

General Description

The CMP13009 is a silicon npn power switching transistor in the TO220 envelope intended for use in high frequency electronic lighting ballast applications, converters, inverters, switching regulators, motor control systems, etc.

Features

- High-Voltage Capability
- High Switching Speed
- RoHS Compliant

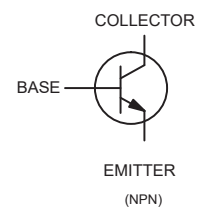
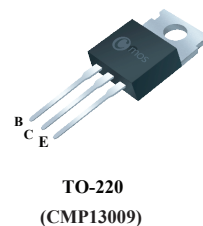
Product Summary

VCBO	VCEO	IC
700V	400V	12A

Applications

- Electronic Ballast
- Switching Regulator
- Motor Control
- Switched Mode Power Supply

TO-220 Pin Configuration



MAXIMUM RATINGS

Symbol	Parameter	Rating	Units
V_{CEO}	Collector–Emitter Voltage	400	V
V_{CBO}	Collector–Base Voltage	700	V
V_{EBO}	Emitter–Base Voltage	9	V
I_C	Collector Current	12	A
I_B	Base Current	6	A
P_D	Total Power Dissipation @ $T_c = 25^\circ\text{C}$	100	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-65 to +150	$^\circ\text{C}$

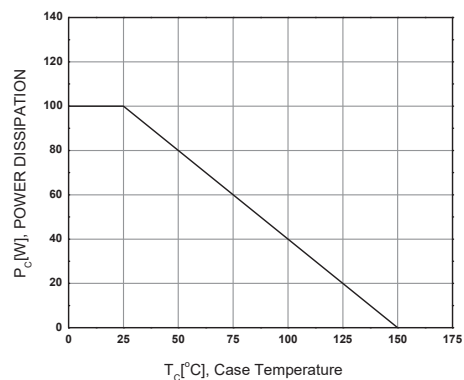
Electrical Characteristics ($T_c=25^\circ\text{C}$, unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Unit
$V_{CE(sus)}$	Collector-Emitter Sustaining 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
$V_{CE(sat)}$	Collector-emitter saturation voltage ¹ ($I_C = 5\text{ A}$, $I_B = 1\text{ A}$)	---	1.0	V
	($I_C = 8\text{ A}$, $I_B = 1.6\text{ A}$)	---	1.5	
	($I_C = 12\text{ A}$, $I_B = 3\text{ A}$)	---	3.0	
$V_{BE(sat)}$	Base-emitter saturation voltage ¹ ($I_C = 5\text{ A}$, $I_B = 1\text{ A}$)	---	1.2	V
	($I_C = 8\text{ A}$, $I_B = 1.6\text{ A}$)	---	1.6	
T_{STG}	Storage Time ($I_C = 0.5\text{ A}$)	4	6	μs
T_F	Fall Time ($I_C = 0.5\text{ A}$)	---	0.7	μs
h_{FE}	DC Current Gain ¹ ($I_C=3\text{ A}$, $V_{CE}= 5\text{ V}$)	25	---	35
	($I_C=8\text{ A}$, $V_{CE}= 5\text{ V}$)	10	---	20
f_T	Current Gain Bandwidth Product ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$)	4	---	MHz

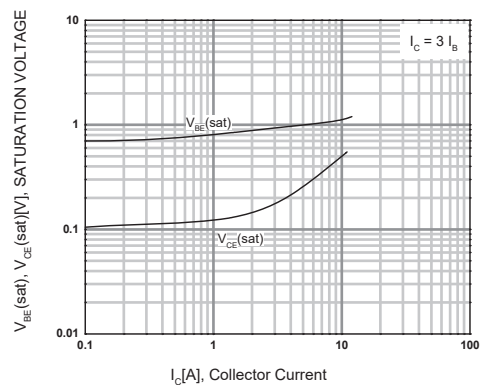
1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$.

This product has been designed and qualified for the consumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design, functions and reliability without notice.

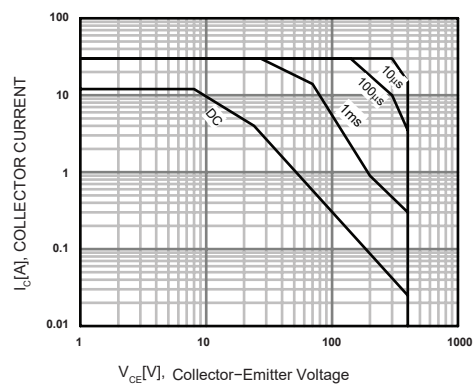
Typical Characteristics



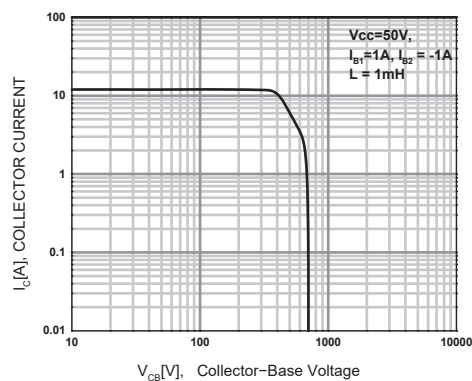
Power Derating



Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage



Forward Bias Safe Operating Area



Reverse Bias Safe Operating Area