

Power Transistor, NPN, General Purpose 100 V, 3 A

MJK31C

These Bipolar Junction Transistors are designed for general purpose power and switching applications such as regulators, converters and power amplifiers. Housed in advanced LFPACK package (5 x 6 mm) with excellent thermal conduction. Automotive end applications include air bag deployment, power train control units, and instrument clusters.

Features

- Complementary PNP: MJK32C
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_A = 25°C)

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V _{CEO}	100	Vdc
Emitter-Base Voltage	V _{EBO}	5	Vdc
Collector Current – Continuous	I _C	3	A
Collector Current – Peak	I _{CM}	5	A
Junction and Storage Temperature Range	T _J , T _{stg}	–65 to +150	°C

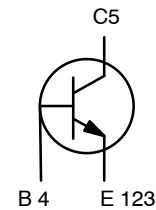
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case per Device (Note 1)	R _{θJC}	2.4	°C/W
Thermal Resistance, Junction-to-Ambient per Device (Note 1)	R _{θJA}	45	°C/W
Total Power Dissipation @ T _A = 25°C (Note 1)	P _D	2.7	W

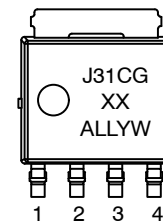
1. Surface-mounted on FR4 board using a 6 cm², 2 oz. Cu collector pad.

NPN TRANSISTOR 100 V, 3 A



LFPACK4 5x6
CASE 760AB

MARKING DIAGRAM



(Top View)

J31CG = Specific Device Code
A = Assembly Location
LL = Wafer Lot
Y = Year
W = Work Week

ORDERING INFORMATION

Device	Package	Shipping [†]
MJK31CTWG	LFPACK4 5x6 (Pb-Free)	3000 / Tape & Reel
NJVMJK31CTWG	LFPACK4 5x6 (Pb-Free)	3000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

MJK31C

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

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage ($I_C = 30\text{ mA}$, $I_B = 0$)	$V_{CEO(sus)}$	100	–	–	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE} = 0$)	I_{CES}	–	–	20	μA
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $I_B = 0$)	I_{CEO}	–	–	50	μA
Emitter Cutoff Current ($V_{EB} = 5\text{ Vdc}$)	I_{EBO}	–	–	1.0	mA

ON CHARACTERISTICS

Collector–Emitter Saturation Voltage ($I_C = 3\text{ Adc}$, $I_B = 0.375\text{ Adc}$)	$V_{CE(sat)}$	–	–	1.2	Vdc
Base–Emitter Saturation Voltage ($I_C = 3\text{ Adc}$, $V_{CE} = 4\text{ Vdc}$)	$V_{BE(on)}$	–	–	1.8	Vdc
DC Current Gain ($V_{CE} = 4\text{ Vdc}$, $I_C = 1\text{ Adc}$) ($V_{CE} = 4\text{ Vdc}$, $I_C = 3\text{ Adc}$)	h_{FE}	25 10	– –	– 60	–

DYNAMIC CHARACTERISTICS

Gain Bandwidth Product ($I_C = 0.5\text{ Adc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1\text{ MHz}$)	f_T	–	3	–	MHz
--	-------	---	---	---	-----

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS

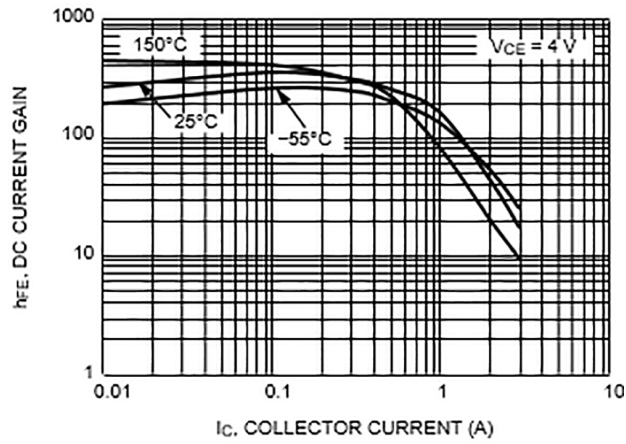


Figure 1. DC Current Gain

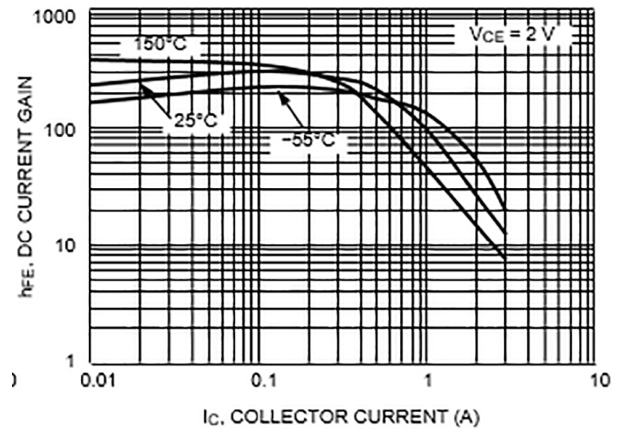


Figure 2. DC Current Gain

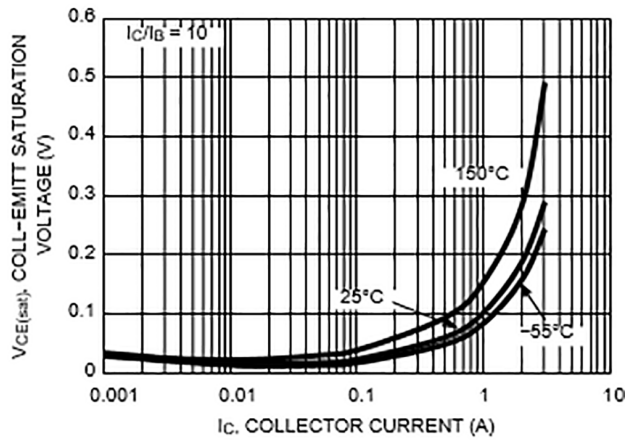


Figure 3. Saturation Voltage $V_{CE(sat)}$

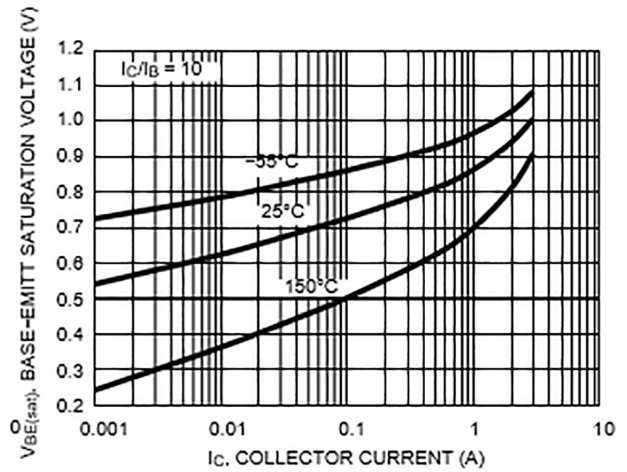


Figure 4. Saturation Voltage $V_{BE(sat)}$

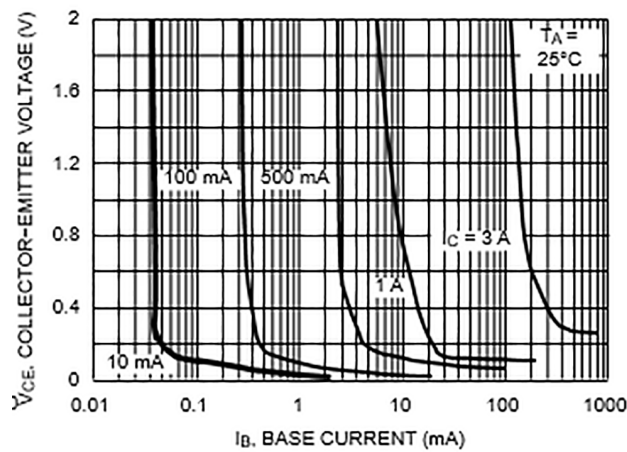


Figure 5. Collector Saturation Region

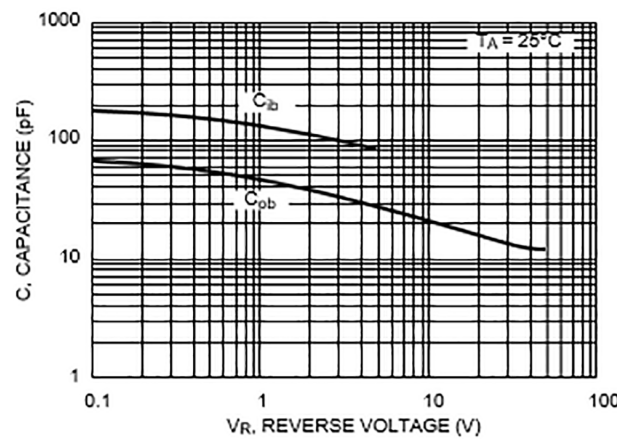


Figure 6. Capacitance

MJK31C

TYPICAL CHARACTERISTICS (continued)

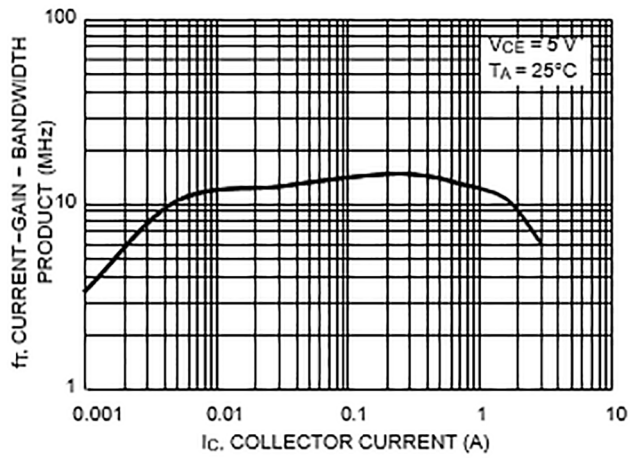


Figure 7. Current-Gain-Bandwidth Product

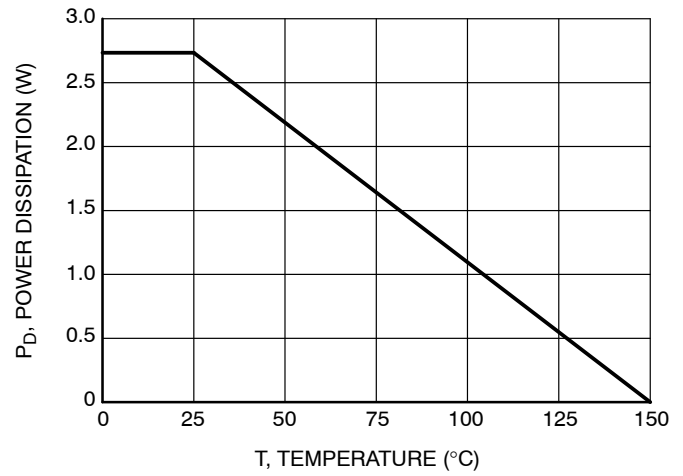


Figure 8. Power Derating

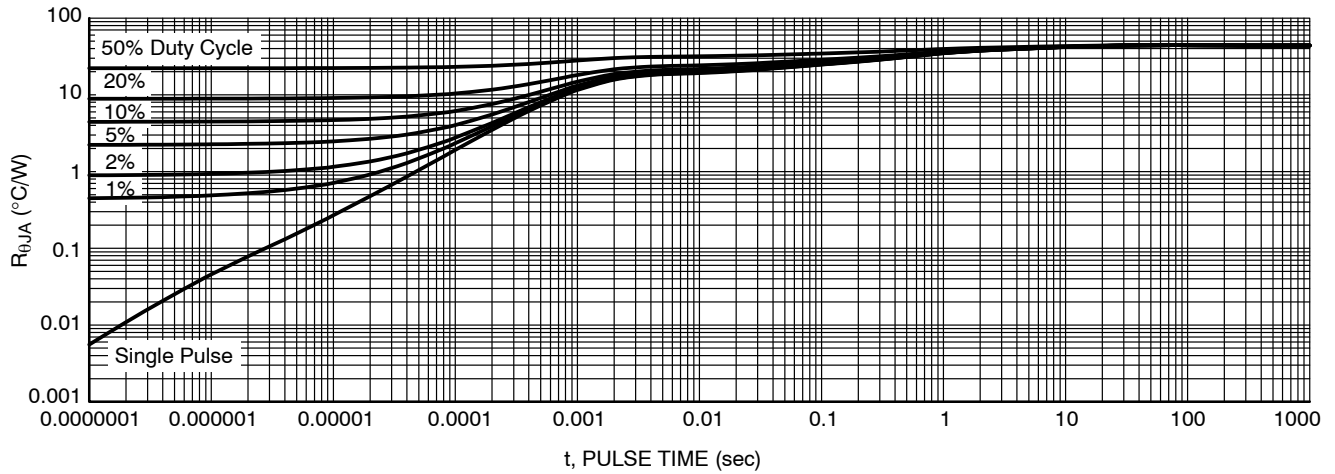
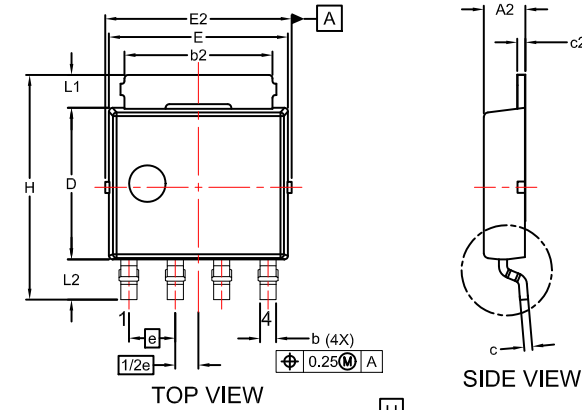


Figure 9. Typical Transient Thermal Response, Junction-to-Case

MJK31C

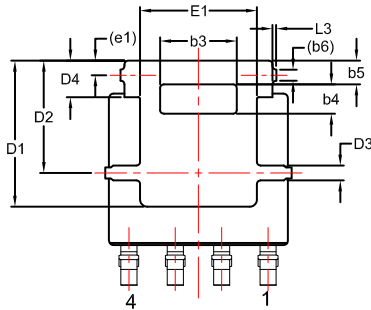
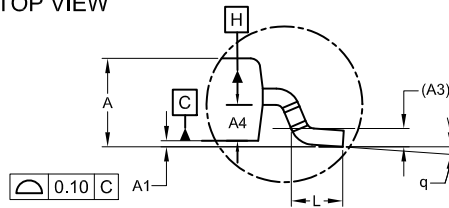
PACKAGE DIMENSIONS

LFP4K4 5x6
CASE 760AB
ISSUE C



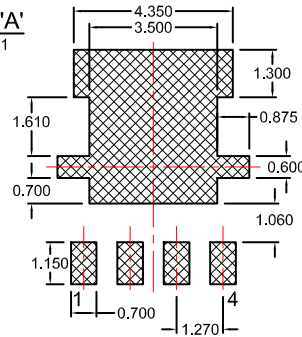
TOP VIEW

SIDE VIEW



BOTTOM VIEW

DETAIL 'A'
SCALE: 2:1



RECOMMENDED LAND PATTERN

*FOR ADDITIONAL INFORMATION ON OUR
PB-FREE STRATEGY AND SOLDERING
DETAILS, PLEASE DOWNLOAD THE ON
SEMICONDUCTOR SOLDERING AND MOUNTING
TECHNIQUES REFERENCE MANUAL,
SOLDERRM/D.

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.150mm PER SIDE.
4. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
5. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.

UNIT IN MILLIMETER			
DIM	MIN	NOM	MAX
A	1.10	1.20	1.30
A1	0.00	0.08	0.15
A2	1.10	1.15	1.20
A3	0.25 REF		
A4	0.45	0.50	0.55
b	0.40	0.45	0.50
b2	3.80	4.10	4.40
b3	2.00	2.10	2.20
b4	0.70	0.80	0.90
b5	0.55	0.65	0.75
b6	0.31 REF		
c	0.19	0.22	0.25
c2	0.19	0.22	0.25
D	4.05	4.15	4.25
D1	3.80	4.00	4.20
D2	3.00	3.10	3.20
D3	0.30	0.40	0.50
D4	0.90	1.00	1.10
E	4.80	4.90	5.00
E1	3.10	3.20	3.30
E2	5.00	5.15	5.30
e	1.27 BSC		
1/2e	0.635 BSC		
e1	0.40 REF		
H	6.00	6.15	6.30
L	0.40	0.65	0.85
L1	0.80	0.90	1.00
L2	0.90	1.10	1.30
L3	0.00	0.10	0.20
q	0°	4°	8°

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Bipolar Transistors - BJT](#) ***category:***

Click to view products by [ON Semiconductor](#) ***manufacturer:***

Other Similar products are found below :

[BC559C](#) [MCH4017-TL-H](#) [MMBT-2369-TR](#) [BC546/116](#) [NJVMJD148T4G](#) [NTE16](#) [NTE195A](#) [IMX9T110](#) [2N4401-A](#) [2N6728](#) [2SB1204S-TL-E](#) [2SC5488A-TL-H](#) [FMC5AT148](#) [2N2369ADCSM](#) [2N2907A](#) [2N3904-NS](#) [2N5769](#) [2SC4618TLN](#) [CPH6501-TL-E](#) [Jantx2N5416](#) [US6T6TR](#) [BAX18/A52R](#) [BC556/112](#) [IMZ2AT108](#) [UMX21NTR](#) [MCH6102-TL-E](#) [2N3879](#) [30A02MH-TL-E](#) [NTE13](#) [NTE282](#) [NTE350](#) [NTE81](#) [JANTX2N2920L](#) [JANSR2N2907AUB](#) [JANSR2N2222AUB](#) [CMLT3946EG TR](#) [SNSS40600CF8T1G](#) [CMLT3906EG TR](#) [GRP-DATA-JANS2N2907AUB](#) [GRP-DATA-JANS2N2222AUA](#) [MMDT3946FL3-7](#) [2N4240](#) [JANS2N3019](#) [MSB30KH-13](#) [2N2221AUB](#) [2SD1815T-TL-E](#) [Jantxv2N3810](#) [2N6678](#) [2N2907Ae4](#) [JAN2N3507](#)