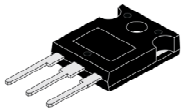
Silicon NPN Power Transistor

BD245 A/B/C

TO-3P Leaded
Plastic Package
RoHS compliant



TO-3P

DESCRIPTION:

1. Collector Current : I_C= 10A
2. Collector-Emitter Breakdown Voltage:- $V_{(BR)CEO}$ = 45V(Min)- BD245; 60V(Min)- BD245A 80V(Min)- BD245B; 100V(Min)- BD245C
3. Complement to Type **BD246/A/B/C**

APPLICATIONS:

Designed for use in general purpose power amplifier and switching applications

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

DESCRIPTION		SYMBOL	VALUE	UNIT
Collector-Emitter Voltage (R_{BE}= 100Ω)	BD245	V_{CER}	55	V
	BD245A		70	
	BD245B		90	
	BD245C		115	
Collector-Emitter Voltage	BD245	V_{CEO}	45	V
	BD245A		60	
	BD245B		80	
	BD245C		100	
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current-Continuous		I_C	10	A
Collector Current-Peak		I_{CM}	15	
Base Current		I_B	3	
Collector Power Dissipation	@ T_a=25℃	P_C	3	W
	@ T_C=25℃		80	
Junction Temperature		T_J	150	ºC
Storage Temperature Range		T_{stg}	-65~150	

THERMAL CHARACTERISTICS:

DESCRIPTION	SYMBOL	VALUE (Max)	UNIT
Thermal Resistance, Junction to Case	$R_{\theta j\text{-}c}$	1.56	℃/W

ELECTRICAL CHARACTERISTICS at T_a = 25 °C

DESCRIPTION		SYMBOL	TEST CONDITIONS	VALUES			UNIT
				MIN	Typ.	MAX	
Collector-Emitter Breakdown Voltage	BD245	$V_{(BR)CEO}$	I_C= 30mA ;I_B=0	45	--	--	V
	BD245A			60	--	--	
	BD245B			80	--	--	
	BD245C			100	--	--	
Collector-Emitter Saturation Voltage		$V_{CE(sat)-1}$	I_C= 3A; I_B= 0.3A	--	--	1.0	
		$V_{CE(sat)-2}$	I_C= 10A; I_B= 2.5A	--	--	4.0	
Base-Emitter On Voltage		$V_{BE(on)-1}$	I_C= 3A ; V_{CE}= 4V	--	--	1.6	
		$V_{BE(on)-2}$	I_C= 10A ; V_{CE}= 4V	--	--	3.0	
Collector Cutoff Current	BD245	I_{CES}	V_{CE}= 55V; V_{BE}= 0	--	--	0.4	mA
	BD245A		V_{CE}= 70V; V_{BE}= 0	--	--		
	BD245B		V_{CE}= 90V; VBE= 0	--	--		
	BD245C		V_{CE}= 115V; V_{BE}= 0	--	--		
Collector Cutoff Current	BD245/A	I_{CEO}	V_{CE}= 30V;IB= 0	--	--	0.7	
	BD245B/C		V_{CE}= 60V;I_B= 0	--	--		
Emitter Cutoff Current		I_{EBO}	V_{EB}= 5V; I_C=0	--	--	1	
DC Current Gain		h_{FE-1}	I_C= 1A ; V_{CE}= 4V	40	--	--	
		h_{FE-2}	I_C= 3A ; V_{CE}= 4V	20	--	--	
		h_{FE-3}	I_C= 10A ; V_{CE}= 4V	4	--	--	
Current-Gain—Bandwidth Product		f_T	I_C= 0.5A ;V_{CE}= 10V,f_{test}= 1.0MHz	3.0	--	--	MHz
Switching times							
Turn-on Time		t_{on}	I_C= 1A; I_{B1}= -I_{B2}= 0.1A; R_L=20Ω; $V_{BE(OFF)}$= -3.7V	--	0.2	--	µs
Turn-off Time		t_{off}		--	0.8	--	µs

Typical Characteristic Curves

Fig. 1. DC Current Gain v/s Collector current

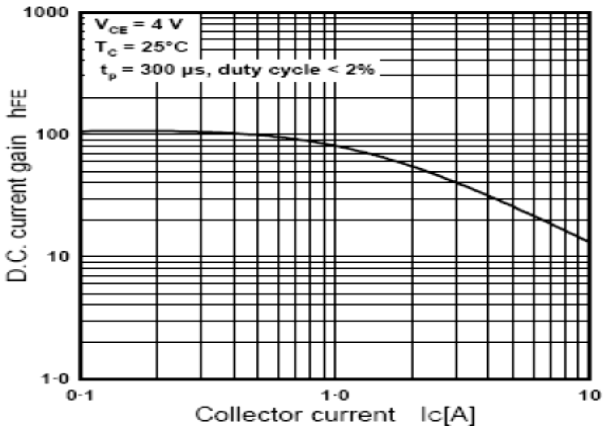


Fig. 2. Saturation voltage v/s Collector current

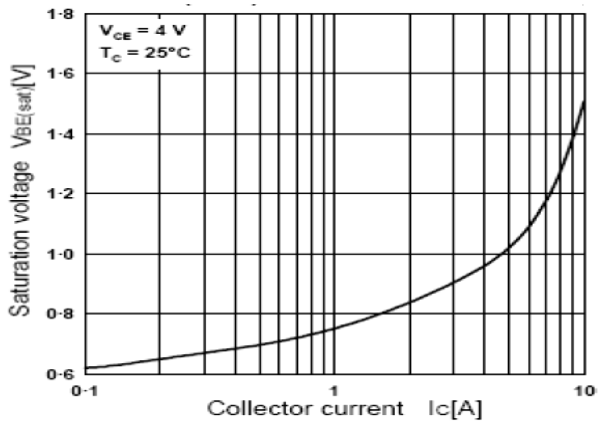


Fig. 3. Safe operating area

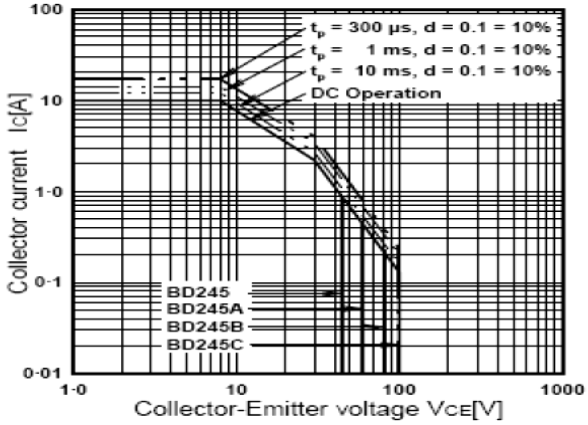


Fig. 4. Saturation voltage v/s Base current

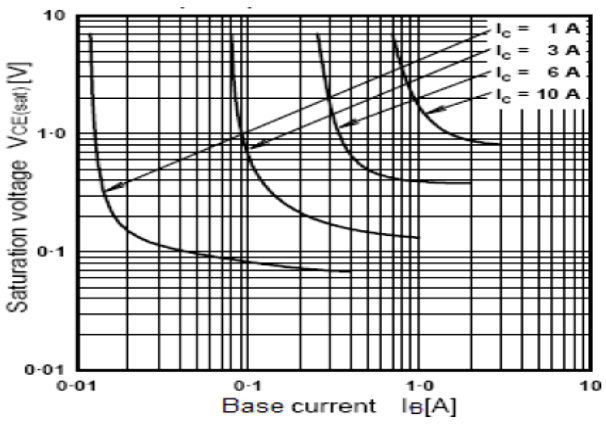
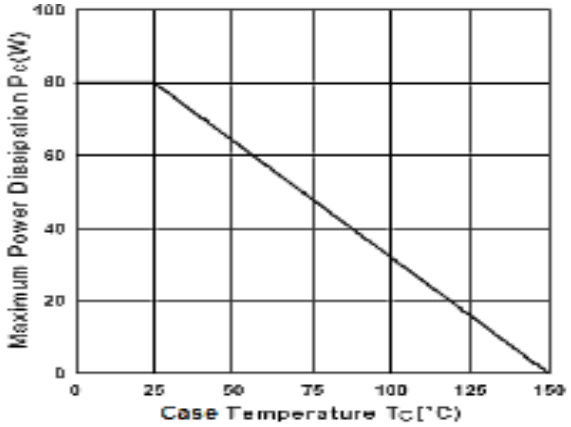


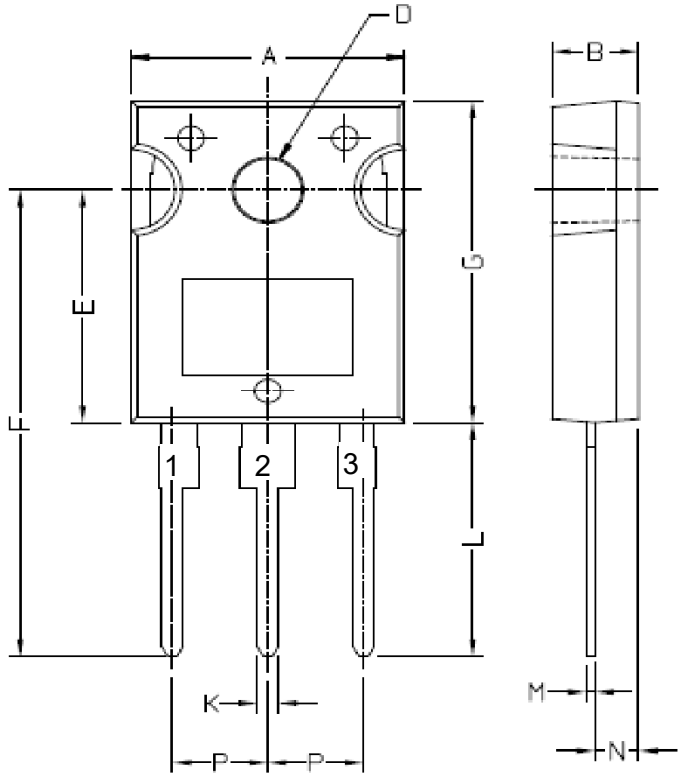
Fig. 5. Power Derating curve



BD245 A,B,C
Rev2_310120241EM

Package Details

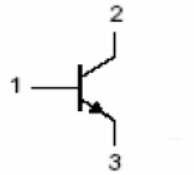
TO-3P Package Outline and Dimension



DIMENSIONS		
REF DIM	MIN	MAX
A	15.20	15.80
B	4.90	5.10
øD	3.90	4.10
E	14.20	14.80
F	28.20	30.50
G	19.80	20.20
K	1.00	1.30
L	13.90	14.50
M	0.40	0.60
N	2.00	2.75
P	5.20	5.70

ALL DIMENSION ARE MM

Pin Configuration:



PIN 1. BASE
2.COLLECTOR
3. EMITTER

Recommended Reflow Solder Profiles

The recommended reflow solder profiles for Pb and Pb-free devices are shown below.

Figure 1 shows the recommended solder profile for devices that have Pb-free terminal plating, and where a Pb-free solder is used.

Figure 2 shows the recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

Figure 1

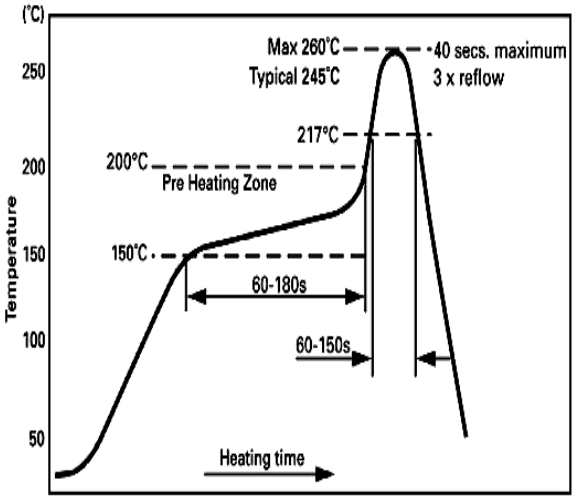
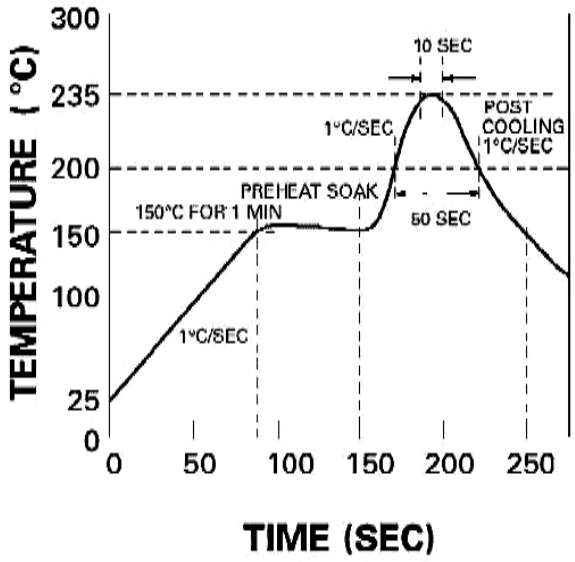


Figure 2

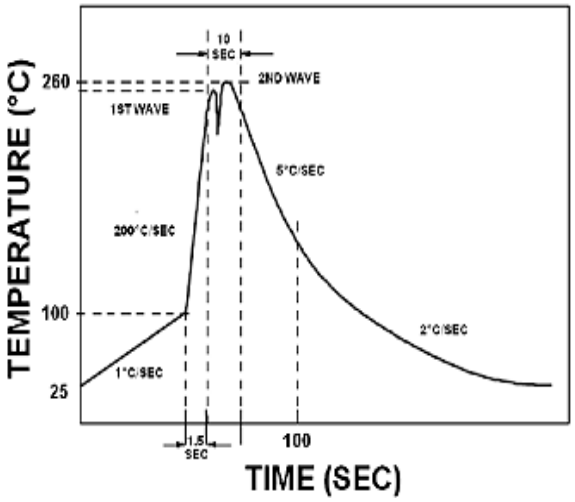


Reflow profiles in tabular form

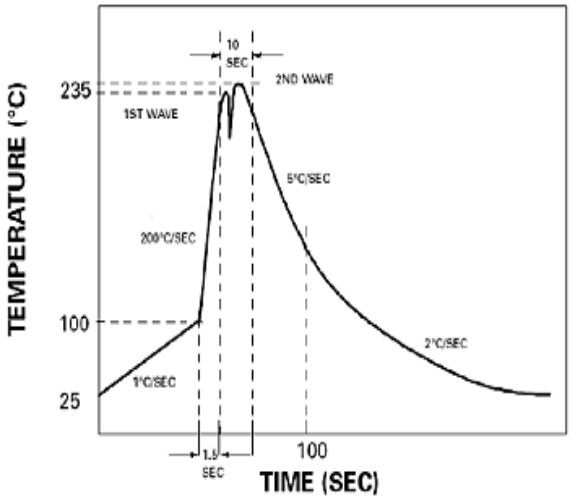
Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150-170°C 60-180 seconds	 150-200°C 60-180 seconds
Time maintained above: – Temperature – Time	 200°C 30-50 seconds	 217°C 60-150 seconds
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	40 seconds
Ramp-Down Rate	3°C/second max.	6°C/second max.

Recommended Wave Solder Profiles

The Recommended solder Profile For Devices with Pb-free terminal plating where a Pb-free solder is used



The Recommended solder Profile For Devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with leaded solder



Wave Profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~200°C/second	~200°C/second
Heating rate during preheat	Typical 1-2, Max 4°C/sec	Typical 1-2, Max 4°C/Sec
Final preheat Temperature	Within 125°C of Solder Temp	Within 125°C of Solder Temp
Peak Temperature	235°C	260°C max.
Time within +0 -5°C of actual Peak	10 seconds	10 seconds
Ramp-Down Rate	5°C/second max.	5°C/second max

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).
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CIN No. U32109DL1964PTC004291

BD245 A,B,C
Rev2_310120241EM