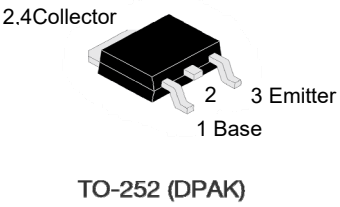
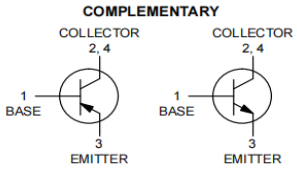
COMPLEMENTARY POWER TRANSISTORS

NPN MJD44H11
PNP MJD45H11





TO-252 (DPAK)
Plastic Package
RoHS compliant

FEATURES:

1. Low Collector Emitter Saturation Voltage
2. Fast Switching Speeds
3. Complementary Pairs Simplifies Designs

APPLICATION:

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

ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C Unless otherwise specified)

PARAMETER		SYMBOL	VALUE	UNIT
Collector Emitter Voltage		V_{CEO}	80	V
Emitter Base Voltage		V_{EBO}	5.0	V
Collector Current	Continuous	I_C	8.0	A
	Peak		16.0	
Total Power Dissipation	T_C = 25ºC	P_D	20.0	W
	Derate Above 25ºC		0.16	W/°C
Total Power Dissipation [1]	T_C = 25ºC	P_D	1.75	W
	Derate Above 25ºC		0.01	W/°C
Operating and Storage Junction Temperature Range		T_j, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

Junction to Case	$R_{th(j-c)}$	6.25	°C/W
Junction to Ambient in free air [1]	$R_{th(j-a)}$	71.4	°C/W
Lead Temperature for Soldering	T_L	260	°C

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

ELECTRICAL CHARACTERISTICS at (Ta = 25 °C Unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITION	VALUE			UNIT
				MIN	TYP	MAX	
Collector Emitter Voltage		V_{CEO}	I_C=1mA, I_B=0	80	--	--	V
Collector Cut Off Current		I_{CES}	V_{CE}=Rated V_{CEO}, V_{BE}=0	--	--	10	µA
Emitter Cut Off Current		I_{EBO}	V_{EB}=5V, I_C=0	--	--	50.0	mA
Collector Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=8A, I_B=0.4A	--	--	1.85	V
Base Emitter Saturation Voltage		$V_{BE(sat)}$	I_C=8A, I_B=0.8A	--	--	1.5	V
DC Current Gain		h_{FE}	I_C=2A, V_{CE}=1V	60	--	--	
			I_C=4A, V_{CE}=1V	40	--	--	
DYNAMIC CHARACTERISTICS							
Collector Capacitance	MJD44H11	C_{cb}	I_E=0, V_{CB}=10V, f=1MHz		130		pF
	MJD45H11				230		
Current Gain Bandwidth Product	MJD44H11	f_T	I_C=0.5A, V_{CE}=10V, f=20MHz		50		MHz
	MJD45H11				40		
SWITCHING CHARACTERISTICS							
Delay and Rise Time	MJD44H11	$t_d + t_r$	I_C=5A, I_{B1}=0.5A		300		ns
	MJD45H11				135		
Storage Time	MJD44H11	t_s	I_C=5A, I_{B1}=I_{B2}=0.5A		500		
	MJD45H11				500		
Fall Time	MJD44H11	t_f	I_C=5A, I_{B1}=I_{B2}=0.5A		140		
	MJD45H11				100		

TYPICAL CHARACTERISTIC CURVES

Figure 1. Thermal Response

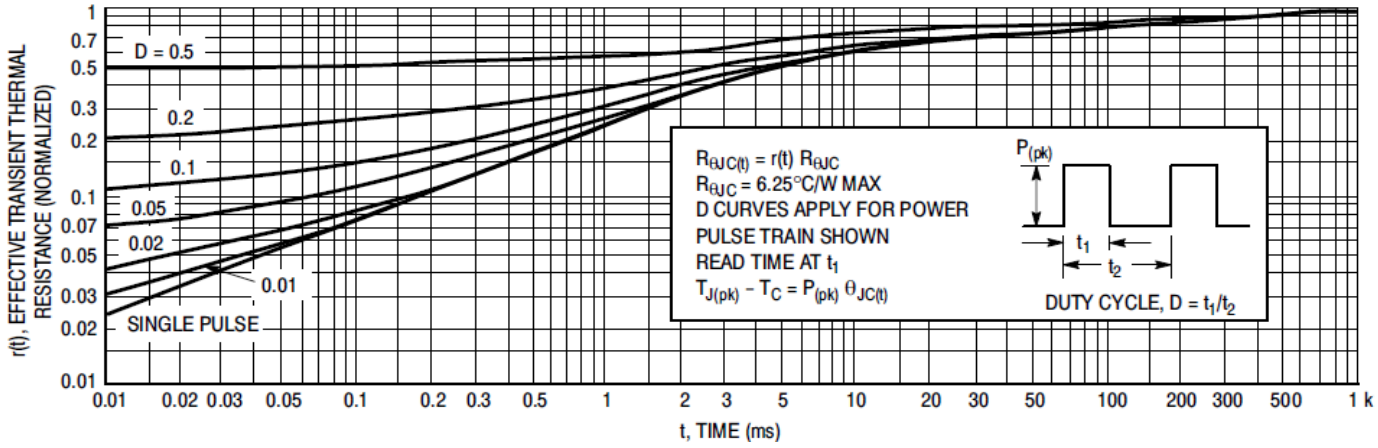


Figure 2. Maximum Forward Bias Safe Operating Area

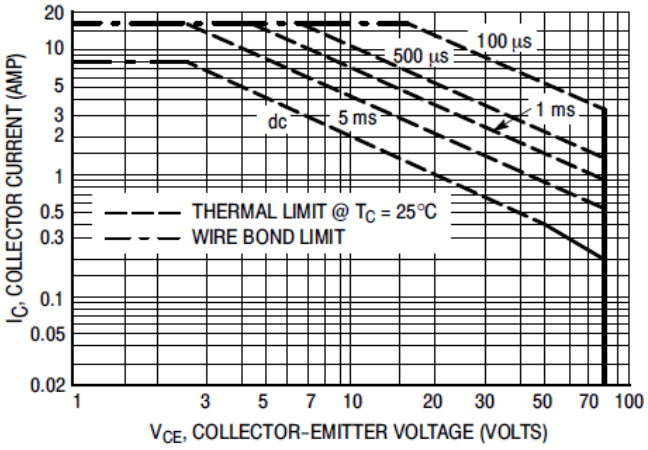


Figure 3. Power Derating

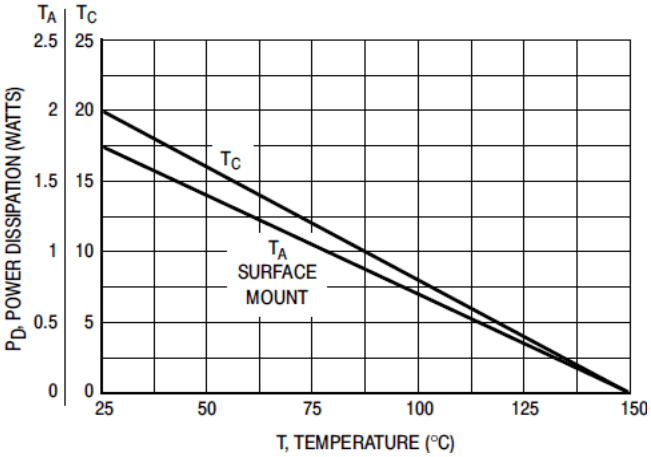


Figure 4. MJD44H11 DC Current Gain

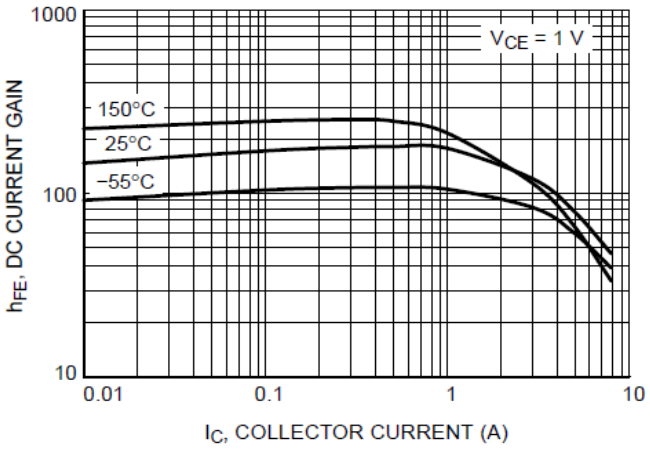
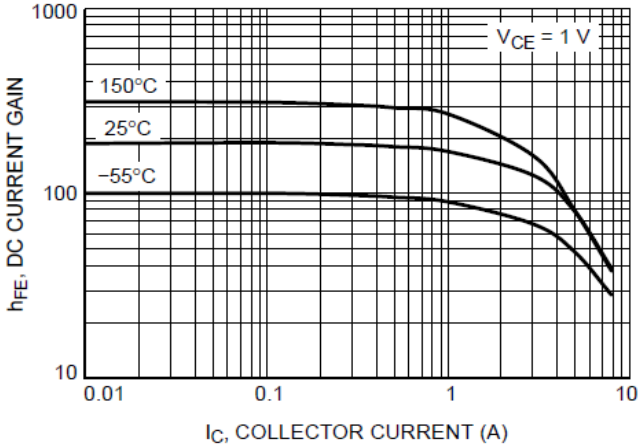


Figure 5. MJD45H11 DC Current Gain



TYPICAL CHARACTERISTIC CURVES

Figure 6. MJD44H11 Saturation Voltage $V_{BE(sat)}$

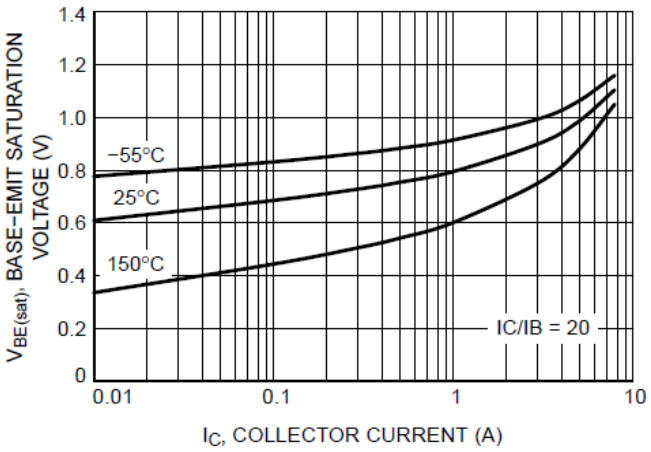


Figure 7. MJD45H11 Saturation Voltage $V_{BE(sat)}$

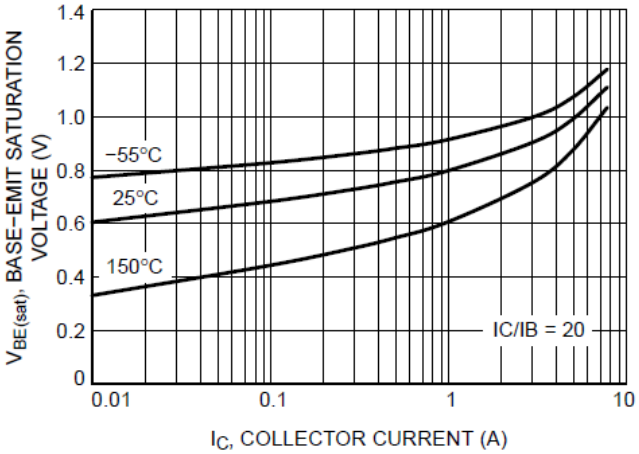


Figure8. MJD44H11 Collector Saturation Region

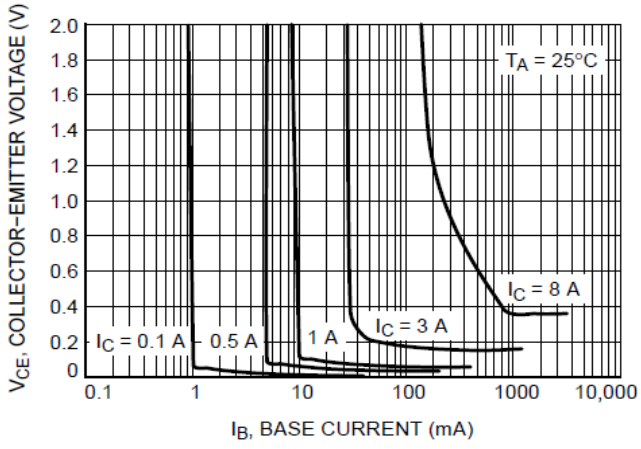


Figure 9. MJD45H11 Collector Saturation Region

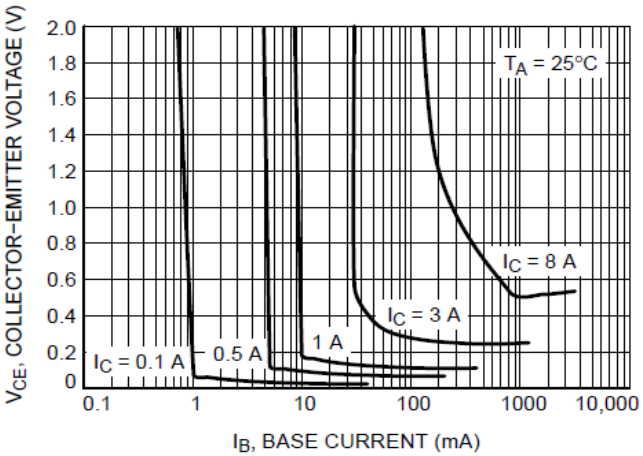


Figure 10.MJD44H11 Capacitance

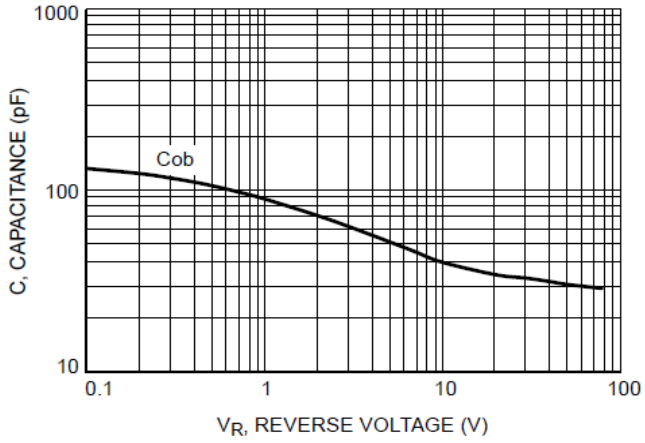
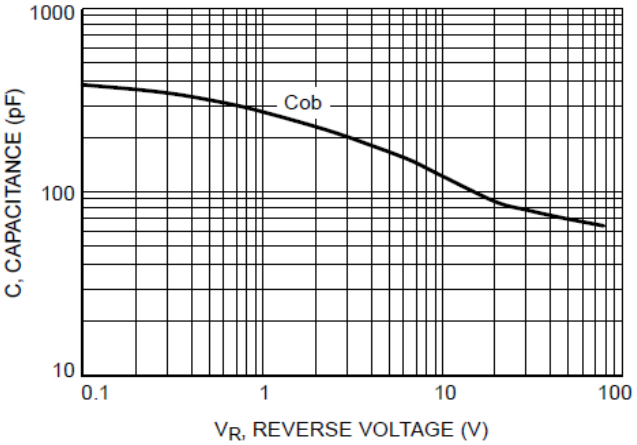
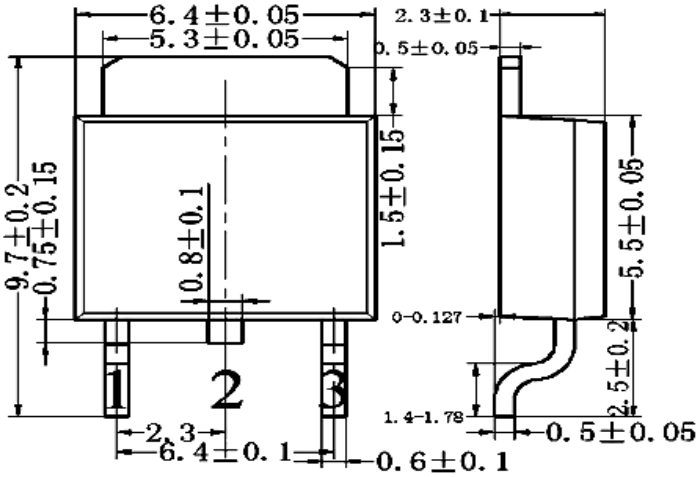


Figure 11.MJD45H11 Capacitance



PACKAGE DETAILS

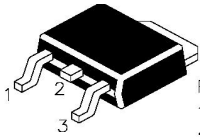
TO-252 (DPAK) Package Outline and Dimensions



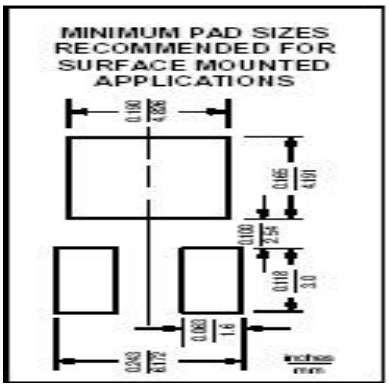
All Dimensions in are mm

Pin Configuration

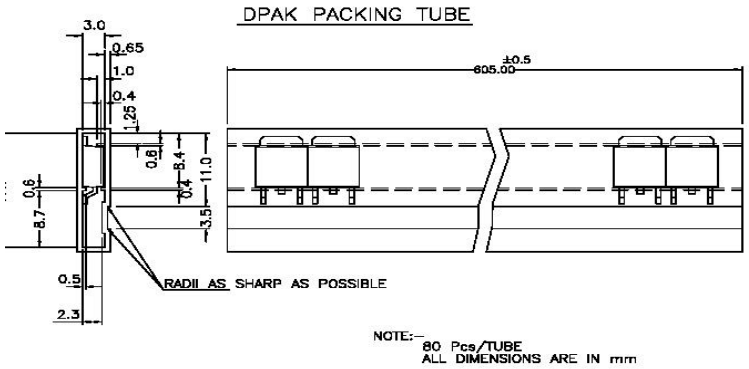
1. Base
2. Collector
3. Emitter

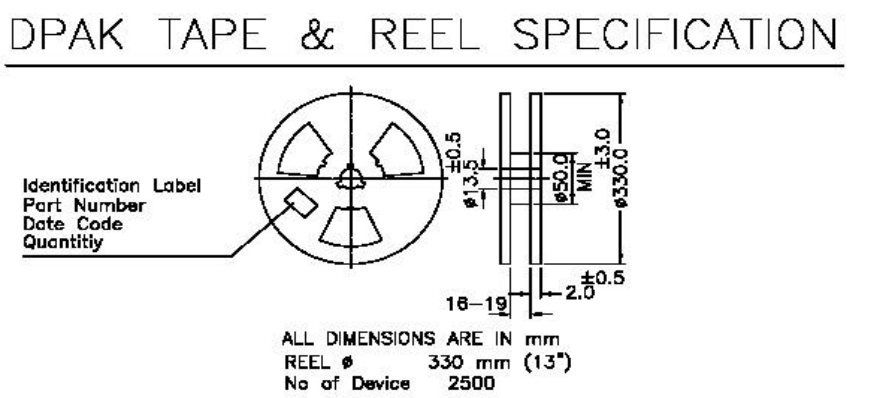


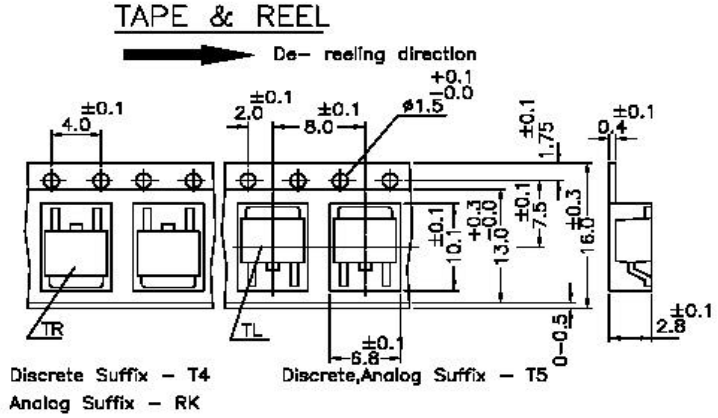
Recommended PCB Pad Layout



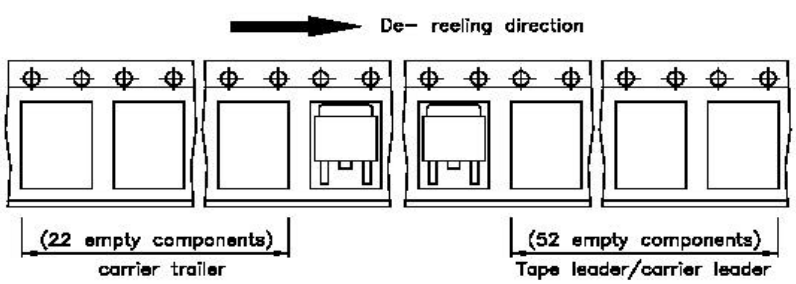
Packing Details







Notes:-
A maximum of three consecutive components may be missing. Provided this gap is followed by six consecutive components.



Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.
If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.
The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).
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