

# MJD44H11 (NPN) MJD45H11 (PNP)

Preferred Device

## Complementary Power Transistors

### DPAK For Surface Mount Applications

Designed for general purpose power and switching such as output or driver stages in applications such as switching regulators, converters, and power amplifiers.

#### Features

- Lead Formed for Surface Mount Application in Plastic Sleeves (No Suffix)
- Straight Lead Version in Plastic Sleeves ("-1" Suffix)
- Electrically Similar to Popular D44H/D45H Series
- Low Collector Emitter Saturation Voltage -  
 $V_{CE(sat)} = 1.0 \text{ Volt Max @ } 8.0 \text{ Amperes}$
- Fast Switching Speeds
- Complementary Pairs Simplifies Designs
- Epoxy Meets UL 94 V-0 @ 0.125 in
- ESD Ratings: Human Body Model, 3B > 8000 V  
Machine Model, C > 400 V
- Pb-Free Packages are Available

#### MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	Vdc
Emitter-Base Voltage	$V_{EB}$	5	Vdc
Collector Current - Continuous - Peak	$I_C$	8 16	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	20 0.16	W W/ $^\circ\text{C}$
Total Power Dissipation (Note 1) @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.75 0.014	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6.25	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	71.4	$^\circ\text{C/W}$
Lead Temperature for Soldering	$T_L$	260	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

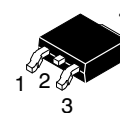
1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.



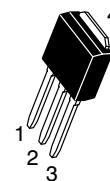
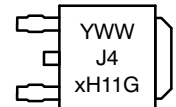
ON Semiconductor®

## SILICON POWER TRANSISTORS 8 AMPERES 80 VOLTS, 20 WATTS

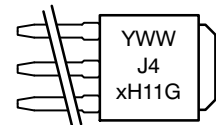
#### MARKING DIAGRAMS



DPAK  
CASE 369C  
STYLE 1



DPAK-3  
CASE 369D  
STYLE 1



Y = Year  
WW = Work Week  
J4xH11 = Device Code  
x = 4 or 5  
G = Pb-Free Package

#### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

## MJD44H11 (NPN) MJD45H11 (PNP)

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

Characteristic	Symbol	Min	Typ	Max	Unit
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#### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ( $I_C = 30\text{ mA}$ , $I_B = 0$ )	$V_{CE(sus)}$	80			Vdc
Collector Cutoff Current ( $V_{CE} = \text{Rated } V_{CE0}$ , $V_{BE} = 0$ )	$I_{CES}$			1.0	$\mu\text{A}$
Emitter Cutoff Current ( $V_{EB} = 5\text{ Vdc}$ )	$I_{EBO}$			1.0	$\mu\text{A}$

#### ON CHARACTERISTICS

Collector-Emitter Saturation Voltage ( $I_C = 8\text{ Adc}$ , $I_B = 0.4\text{ Adc}$ )	$V_{CE(sat)}$			1	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 ( $V_{CE} = 1\text{ Vdc}$ , $I_C = 2\text{ Adc}$ )	$h_{FE}$	60			-
DC Current Gain ( $V_{CE} = 1\text{ Vdc}$ , $I_C = 4\text{ Adc}$ )		40			

#### DYNAMIC CHARACTERISTICS

Collector Capacitance ( $V_{CB} = 10\text{ Vdc}$ , $f_{test} = 1\text{ MHz}$ )	MJD44H11 MJD45H11	$C_{cb}$		45 130	pF
Gain Bandwidth Product ( $I_C = 0.5\text{ Adc}$ , $V_{CE} = 10\text{ Vdc}$ , $f = 20\text{ MHz}$ )	MJD44H11 MJD45H11	$f_T$		85 90	MHz

#### SWITCHING TIMES

Delay and Rise Times ( $I_C = 5\text{ Adc}$ , $I_{B1} = 0.5\text{ Adc}$ )	MJD44H11 MJD45H11	$t_d + t_r$		300 135	ns
Storage Time ( $I_C = 5\text{ Adc}$ , $I_{B1} = I_{B2} = 0.5\text{ Adc}$ )	MJD44H11 MJD45H11	$t_s$		500 500	ns
Fall Time ( $I_C = 5\text{ Adc}$ , $I_{B1} = I_{B2} = 0.5\text{ Adc}$ )	MJD44H11 MJD45H11	$t_f$		140 100	ns

## MJD44H11 (NPN) MJD45H11 (PNP)

### ORDERING INFORMATION

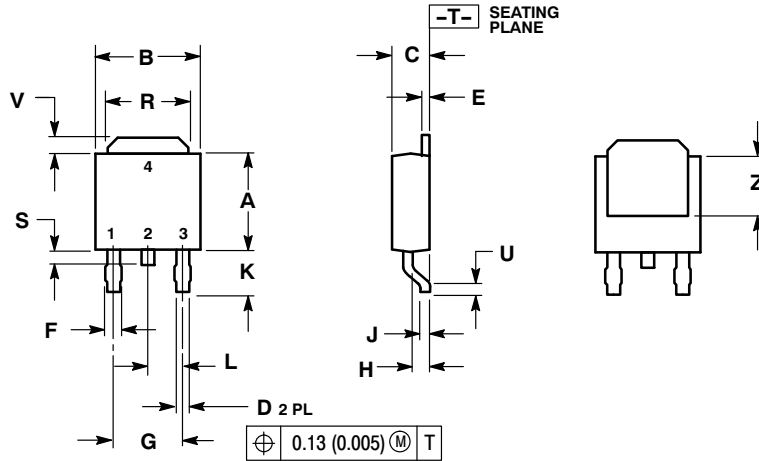
Device	Package Type	Package	Shipping†
MJD44H11	DKPAK	369C	75 Units / Rail
MJD44H11G	DKPAK (Pb-Free)		
MJD44H11-001	DKPAK-3	369D	
MJD44H11-001G	DKPAK-3 (Pb-Free)		
MJD44H11RL	DKPAK	369C	1800 Tape & Reel
MJD44H11RLG	DKPAK (Pb-Free)		2500 Tape & Reel
MJD44H11T4	DKPAK		
MJD44H11T4G	DKPAK (Pb-Free)		
MJD44H11T5	DKPAK		
MJD44H11T5G	DKPAK (Pb-Free)		
MJD45H11	DKPAK		75 Units / Rail
MJD45H11G	DKPAK (Pb-Free)		
MJD45H11-001	DKPAK-3		369D
MJD45H11-001G	DKPAK-3 (Pb-Free)		
MJD45H11RL	DKPAK	369C	1800 Tape & Reel
MJD45H11RLG	DKPAK (Pb-Free)		2500 Tape & Reel
MJD45H11T4	DKPAK		
MJD45H11T4G	DKPAK (Pb-Free)		

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

# MJD44H11 (NPN) MJD45H11 (PNP)

## PACKAGE DIMENSIONS

**DPAK**  
CASE 369C  
ISSUE O

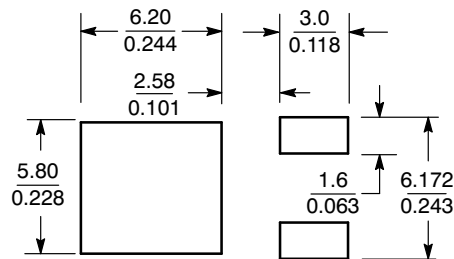


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.245	5.97	6.22
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
S	0.025	0.040	0.63	1.01
U	0.020	---	0.51	---
V	0.035	0.050	0.89	1.27
Z	0.155	---	3.93	---

- STYLE 1:  
PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR

### SOLDERING FOOTPRINT\*



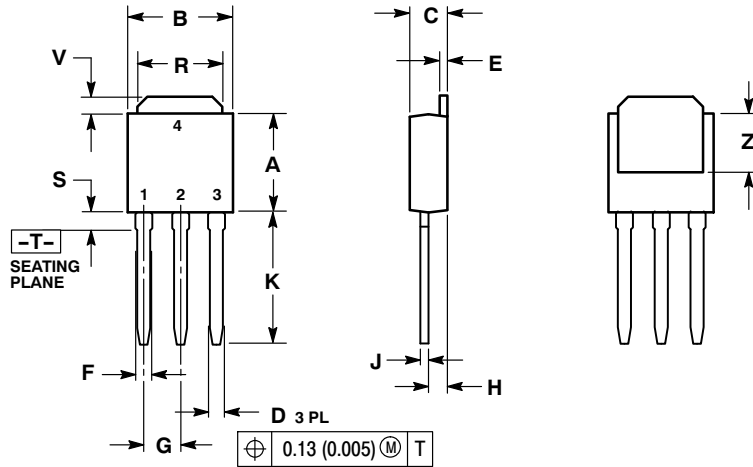
SCALE 3:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MJD44H11 (NPN) MJD45H11 (PNP)

## PACKAGE DIMENSIONS

DPAK-3  
CASE 369D-01  
ISSUE B



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.245	5.97	6.35
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.090 BSC		2.29 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.350	0.380	8.89	9.65
R	0.180	0.215	4.45	5.45
S	0.025	0.040	0.63	1.01
V	0.035	0.050	0.89	1.27
Z	0.155	---	3.93	---

STYLE 1:

- PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR