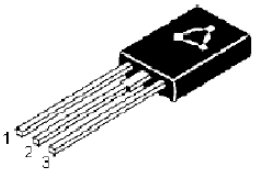
PNP Power Darlington Transistor

multicomp PRO



Pin Configuration:
1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings

Parameter	Symbol	Values	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}		
Emitter Base Voltage	V_{EBO}	5	
Collector Current	I_C	4	A
Base Current	I_B	0.1	
Total Power Dissipation at T_a = 25°C Derate above 25°C	P_D	1.25 10	W mW/°C
Total Power Dissipation at T_C = 25°C Derate above 25°C		40 0.32	W W/°C
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	°C

Thermal Resistance

Junction to Case	$R_{th\ (j-c)}$	3.13	°C/W
Junction to Ambient in Free Air	$R_{th\ (j-a)}$	100	

Electrical Characteristics (T_c = 25°C unless specified otherwise)

Parameter	Symbol	Test Condition	Min.	Max.	Unit
Collector Emiiter Voltage	V_{CEO}*	I_C = 50mA, I_B = 0	60	-	V
Collector Cut off Current	I_{CEO} I_{CBO}	V_{CE} = Half Rated V_{CEO}, I_B = 0 V_{CB} = Rated V_{CBO}, I_E = 0	-	500 0.2	µA mA
	I_{CBO}	V_{CB} = Rated V_{CBO}, I_E = 0 T_C = 100°C		2	mA
Emitter Cut off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	2	mA
Collector Emitter Saturation Voltage **NON A** **A**	$V_{CE\ (sat)}$*	I_C = 1.5A, I_B = 6mA I_C = 2A, I_B = 8mA	-	2.5 2.8	V
Base Emitter On Voltage **NON A** **A**	$V_{EB\ (on)}$*	I_C = 1.5A, V_{CE} = 3V I_C = 2A, V_{CE} = 3V	-	2.5 2.5	
DC Current Gain **NON A** **A**	h_{FE}*	I_C = 1.5A, V_{CE} = 3V I_C = 2A, V_{CE} = 3V	750 750	-	-
Small Signal Current Gain	$\|h_{fe}\|$	I_C = 1.5A, V_{CE} = 3V f = 1MHz	1	-	-

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

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.

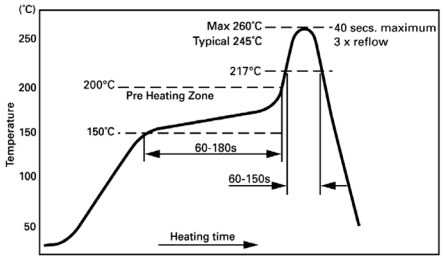


Figure 1

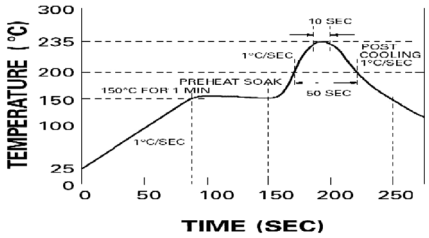
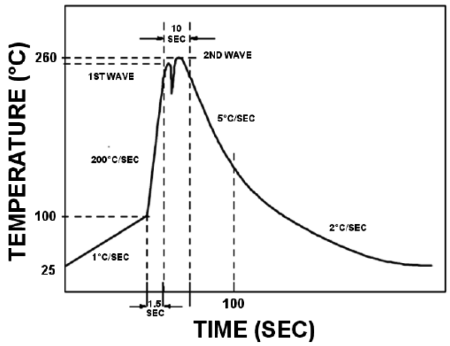


Figure 2

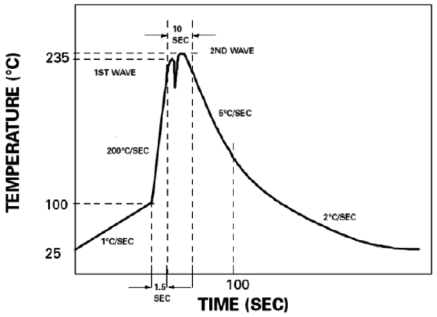
Reflow profiles in Tabular Form

Profile Feature	Sn-Pb System	Pb-Free System
Average Ramp-Up Rate	~3°C/second	~3°C/second
Preheat – Temperature Range – Time	 150°C ~ 170°C 60-180 seconds	 150°C ~ 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.



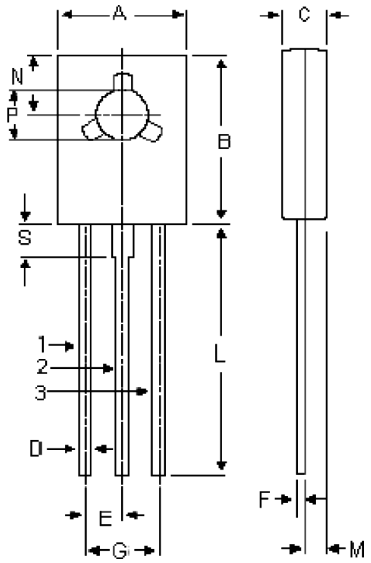
The recommended solder profile for devices with Pb-free terminal plating used with leaded solder, or for devices with leaded terminal plating used with a leaded solder.

Wave Profile in Tabular Form

Profile Features	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
Time within +0 -5°C of actual Peak	10 Seconds	10 Seconds
Ramp-Down Rate	5°C/Second Max.	5°C/Second Max.

Recommended Manual Soldering
3 Sec at 350°C or 10 Sec at 260°C for Sn/Pb System

Diagram



Pin Configuration:
1. Emitter
2. Collector
3. Base

Dimensions	Min.	Max.
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 (Typical)	
F	0.49	0.75
G	4.5 (Typical)	
L	15.7 (Typical)	
M	1.27 (Typical)	
N	3.75 (Typical)	
P	3	3.2
S	2.5 (Typical)	

Part Number Table

Description	Part Number
Darlington Transistor, TO-126	BD678

Dimensions : Millimetres

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