PNP Silicon Low Power Transistors

2N3635
2N3636
2N3637

TO-39

TO-39
Metal Can Package
RoHS compliant

Descriptions:

2N3635, 2N3636 and 2N3637 are PNP Silicon Transistors For High Voltage Switching and Low Power Amplifier.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE			UNIT
		2N3635	2N3636	2N3637	
Collector Emitter Voltage	V_{CEO}	140	175	175	V
Collector Base Voltage	V_{CBO}	140	175	175	V
Emitter Base Voltage	V_{EBO}	5			V
Collector Current	I_C	1			A
Power Dissipation @ T_a=25ºC	P_D	1			W
Derate Above 25ºC		5.71			mW/°C
Power Dissipation@ T_c=25ºC	P_D	5			W
Derate Above 25ºC		28.6			mW/°C
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-65 to +200			W

Thermal Resistance

Junction to Ambient	$R_{th(j-a)}$	175	°C/W
Junction to Case	$R_{th(j-c)}$	35	°C/W

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITION	VALUE			UNIT
				MIN	TYP	MAX	
Collector Emitter Breakdown Voltage	2N3635	B_{VCEO} [1]	I_C=10mA, I_B =0	140	--	--	V
	2N3636			175	--	--	V
	2N3637			175	--	--	V
Collector Base Breakdown Voltage	2N3635	B_{VCBO}	I_C=100μA, I_E =0	140	--	--	V
	2N3636			175	--	--	V
	2N3637			175	--	--	V
Emitter Base Breakdown Voltage		B_{VEBO}	I_E=10μA, I_C=0	5	--	--	V
Collector Leakage Current		I_{CBO}	V_{CB}=100V, I_E=0	--	--	100	nA
Emitter Leakage Current		I_{EBO}	V_{EB}=3V, I_C=0	--	--	50	nA
Collector Emitter Saturation Voltage		$V_{CE(sat)}$ [1]	I_C=10mA, I_B =1mA	--	--	0.3	V
			I_C=50mA, I_B =5mA	--	--	0.5	V
Base Emitter Saturation Voltage		$V_{BE(Sat)}$ [1]	I_C=10mA,I_B=1mA	--	--	0.8	V
			I_C=50mA,I_B=5mA	0.65	--	0.9	V
DC Current Gain	2N3635	h_{FE}	I_C=2mA,V_{CE}=10V	80	--	--	
	2N3636			40	--	--	
	2N3637			80	--	--	
	2N3635		I_C=1mA,V_{CE}=10V	90	--	--	
	2N3636			45	--	--	
	2N3637			90	--	--	
	2N3635		I_C=10mA [1],V_{CE}=10V	100	--	--	
	2N3636			50	--	--	
	2N3637			100	--	--	
	2N3635		I_C=50mA [1],V_{CE}=10V	100	--	300	
	2N3636			50	--	130	
	2N3637			100	--	300	
	2N3635		I_C=150mA [1],V_{CE}=10V	50	--	--	
	2N3636			25	--	--	
	2N3637			50	--	--	

SMALL SIGNAL CHARACTERISTICS

Transition Frequency	2N3635	f_T	I_C=30mA, V_{CE}=30V f=100MHz	200	--	--	MHz
	2N3636			150	--	--	
	2N3637			200	--	--	
Current Gain	2N3635	$\lvert h_{fe} \rvert$	I_C=10mA, V_{CE}=10V, f=1kHz	80	--	320	
	2N3636			40	--	160	
	2N3637			80	--	320	
Input Impedence	2N3635	h_{ie}	I_C=10mA, V_{CE}=10V	200	--	1200	Ω
	2N3636			100	--	600	
	2N3637			200	--	1200	

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	VALUE			UNIT
			MIN	TYP	MAX	
Reverse Voltage Feedback Ratio	h_{re}	I_C=10mA, V_{CE}=10V	--	--	$3X10^{-4}$	
Output Admittance	h_{oe}	I_C=10mA, V_{CE}=10V	--	--	200	μ℧
Noise Figure	N_F	I_C= 500mA, V_{CE}=10V, Rs=1KΩ	--	--	--	
Output Capacitance	C_{ob}	V_{CB}=20V, I_E=0, f=100KHz	10	--	--	pF
Input Capacitance	C_{ib}	V_{EB}=1V, I_C=0, f=100KHz	75	--	--	pF
Turn on Time	t_{on}	I_C=50mA, I_{B1}=I_{B2}=5mA V_{CC}=100V, V_{BE}=4V	400	--	--	ns
Turn off Time	t_{off}	I_C=50mA, I_{B1}=I_{B2}=5mA V_{CC}=100V, V_{BE}=4V	600	--	--	ns

Note:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
2. Voltage and currents values are in negative (-).

Typical Characteristic curves

Fig 1: DC Current Gain

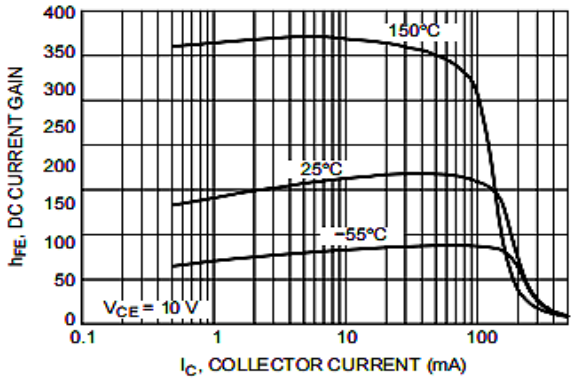


Fig 2: Collector−Emitter Saturation Voltage

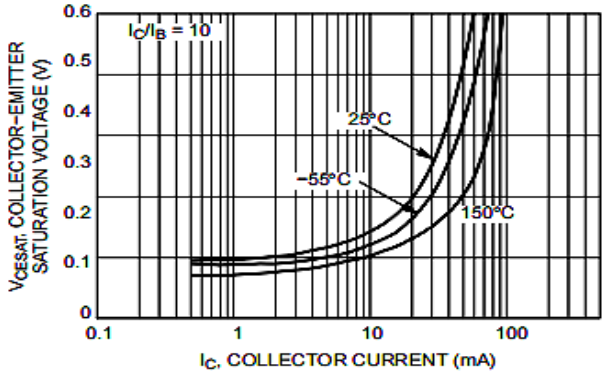


Fig 3: Collector Saturation Region

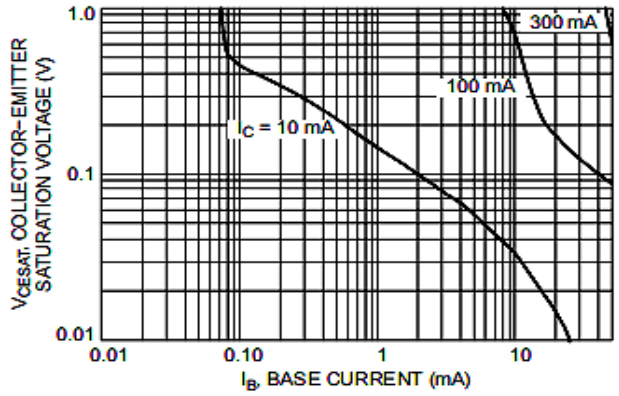


Fig 4: Base−Emitter Saturation Voltage

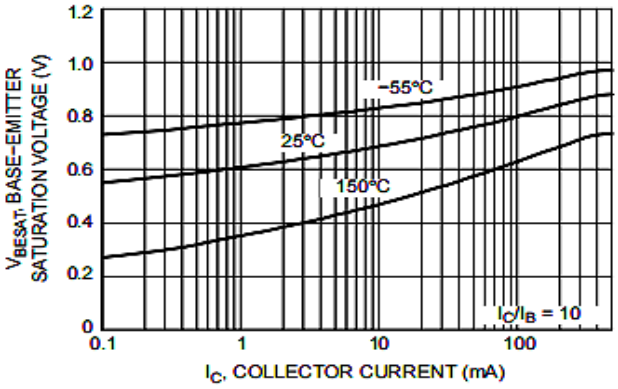


Fig 5: Base−Emitter Voltage

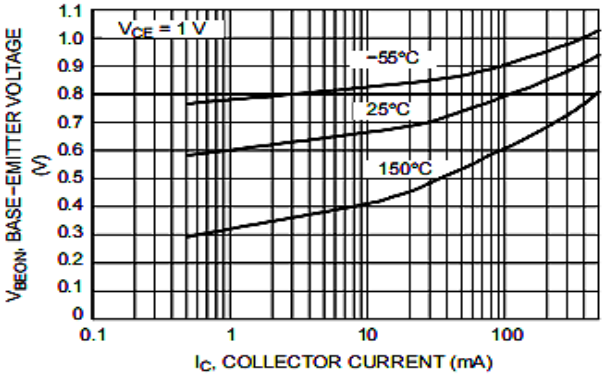
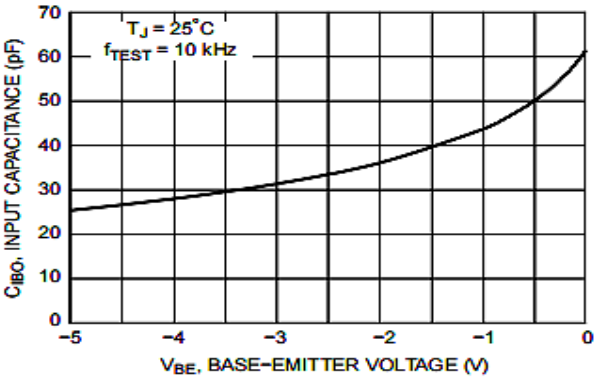


Fig 6: Input Capacitance



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Typical Characteristic curves

Fig 7: Output Capacitance

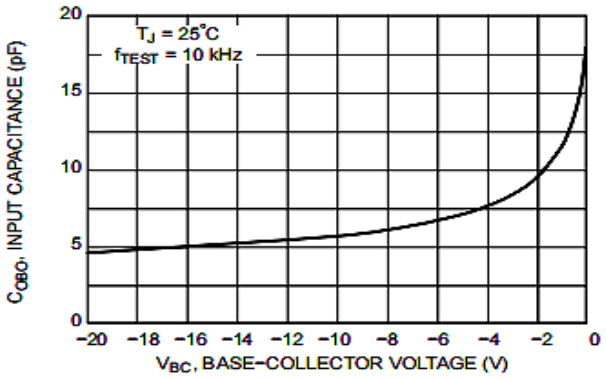
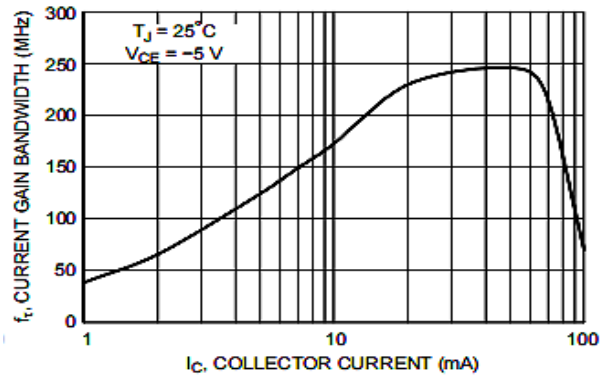
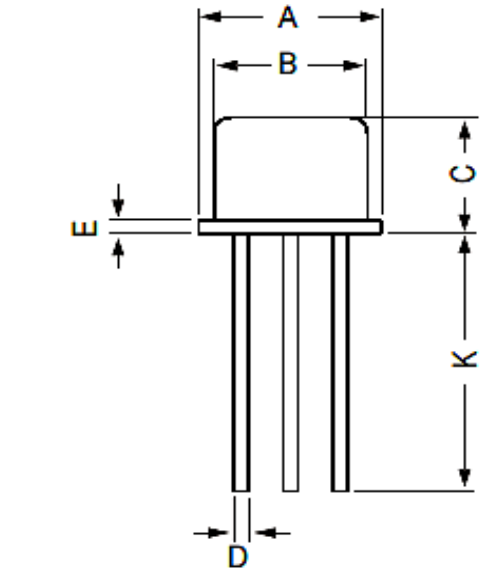


Fig 8: Current Gain Bandwidth Product



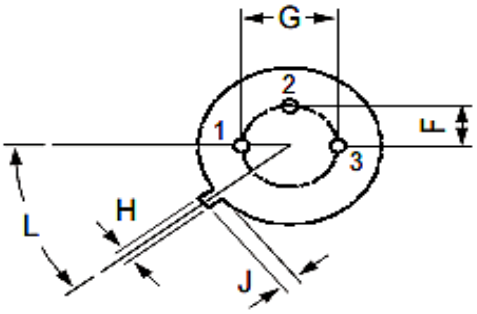
PACKAGE DETAILS

TO-39 Metal Can Package



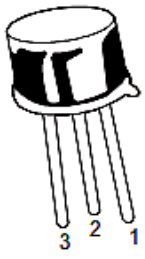
DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	-	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	-
L	42 DEG	48 DEG

All Dimension are in mm



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR



Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	540 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 15" x 13.5"	32K	40 kgs

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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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