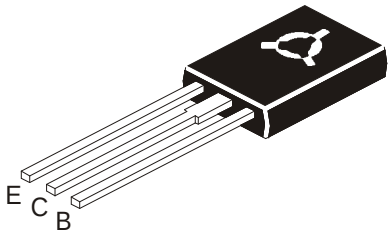
Continental Device India Limited

An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company

NPN SILICON POWER TRANSISTOR

CR13003



TO126
Plastic Package

Suitable for Lighting, Switching Regulator and Motor Control

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Base Voltage	V_{CBO}	700	V
Collector Emitter (sus) Voltage	V_{CEO}	400	V
Emitter Base Voltage	V_{EBO}	9.0	V
Collector Current Continuous	I_C	1.5	A
Peak (1)	I_{CM}	3.0	A
Base Current Continuous	I_B	0.75	A
Peak (1)	I_{BM}	1.5	A
Emitter Current Continuous	I_E	2.25	A
Peak (1)	I_{EM}	4.5	A
Power Dissipation at T_a=25 ºC	P_D	1.4	W
Derate Above 25ºC		11.2	mW/ ºC
Power Dissipation at T_c=25 ºC	P_D	40	W
Derate Above 25ºC		320	mW/ ºC
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to+150	ºC

THERMAL RESISTANCE

Junction to Case	$R_{th\ (j-c)}$	3.12	ºC/W
Junction to Ambient	$R_{th\ (j-a)}$	89	ºC/W
Maximum Lead Temperature for Soldering Purpose: 1/8" from Case for 5 Seconds	T_L	275	ºC

(1) Pulse Test: Pulse Width=5ms, Duty Cycle=10%

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector Base Voltage	V_{CBO}	I_C=1mA, I_E=0	600			V
Collector Emitter (sus) Voltage	*$V_{CEO(sus)}$	I_C=10mA, I_B=0	400			V
Collector Cut Off Current	I_{CBO}	V_{CB}=700V, I_E=0			1.0	mA
		V_{CB}=700V, I_E=0, T_c=100ºC			5.0	mA
Emitter Cut Off Current	I_{EBO}	V_{EB}=9V, I_C=0			1.0	mA

***Pulse Test: PW=300µs, Duty Cycle=2%**

CR13003Rev230106E

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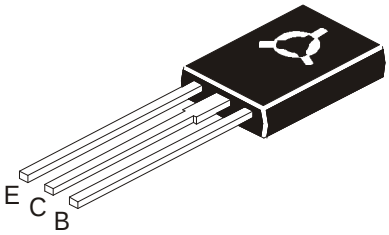


TO126
Plastic Package

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	*h_{FE}	**I_C=0.3A, V_{CE}=2V	10		30	
		I_C=0.5A, V_{CE}=2V	8		40	
		I_C=1A, V_{CE}=2V	4		25	
Collector Emitter Saturation Voltage	*$V_{CE\ (sat)}$	I_C=0.5A, I_B=0.1A			0.5	V
		I_C=1A, I_B=0.25A			1.0	V
		I_C=1.5A, I_B=0.5A			3.0	V
		I_C=1A, I_B=0.25A,T_c=100ºC			1.0	V
Base Emitter Saturation Voltage	*$V_{BE\ (sat)}$	I_C=0.5A, I_B=0.1A			1.0	V
		I_C=1A, I_B=0.25A			1.2	V
		I_C=1A, I_B=0.25A,T_c=100ºC			1.1	V

DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Current Gain Bandwidth Product	f_T	I_C=100mA, V_{CE}=10V, f=1MHz	4.0			MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=0.1MHz		21		pF

SWITCHING TIME

Delay Time	t_d	V_{CC}=125V, I_C=1A, I_{B1}=I_{B2}=0.2A, t_p=25µs, Duty Cycle=1%			0.1	µs
Rise Time	t_r				1.0	µs
Storage Time	t_s				4.0	µs
Fall Time	t_f				0.7	µs

Voltage Storage Time	t_{sv}	V_{Clamp}=300V, I_C=1A, I_{B1}=0.2A, $V_{BE(off)}$=5V, T_c=100ºC			4.00	µs
Crossover Time	t_C				0.75	µs
Fall Time	t_{fi}			0.15		µs

***Pulse Test: PW=300µs, Duty Cycle=2%**

**** h_{FE} Classification:-**

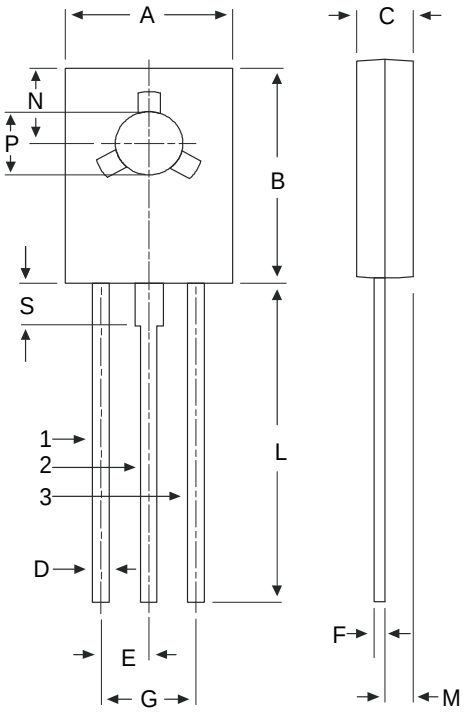
Note:- Product is pre selected in DC current gain (Groups A to F). CDIL reserves the right to ship any of the groups according to production availability.	**A**	**B**	**C**	**E**	**F**
	11-16	**15-19**	**18-22**	**21-25**	**24-30**
MARKING	**CR 13003A XY**	**CR 13003B XY**	**CR 13003C XY**	**CR 13003E XY**	**CR 13003F XY**

X = Year of Manufacturer Code
Y = Month Code

***Pulse Test:- PW=300µs, Duty Cycle=2%**

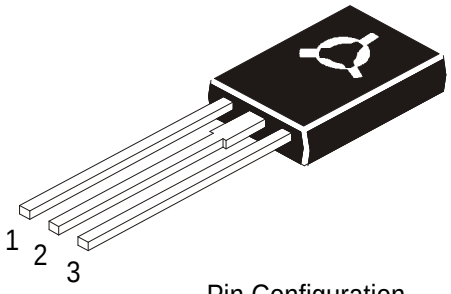
CR13003Rev230106E

TO-126 (SOT-32) Plastic Package



DIM	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 TYP.	
F	0.49	0.75
G	4.5 TYP.	
L	15.7 TYP.	
M	1.27 TYP.	
N	3.75 TYP.	
P	3.0	3.2
S	2.5 TYP.	

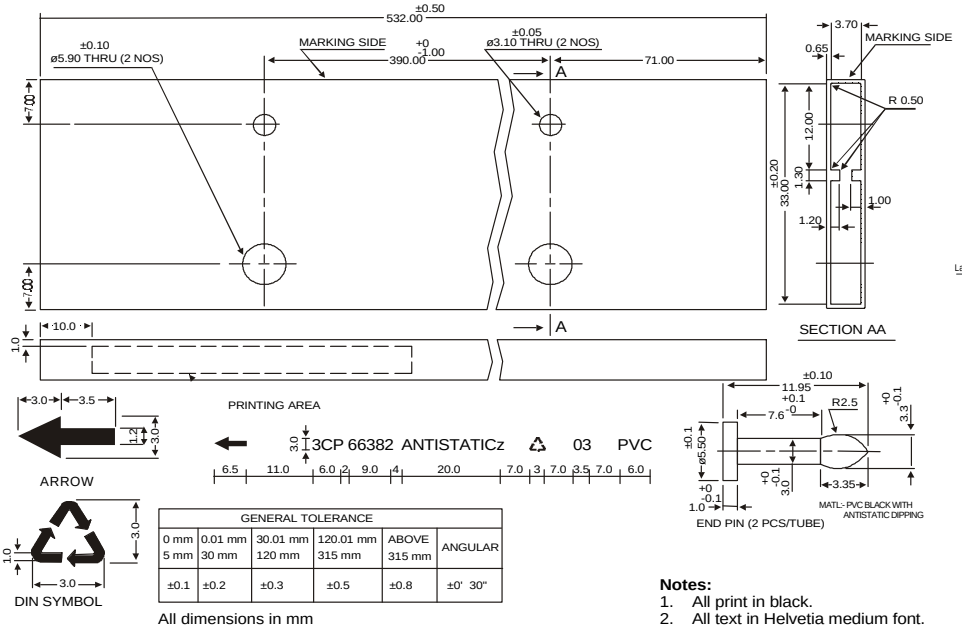
All dimensions in mm.



Pin Configuration

1. Emitter
2. Collector
3. Base

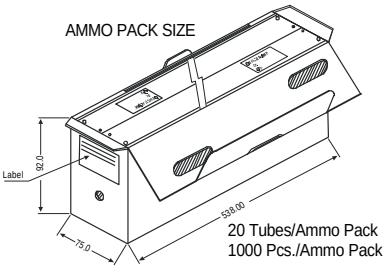
TO-126 TUBE PACKING



GENERAL TOLERANCE					
0 mm 5 mm	0.01 mm 30 mm	30.01 mm 120 mm	120.01 mm 315 mm	ABOVE 315 mm	ANGULAR
±0.1	±0.2	±0.3	±0.5	±0.8	±0° 30"

All dimensions in mm

Notes:
1. All print in black.
2. All text in Helvetia medium font.



20 Tubes/Ammo Pack
1000 Pcs./Ammo Pack

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-126 Bulk	500 pcs/polybag	340 gm/500 pcs	3" x 7.5" x 7.5"	2K	17" x 15" x 13.5"	32K	31 kgs
TO-126 Tube	50 pcs/tube	73 gm/50 pcs	3" x 3.7" x 21.5"	1K	19" x 19" x 19"	10K	15 kgs

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

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