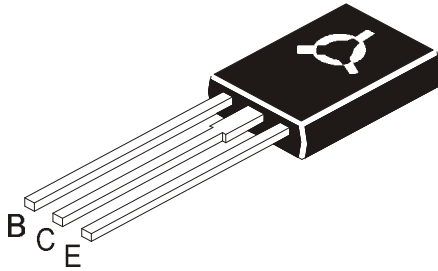


NPN SILICON POWER TRANSISTOR

CD13003

**TO126
Plastic Package**



Applications

Suitable for Lighting, Switching Regulator and Motor Control

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Base Voltage	V_{CBO}	600	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 @ $T_a=25^\circ\text{C}$	P_D	1.4	W
Derate Above 25°C		11.2	mW/°C
Power Dissipation @ $T_c=25^\circ\text{C}$	P_D	45	W
Derate Above 25°C		360	mW/°C
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to+150	°C

THERMAL RESISTANCE

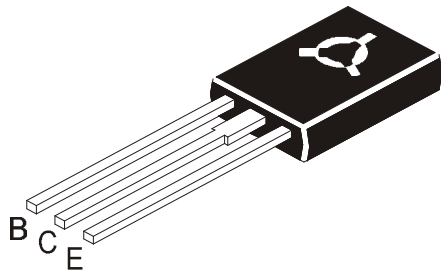
Junction to Case	$R_{th(j-c)}$	2.77	°C/W
Junction to Ambient	$R_{th(j-a)}$	89	°C/W
Maximum Lead Temperature for Soldering Purpose: 1/8" from Case for 5 Seconds	T_L	275	°C

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

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless specified otherwise)

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

*Pulse Test: PW=300µs, Duty Cycle=2%



ELECTRICAL CHARACTERISTICS (T_a=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
DC Current Gain	*h _{FE}	**I _C =0.5A, V _{CE} =5V	11		30	
		I _C =1A, V _{CE} =5V	5		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			2.5	V
		I _C =1A, I _B =0.25A, T _c =100°C			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 =100°C			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

Turn On Time	t _{on}	V _{CC} =125V, I _C =1A, I _{B1} =0.2A, I _{B2} =0.2A			1.1	μs
Storage Time	t _{stg}		2.0		4.0	μs
Fall Time	t _r				0.7	μs

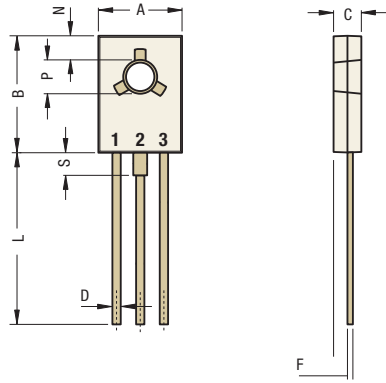
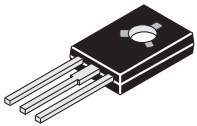
**** h_{FE} Classification:-**

Note:- Product is pre selected in DC current gain (Groups A to E). CDIL reserves the right to ship any of the groups according to production availability.	A	B	C	E
	11-16	15-20	19-25	24-30
	CD	CD	CD	CD
MARKING	13003A	13003B	13003C	13003E
	XY	XY	XY	XY
X = Year of Manufacturer Code Y = Month Code				

*Pulse Test:- PW=300μs, Duty Cycle=2%

TO126
Plastic Package

TO-126
Leaded Plastic
Package

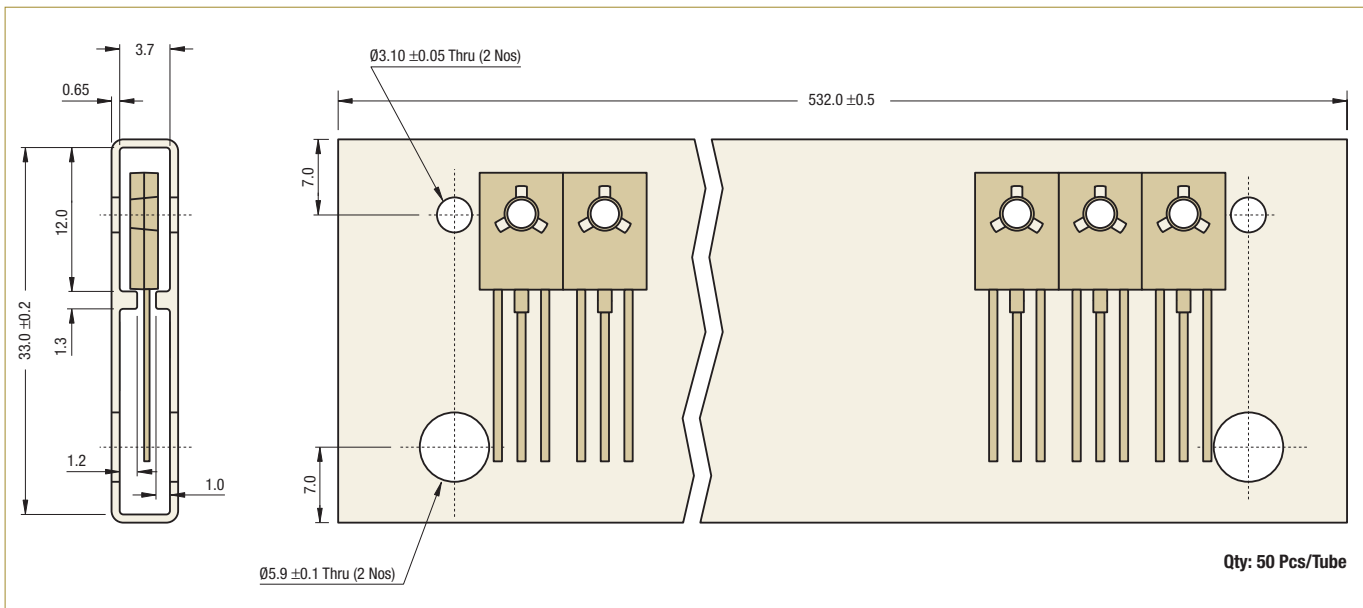


DIM	Min	Max	DIM	Min	Max
A	7.12	8.38	G	4.07	5.08
B	10.16	11.43	L	15.00	16.63
C	2.29	3.04	M	0.89	1.65
D	0.64	0.88	N	3.31	4.44
E	2.040	2.285	P	2.54	3.30
F	0.39	0.63	S	—	2.54

Pin Configurations

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

TO-126 Series Packaging Tube



Packaging Specifications ...

T & A: Tape and Ammo Pack; T & R: Tape and Reel; Bulk: Loose in Poly Bags; Tube: Tube and Carton; K: 1,000

Package / Case Type	Packaging Type	Inner Carton				Outer Carton		
		Std. Packing Qty	Qty	Size L x W x H (cm)	Gross Weight (Kg)	Qty	Size L x W x H (cm)	Gross Weight (Kg)
TO-126	Bulk	2,000	2K	19 x 19 x 8	1.4	20K	46 x 38 x 22	15.6
	Tube	1,000 (50 pcs/tube)	1K	55 x 8 x 10	1.5	10K	55 x 35 x 27	16.3

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 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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