage Temperature		- 65 ~ 150	°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{mA}$, $I_B = 0$	300			V
			400			V
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 9\text{V}$, $I_C = 0$			1	mA
h_{FE}	*DC Current Gain	$V_{CE} = 5\text{V}$, $I_C = 1\text{A}$ $V_{CE} = 5\text{V}$, $I_C = 2\text{A}$	10 8		60 40	
$V_{CE(sat)}$	*Collector-Emitter Saturation Voltage	$I_C = 1\text{A}$, $I_B = 0.2\text{A}$			0.5	V
		$I_C = 2\text{A}$, $I_B = 0.5\text{A}$			0.6	V
		$I_C = 4\text{A}$, $I_B = 1\text{A}$			1	V
$V_{BE(sat)}$	*Base-Emitter Saturation Voltage	$I_C = 1\text{A}$, $I_B = 0.2\text{A}$			1.2	V
		$I_C = 2\text{A}$, $I_B = 0.5\text{A}$			1.6	V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}$, $f = 0.1\text{MHz}$		65		pF
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}$, $I_C = 0.5\text{A}$	4			MHz
t_{ON}	Turn On Time	$V_{CC} = 125\text{V}$, $I_C = 2\text{A}$ $I_{B1} = - I_{B2} = 0.4\text{A}$ $R_L = 62.5\Omega$			0.8	μs
t_{STG}	Storage Time				4	μs
t_F	Fall Time				0.9	μs

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

Typical Characteristics

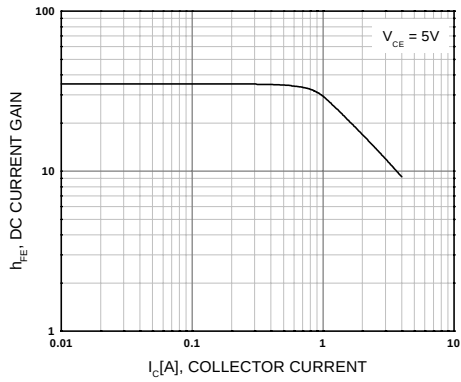


Figure 1. DC current Gain

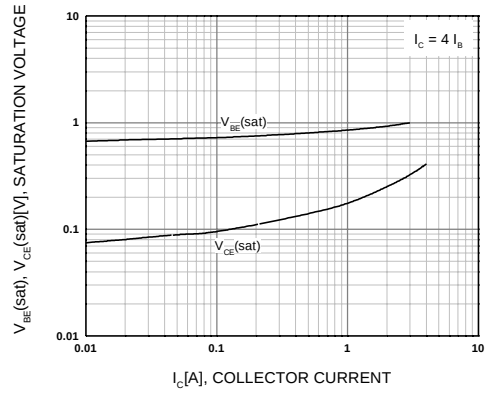


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

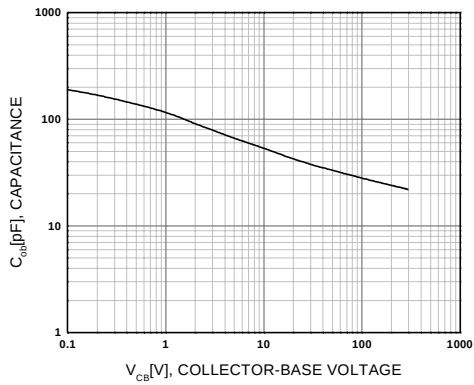


Figure 3. Collector Output Capacitance

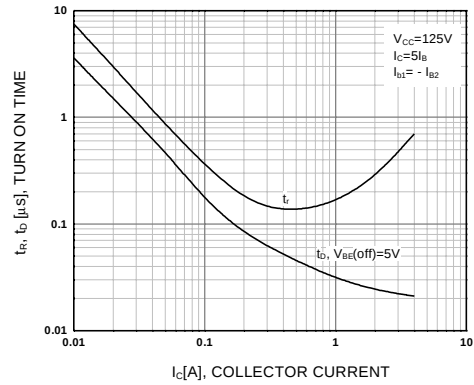


Figure 4. Turn On Time

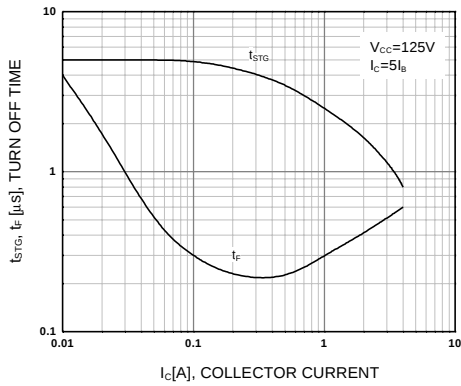


Figure 5. Turn Off Time

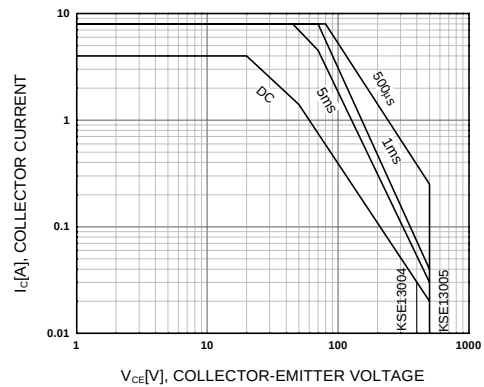


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

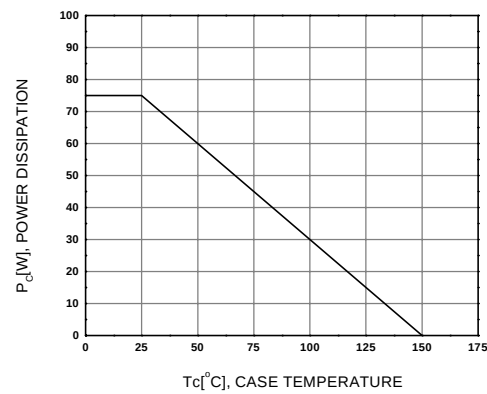


Figure 7. Power Derating

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Technical drawing of a 3-pin connector with dimensions in millimeters.

Front View Dimensions:

- Overall Width: 9.90 ± 0.20
- Pin Pitch: 2.54 TYP [2.54 ± 0.20]
- Pin Diameter: $\varnothing 3.60 \pm 0.10$
- Pin Spacing (Center-to-Center): 1.27 ± 0.10
- Pin Spacing (Edge-to-Edge): 1.52 ± 0.10
- Pin Angle: 45°
- Overall Height: 18.95 MAX.
- Height from Base to Pin Tip: 10.08 ± 0.30
- Height from Base to Pin Tip (Alternative): 15.90 ± 0.20
- Height from Base to Pin Tip (Alternative): 9.20 ± 0.20
- Height from Base to Pin Tip (Alternative): 1.30 ± 0.10
- Height from Base to Pin Tip (Alternative): 1.46
- Height from Base to Pin Tip (Alternative): 3.00
- Height from Base to Pin Tip (Alternative): 3.70
- Height from Base to Pin Tip (Alternative): 2.80 ± 0.10

Side View Dimensions:

- Overall Height: 4.50 ± 0.20
- Pin Diameter: $1.30^{+0.10}_{-0.05}$
- Pin Spacing (Edge-to-Edge): 2.40 ± 0.20
- Pin Spacing (Edge-to-Edge): $0.50^{+0.10}_{-0.05}$

Top View Dimensions:

- Overall Width: 10.00 ± 0.20

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