CMB13009

NPN Silicon Transistor

General Description

The CMB13009 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.

Product Summary

VCBO	VCEO	IC
700V	400V	12A

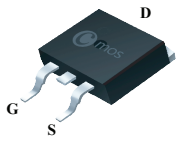
Applications

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

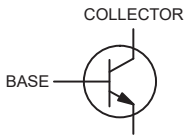
Features

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

TO-263 Pin Configuration



TO-263
(CMB13009)



EMITTER
(NPN)

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 @ Tc = 25℃	100	W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature Range	-65 to +150	℃

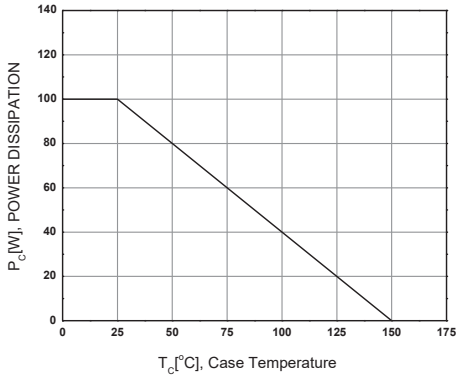
Electrical Characteristics (Tc=25℃, unless otherwise noted)

Symbol	Characteristic	Min.	Max.	Unit
$V_{CEO\,(sus)}$	Collector−Emitter Sustaining Voltage (I_C = 10 mA, I_B = 0)	400	---	V
I_{EBO}	Emitter cut-off current (V_{EB} = 9 V, I_C = 0)	---	1	mA
$V_{CE(sat)}$	Collector-emitter saturation voltage [1] (I_C = 5A, I_B = 1A) (I_C = 8A, I_B = 1.6A) (I_C = 12A, I_B = 3A)	 --- --- ---	 1.0 1.5 3.0	V
$V_{BE(sat)}$	Base-emitter saturation voltage [1] (I_C = 5A, I_B = 1A) (I_C = 8A, I_B = 1.6A)	 --- ---	 1.2 1.6	V
T_{STG}	Storage Time (Ic = 0.5 A)	4	6	μs
T_F	Fall Time (Ic = 0.5 A)	---	0.7	μs
h_{FE}	DC Current Gain [1] (I_C=3A , V_{CE}= 5V) (I_C=8A , V_{CE}= 5V)	 25 10	 --- ---	 40 25
f_T	Current Gain Bandwidth Product (I_C = 500 mA , V_{CE} = 10 V)	4	---	MHz

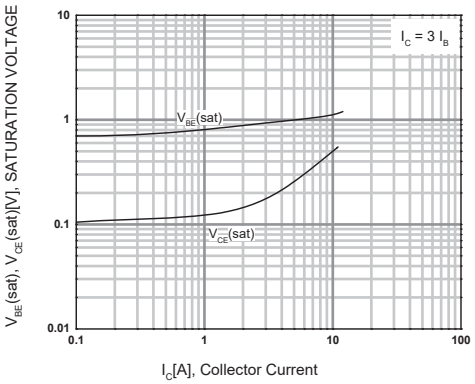
1. Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2%.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

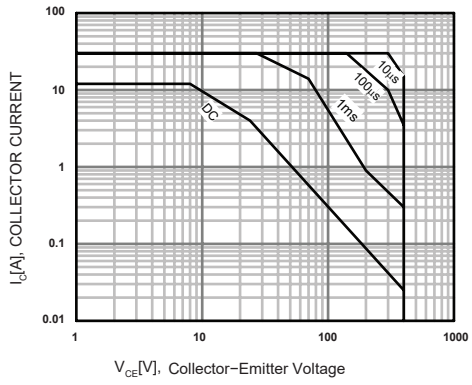
Typical Characteristics



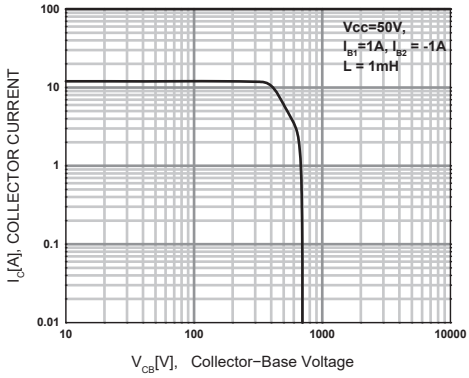
Power Derating



Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage



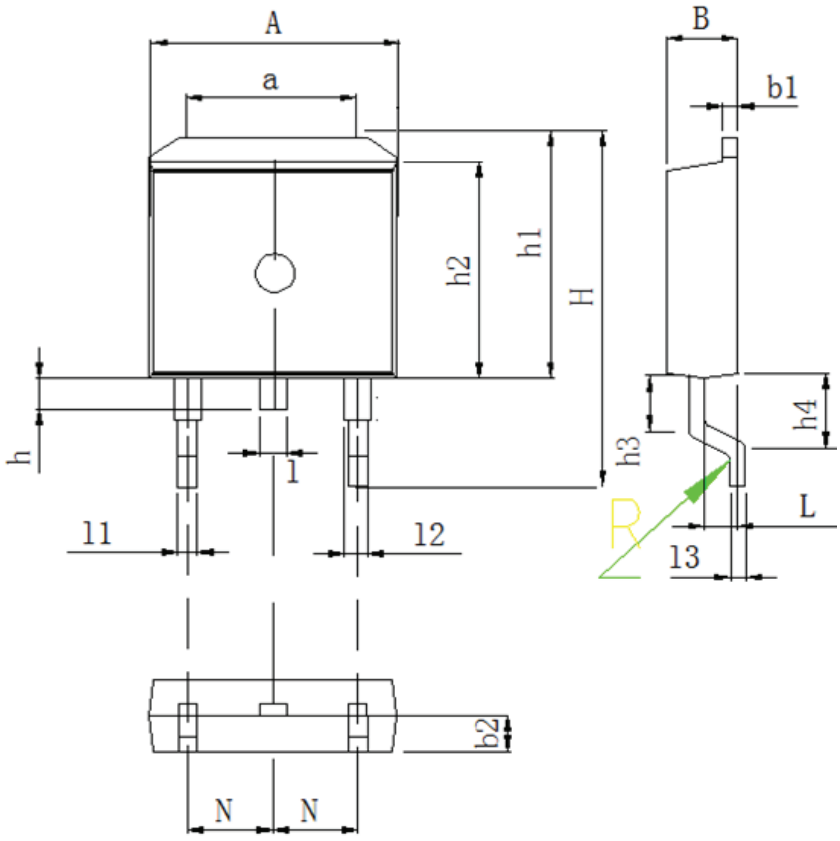
Forward Bias Safe Operating Area



Reverse Bias Safe Operating Area

Package Dimension

TO-263 Unit :mm



DIM	MILLIMETERS
A	9.8±0.2
a	7.4±0.4
B	4.5±0.2
b1	1.3±0.05
b2	2.4±0.2
H	15.5±0.3
h	1.54±0.2
h1	10.5±0.2
h2	9.2±0.1
h3	1.54±0.2
h4	2.7±0.2
L	2.4±0.2
l	1.3±0.1
l1	0.8±0.1
l2	1.3±0.1
l3	0.5±0.1
N	2.54±0.1
R	0.5R±0.05