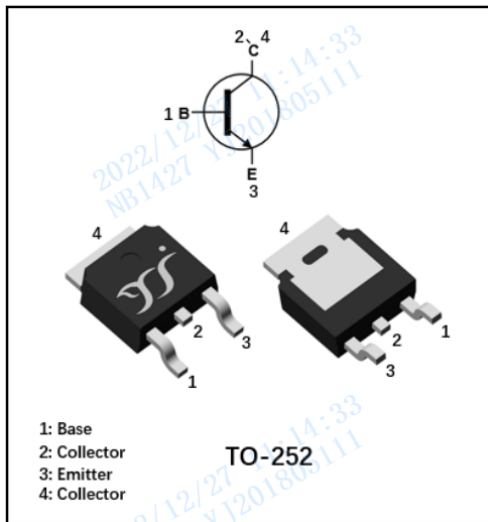


## NPN Power Transistor



### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1

### Applications

- Designed for general purpose amplifier and low speed switching applications.

### Mechanical Data

- Package: TO-252
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102

### ■ Maximum Ratings (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Value
Device marking code			MJD31C
Collector-Base Voltage	$V_{CBO}$	V	100
Collector-Emitter Voltage	$V_{CEO}$	V	100
Emitter-Base Voltage	$V_{EBO}$	V	5
Collector Current -Continuous	$I_C$	A	3
Total Device Dissipation (*)	$P_D$	W	1.25
Thermal Resistance, Junction to Ambient Air (*)	$R_{thJA}$	°C/W	100
Junction Temperature	$T_j$	°C	-55 to +150
Storage Temperature	$T_{STG}$	°C	-55 to +150

(\*) Device mounted on FR-4 PCB 15 x 17 x 0.8 mm



# MJD31C

## ■ Electrical Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C=1\text{mA}, I_E=0$	100	-	-
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C=30\text{mA}, I_B=0$	100	-	-
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E=1\text{mA}, I_C=0$	5	-	-
Collector-base cut-off current	$I_{CEO}$	$\mu\text{A}$	$V_{CE}=60\text{V}, I_B=0$	-	-	50
Collector-base cut-off current	$I_{CES}$	$\mu\text{A}$	$V_{CE}=100\text{V}, V_{EB}=0$	-	-	20
Emitter-base cut-off current	$I_{EBO}$	mA	$V_{EB}=5\text{V}, I_C=0$	-	-	1
DC current gain	$h_{FE}$		$V_{CE}=4\text{V}, I_C=1\text{A}$	25	-	-
			$V_{CE}=4\text{V}, I_C=3\text{A}$	10	-	75
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=3\text{A}, I_B=0.375\text{A}$	-	-	1.2
Base-emitter voltage	$V_{BE}$	V	$I_C=3\text{A}, V_{CE}=4\text{V}$	-	-	1.8

## ■ Other Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Transition frequency	$f_T$	MHz	$V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1\text{KHz}$	3	-	-



## ■ Characteristics(Typical)

Fig.1 - Collector Saturation Region

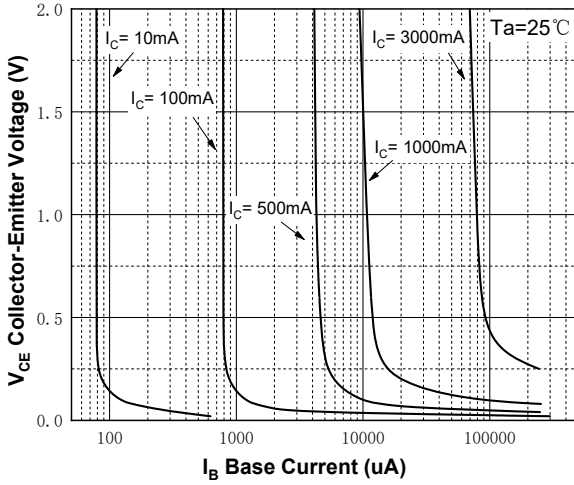


Fig.2 - DC Current Gain

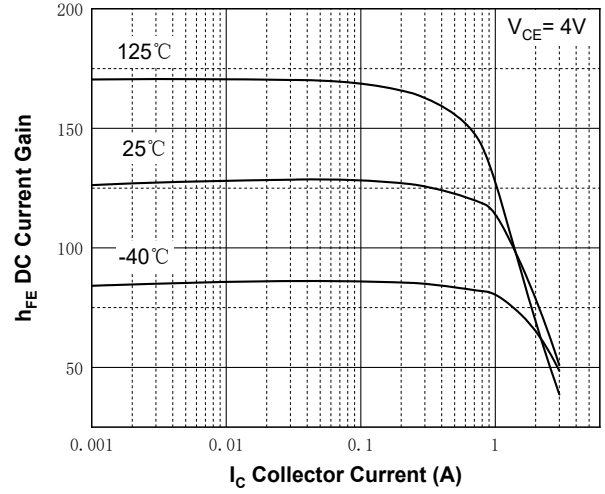


Fig.3 - DC Current Gain

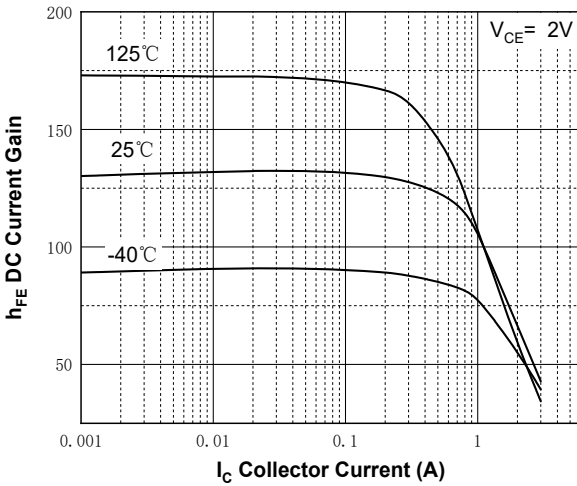


Fig.4 - Collector-Emitter Saturation Voltage vs. Collector Current

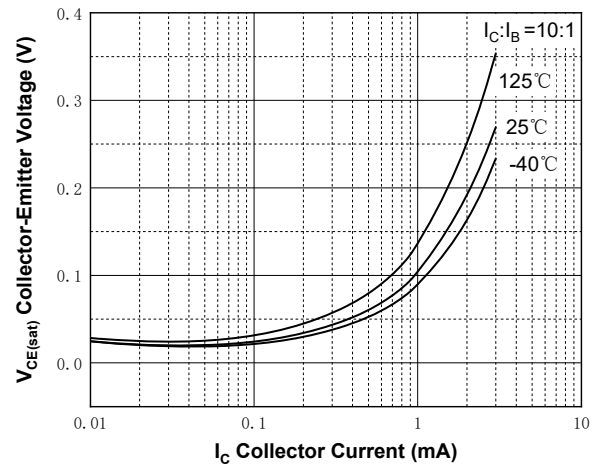


Fig.5 - Base-Emitter Saturation Voltage vs. Collector Current

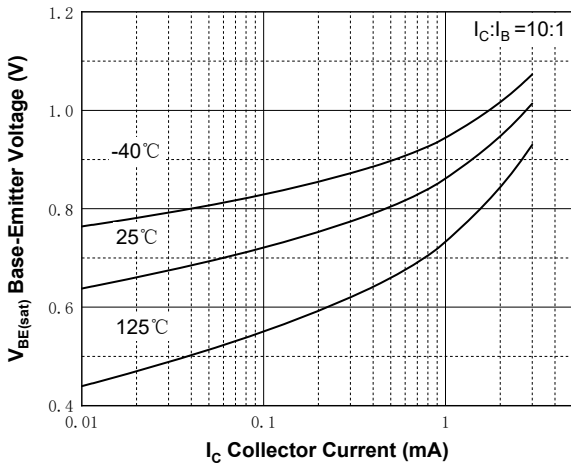
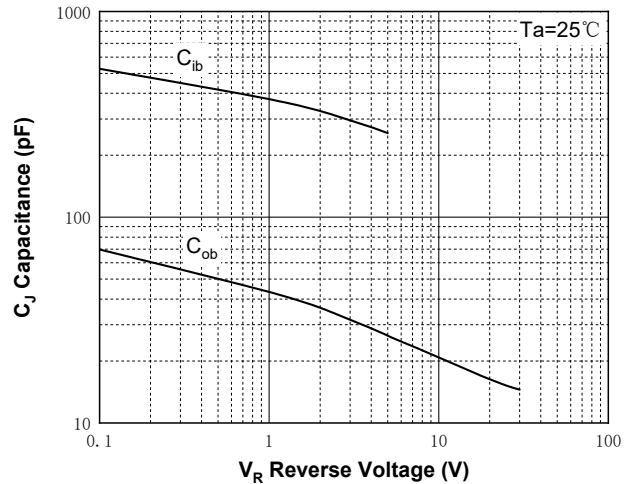


Fig.6 - Capacitance



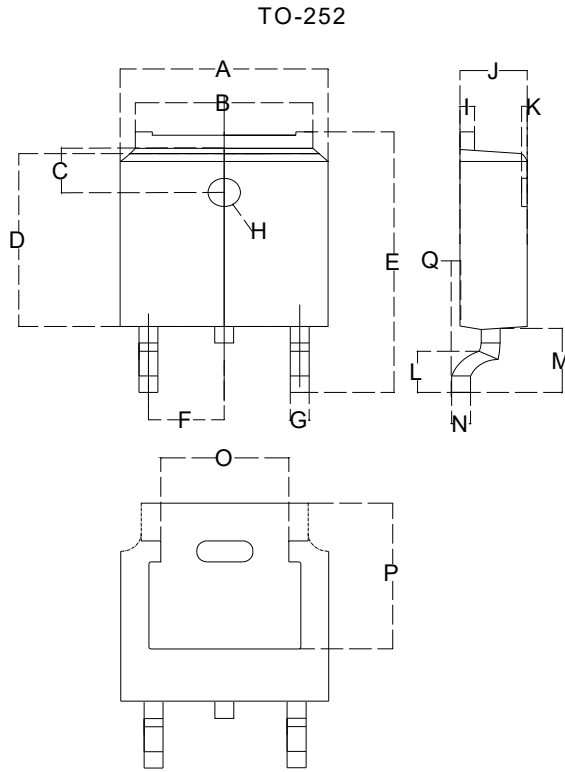


# MJD31C

## ■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MJD31C	F1	2500	2500	25000	13"Reel

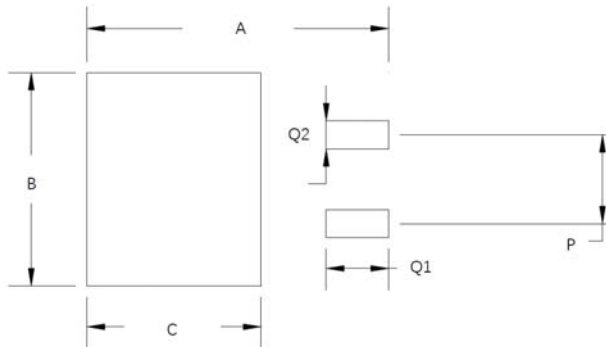
## ■ TO-252 Package information



Dimensions in millimeters

TO-252		
Dim	Min	Max
A	6.500	6.700
B	5.100	5.460
C	1.400	1.800
D	6.000	6.200
E	10.000	10.400
F	2.166	2.366
G	0.660	0.860
H	Φ 1.050	Φ 1.350
I	0.460	0.580
J	2.200	2.400
K	0	0.300
L	0.890	2.290
M	2.730	3.080
N	0.430	0.580
O	4.20	4.95
P	5.15	5.45
Q	0	0.2

## ■ Suggested Pad Layout



Dim	Millimeters
A	11.4
B	6.74
C	6.23
P	4.56
Q1	2.28
Q2	1.52



## MJD31C

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