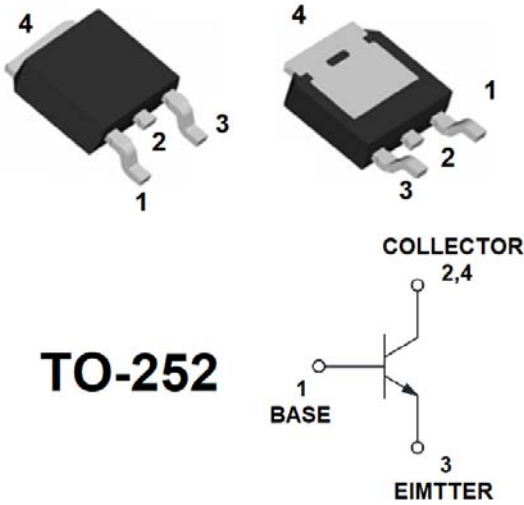


## NPN Power Transistors



**TO-252**

### Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

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

### Mechanical Data

- Case: 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
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	$R_{\theta JA}$	°C/W	100
Junction Temperature	$T_j$	°C	-55 to +150
Storage Temperature	$T_{STG}$	°C	-55 to +150



# MJD31CQ

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

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

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

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

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MJD31CQ	F1	MJD31C	2500	2500	25000	13"Reel



## ■ Characteristics(Typical)

Fig.1 - Collector Saturation Region

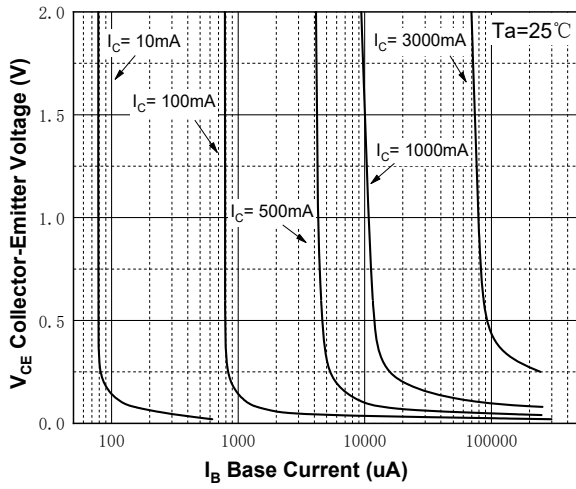


Fig.2 - DC Current Gain

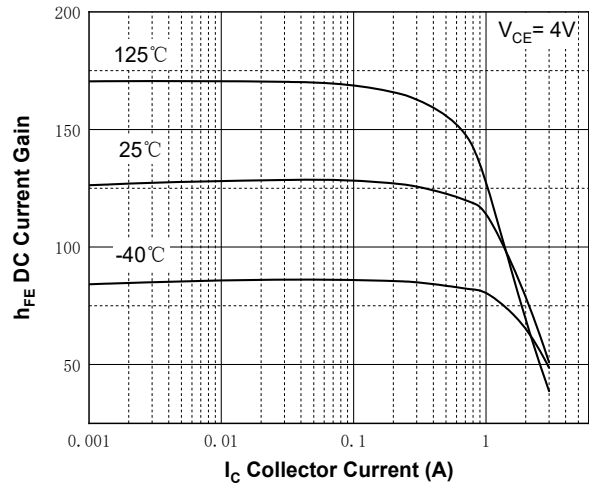


Fig.3 - DC Current Gain

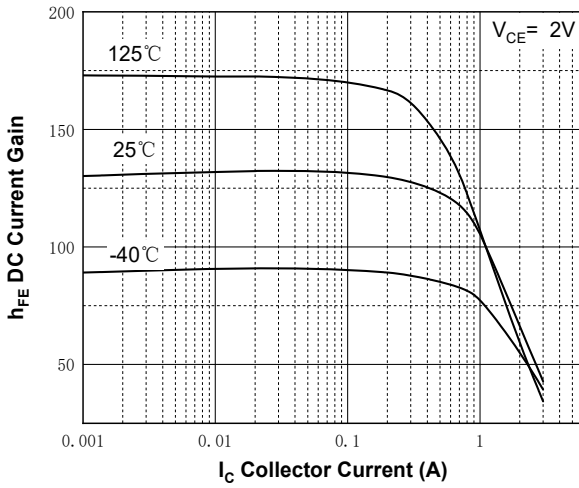


Fig.4 - Collector-Emitter Saturation Voltage vs. Collector Current

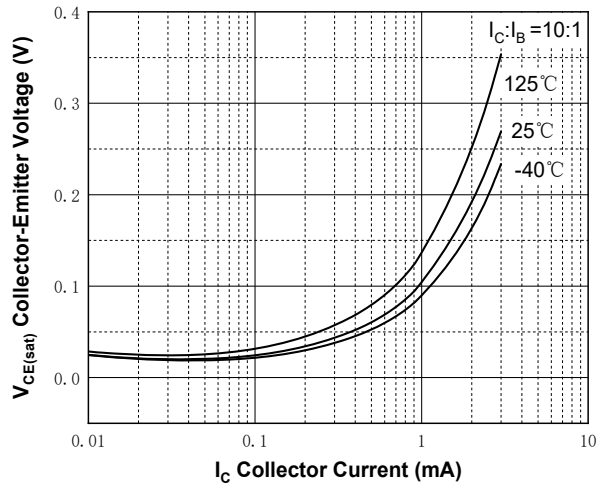


Fig.5 - Base-Emitter Saturation Voltage vs. Collector Current

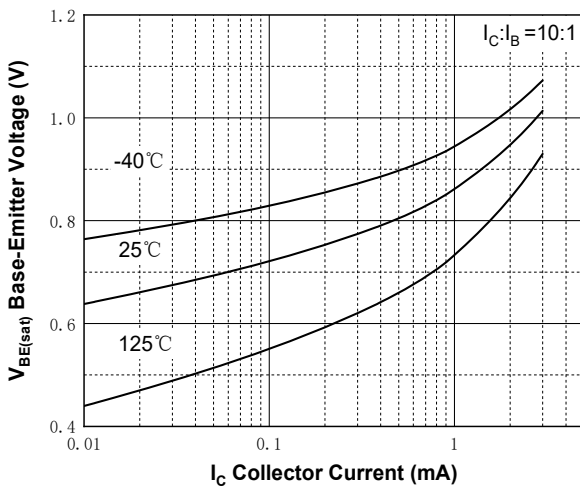
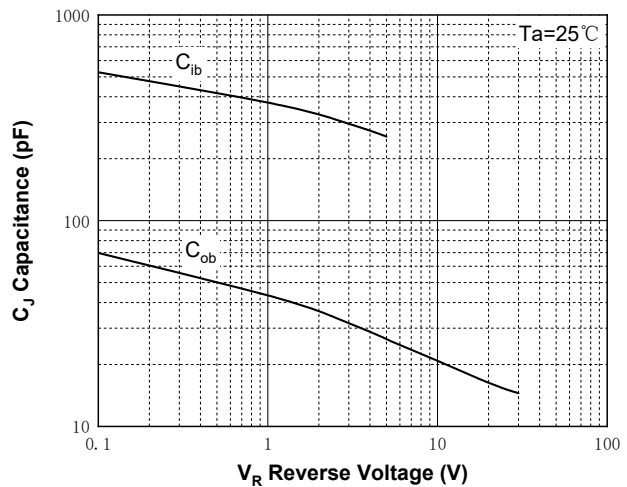


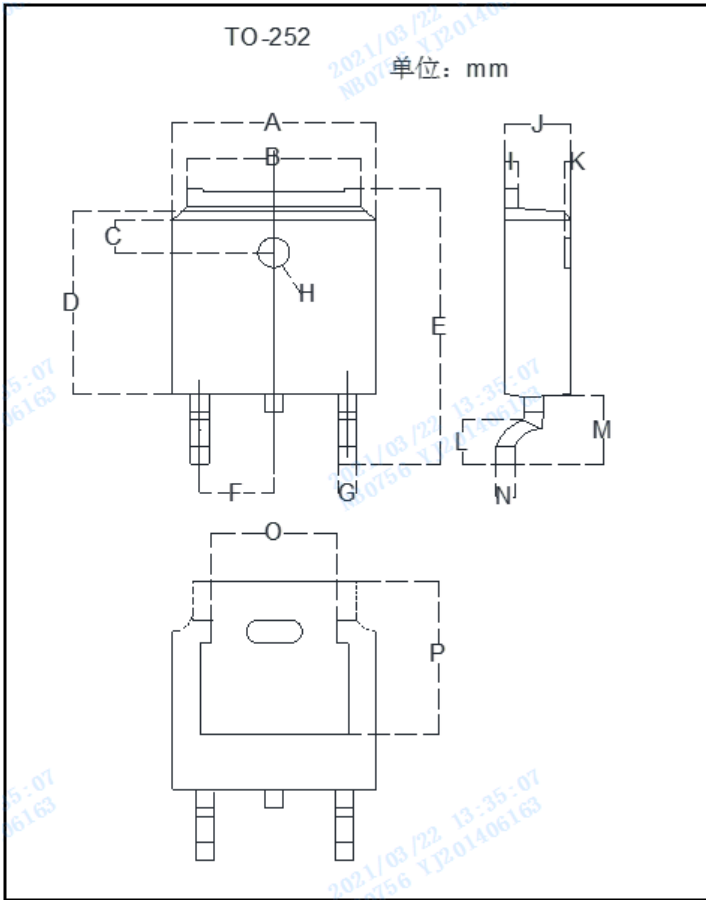
Fig.6 - Capacitance





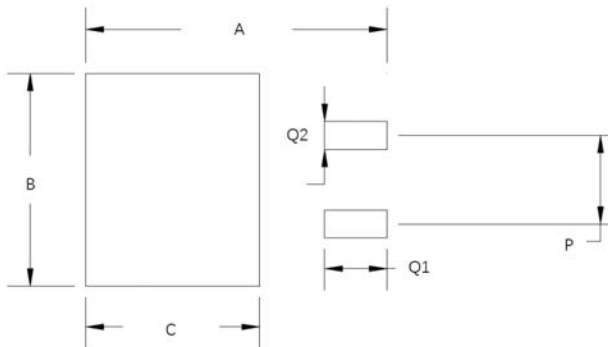
# MJD31CQ

## ■ TO-252 Package information



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.256	0.264	6.50	6.70	
B	0.201	0.215	5.10	5.46	
C	0.055	0.071	1.40	1.80	
D	0.236	0.244	6.00	6.20	
E	0.394	0.409	10.00	10.40	
F	0.085	0.093	2.17	2.37	
G	0.026	0.034	0.66	0.86	
H	Φ0.041	Φ0.531	Φ1.050	Φ1.350	
I	0.018	0.023	0.46	0.58	
J	0.087	0.094	2.20	2.40	
K	0.000	0.012	0.00	0.30	
L	0.035	0.090	0.89	2.29	
M	0.107	0.121	2.73	3.08	
N	0.017	0.023	0.43	0.58	
O	0.165	0.195	4.20	4.95	
P	0.203	0.215	5.15	5.45	

## ■ Suggested Pad Layout



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



## MJD31CQ

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