

Power Transistor 80 V, 8 A General Purpose NPN

MJK44H11

Designed for general purpose power and switching applications such as regulators, converters and power amplifiers. Housed in advanced LPAK 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 NPN: MJK45H11
- 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 ($T_A = 25^\circ\text{C}$)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current – Continuous	I_C	8	A
Collector Current – Peak	I_{CM}	16	A
Junction and Storage Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

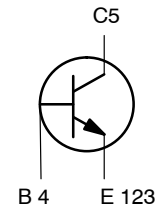
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient per Device (Note 1)	$R_{\theta JC}$	6	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient per Device (Note 1)	$R_{\theta JA}$	70	$^\circ\text{C/W}$
Total Power Dissipation per Device @ $T_A = 25^\circ\text{C}$ (Note 1)	P_D	20	W

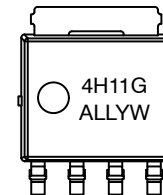
1. Surface-mounted on FR4 board using a 1in², 2 oz. Cu pad

NPN TRANSISTOR 80 V, 8 A



LPAK4 5x6
CASE 760AB

MARKING DIAGRAM



4H11G = Specific Device Code
A = Assembly Location
LL = Wafer Lot
Y = Year
W = Work Week

ORDERING INFORMATION

Device	Package	Shipping [†]
MJK44H11TWG	LPAK4 5x6 (Pb-Free)	3000 / Tape & Reel
NJVMJK44H11TWG	LPAK4 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.

MJK44H11

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage ($I_C = 30\text{ mA}$, $I_B = 0$)	$V_{CE(sus)}$	80	–	–	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE} = 0$)	I_{CES}	–	–	1.0	μA
Emitter Cutoff Current ($V_{EB} = 5\text{ Vdc}$)	I_{EBO}	–	–	1.0	μA
ON CHARACTERISTICS					
Collector–Emitter Saturation Voltage ($I_C = 8\text{ Adc}$, $I_B = 0.4\text{ Adc}$)	$V_{CE(sat)}$	–	–	1.0	Vdc
Base–Emitter Saturation Voltage ($I_C = 8\text{ Adc}$, $I_B = 0.8\text{ Adc}$)	$V_{BE(sat)}$	–	–	1.5	Vdc
DC Current Gain ($V_{CE} = 1\text{ Vdc}$, $I_C = 2\text{ Adc}$) ($V_{CE} = 1\text{ Vdc}$, $I_C = 4\text{ Adc}$)	h_{FE}	60 40	– –	– –	–
DYNAMIC CHARACTERISTICS					
Collector Capacitance ($V_{CB} = 10\text{ Vdc}$, $f_{test} = 1\text{ MHz}$)	C_{cb}	–	–	45	pF
Gain Bandwidth Product ($I_C = 0.5\text{ Adc}$, $V_{CE} = 10\text{ Vdc}$, $f = 20\text{ MHz}$)	f_T	–	85	–	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

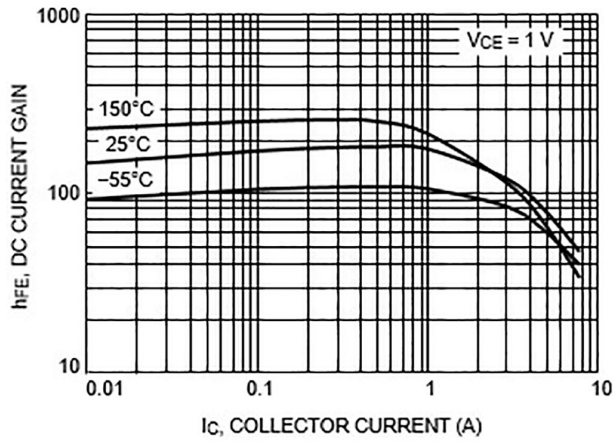


Figure 1. DC Current Gain

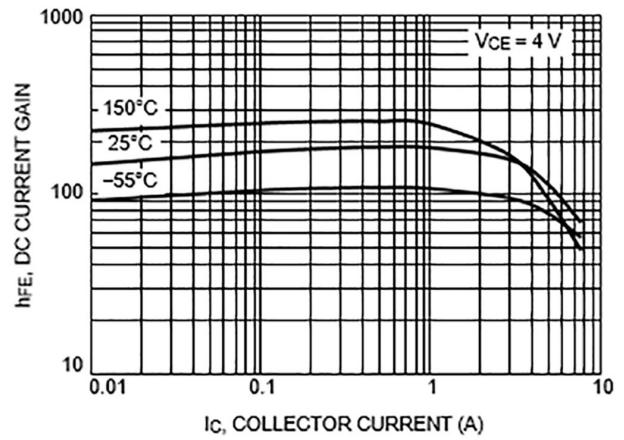


Figure 2. DC Current Gain

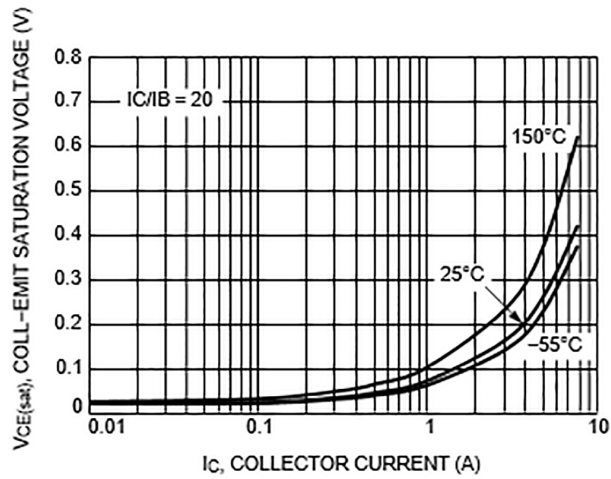


Figure 3. Saturation Voltage $V_{CE(sat)}$

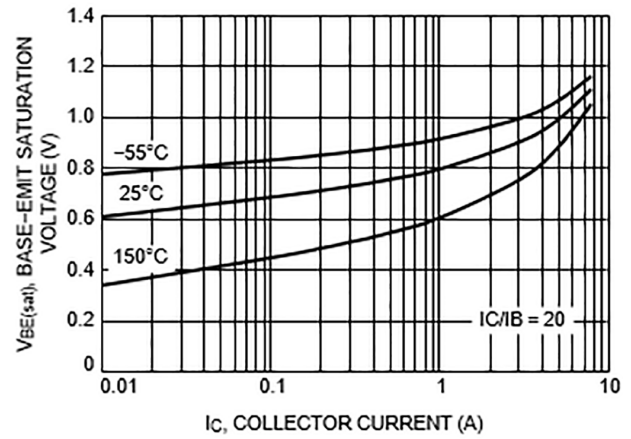


Figure 4. Saturation Voltage $V_{BE(sat)}$

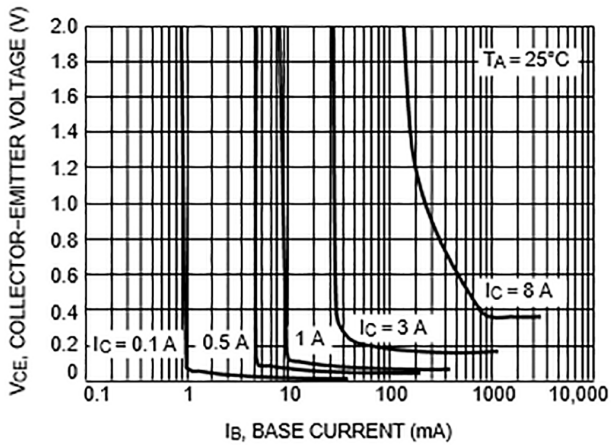


Figure 5. Collector Saturation Region

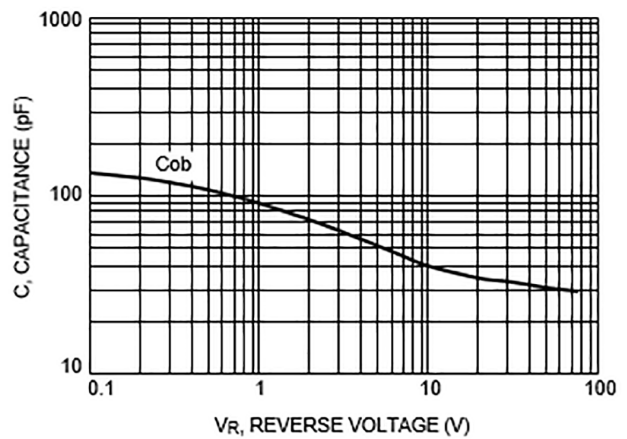


Figure 6. Capacitance

TYPICAL CHARACTERISTICS (CONTINUED)

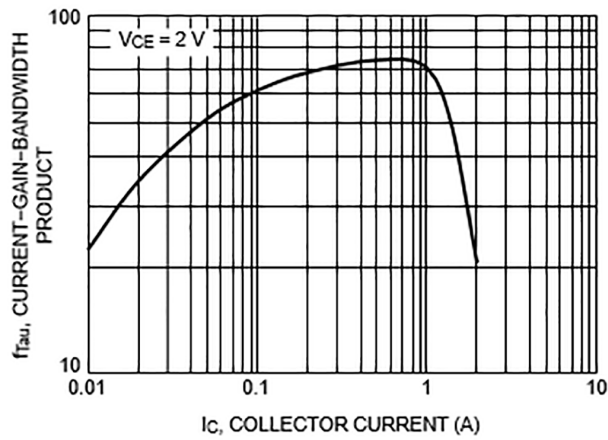


Figure 7. Current-Gain-Bandwidth Product

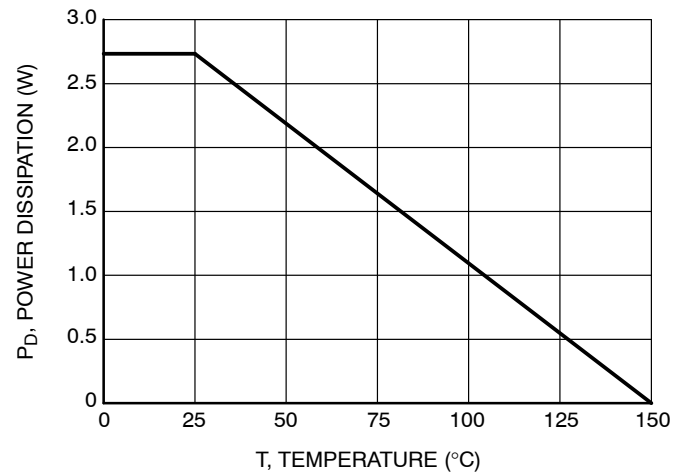


Figure 8. Power Derating

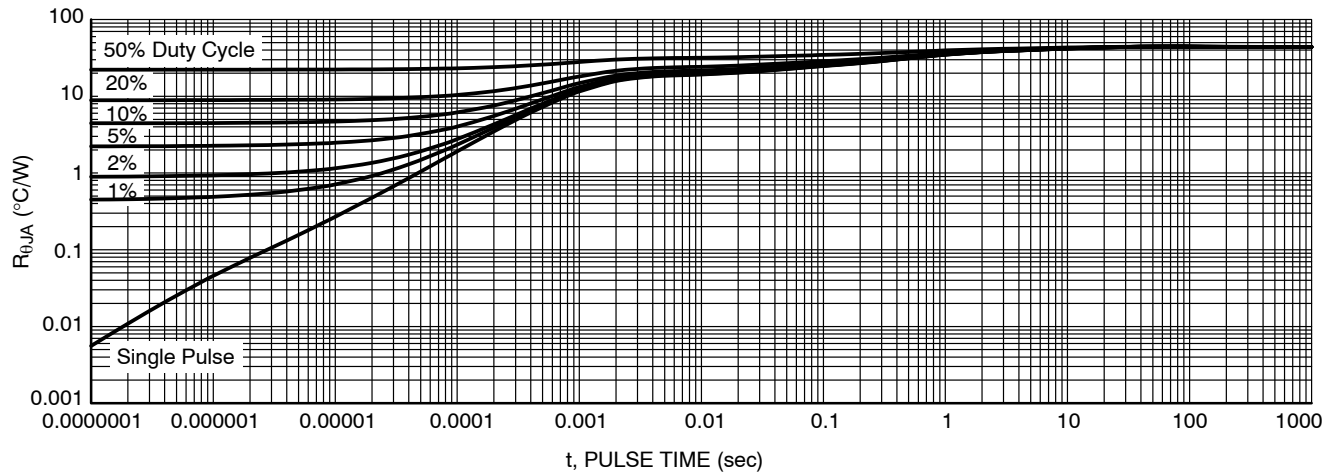
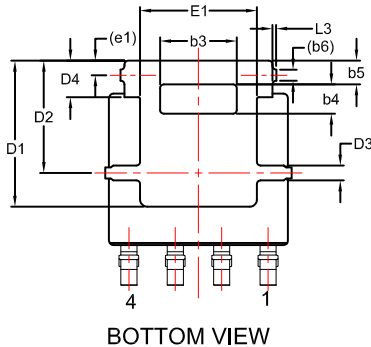
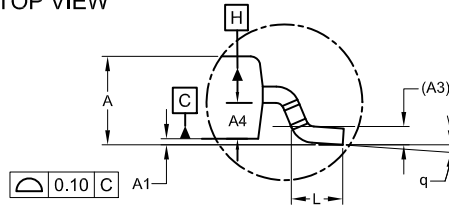
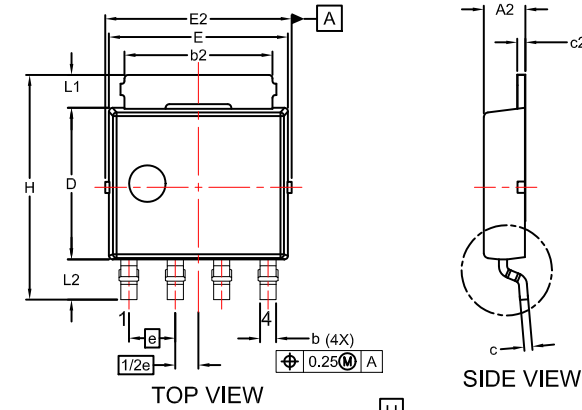


Figure 9. Typical Transient Thermal Response, Junction-to-Case

MJK44H11

PACKAGE DIMENSIONS

LFPK4 5x6
CASE 760AB
ISSUE C



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°

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