

## FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

## MAXIMUM RATINGS

Rating	Symbol	MJ4030 MJ4033	MJ4031 MJ4034	MJ4032 MJ4035	Unit
Collector-emitter voltage	$V_{CEO}$	60	80	100	Volts
Collector-base voltage	$V_{CB}$	60	80	100	Volts
Emitter-base voltage	$V_{EB}$	5.0			Volts
Collector-current	$I_C$	16			Amps
Base current	$I_B$	0.5			Amps
Total device dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	150 0.857			Watts W/ $^\circ\text{C}$
Operating and storage junction temperature range	$T_J, T_{stg}$	-55 to +200			$^\circ\text{C}$
Thermal resistance, junction to case	$R_{\theta JC}$	1.17			$^\circ\text{C}/\text{W}$

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

Characteristics	Symbol	Min	Max	Unit	
<b>OFF CHARACTERISTICS</b>					
<b>Collector-emitter breakdown voltage</b> <sup>(1)</sup> ( $I_C = 100\text{mA}, I_B = 0$ )	MJ4030, MJ4033 MJ4031, MJ4034 MJ4032, MJ4035	$BV_{CEO}$	60 80 100	- - -	Volts
<b>Collector-emitter leakage current</b> ( $V_{CB} = 60\text{V}, R_{BE} = 1.0\text{k}\Omega$ )	MJ4030, MJ4033	-	1.0	mA	
( $V_{CB} = 80\text{V}, R_{BE} = 1.0\text{k}\Omega$ )	MJ4031, MJ4034	-	1.0		
( $V_{CB} = 100\text{V}, R_{BE} = 1.0\text{k}\Omega$ )	MJ4032, MJ4035	-	1.0		
( $V_{CB} = 60\text{V}, R_{BE} = 1.0\text{k}\Omega, T_C = 150^\circ\text{C}$ )	MJ4030, MJ4033	-	5.0		
( $V_{CB} = 80\text{V}, R_{BE} = 1.0\text{k}\Omega, T_C = 150^\circ\text{C}$ )	MJ4031, MJ4034	-	5.0		
( $V_{CB} = 100\text{V}, R_{BE} = 1.0\text{k}\Omega, T_C = 150^\circ\text{C}$ )	MJ4032, MJ4035	-	5.0		
<b>Emitter cutoff current</b> ( $V_{BE} = 5.0\text{V}, I_C = 0$ )		$I_{EBO}$	-	5.0	mA
<b>Collector-emitter leakage current</b> ( $V_{CE} = 30\text{V}, I_B = 0$ )	MJ4030, MJ4033	$I_{CEO}$	-	3.0	mA
( $V_{CE} = 40\text{V}, I_B = 0$ )	MJ4031, MJ4034	-	-	3.0	
( $V_{CE} = 50\text{V}, I_B = 0$ )	MJ4032, MJ4035	-	-	3.0	
<b>ON CHARACTERISTICS</b> <sup>(1)</sup>					
<b>DC current gain</b> ( $I_C = 10\text{A}, V_{CE} = 3\text{V}$ )		$h_{FE}$	1000	-	-
<b>Collector-emitter saturation voltage</b> ( $I_C = 10\text{A}, I_B = 40\text{mA}$ )		$V_{CE(sat)}$	-	2.5	Volts
( $I_C = 16\text{A}, I_B = 80\text{mA}$ )		-	-	4.0	

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

# MJ4030-MJ4032-PNP MJ4033-MJ4035-NPN

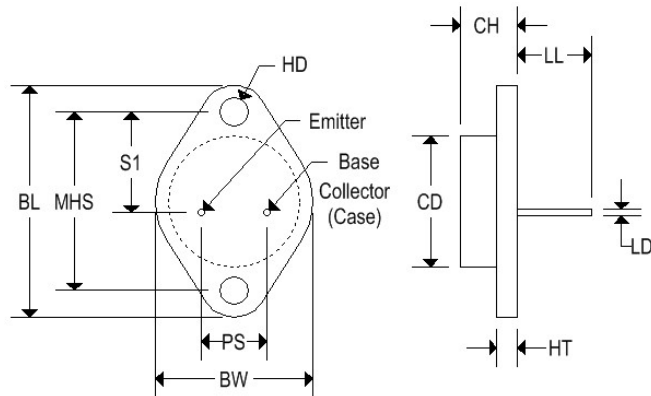
COMPLEMENTARY SILICON DARLINGTON POWER TRANSISTORS

Characteristics	Symbol	Min	Max	Unit
<b>ON CHARACTERISTICS</b>				
<b>Base emitter voltage</b> ( $I_C = 10A, V_{CE} = 3.0V$ )	$V_{BE}$	-	3.0	Volts

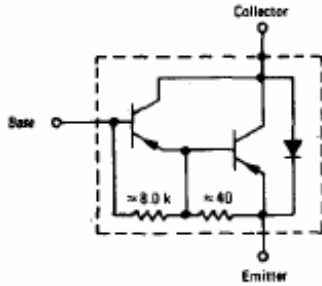
Note 1: Pulse test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2.0\%$ .

## MECHANICAL CHARACTERISTICS

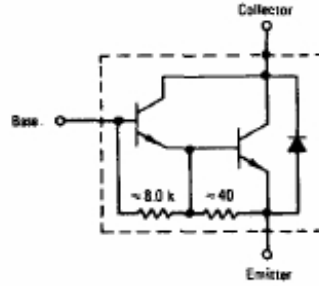
<b>Case</b>	TO-3
<b>Marking</b>	Alpha-numeric
<b>Polarity</b>	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.380	6.860	9.650
HT	0.060	0.135	1.520	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150

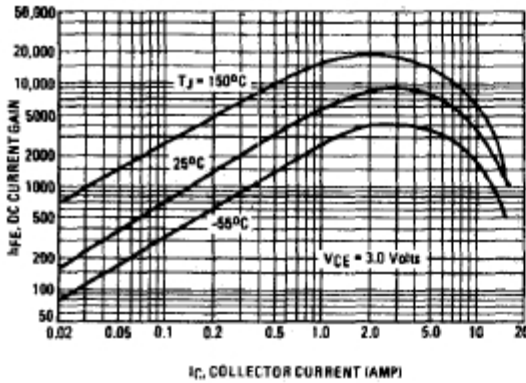


PNP: MJ4030-MJ4032

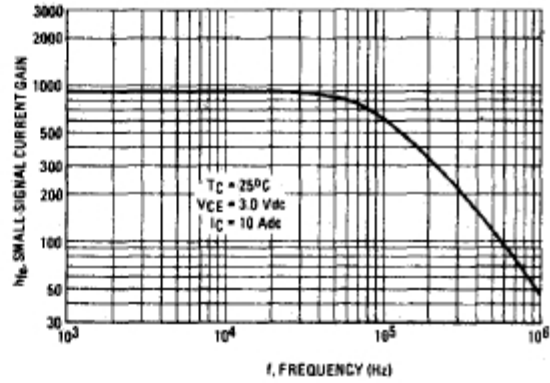


NPN: MJ4033-MJ4035

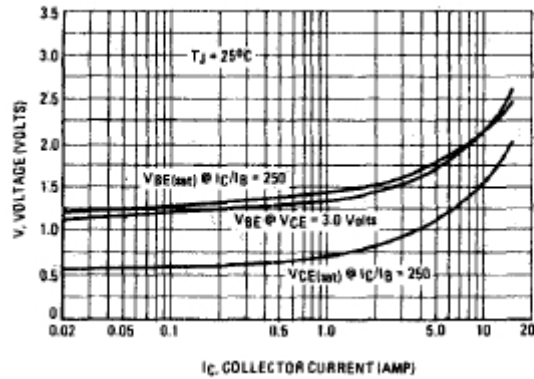
### DARLINGTON CIRCUIT SCHEMATIC



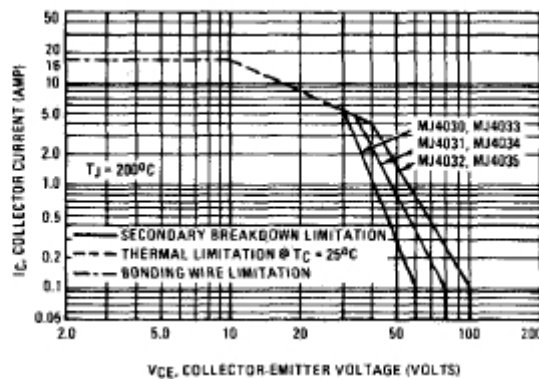
DC CURRENT GAIN



SMALL SIGNAL CURRENT GAIN



"ON" VOLTAGES



DC SAFE OPERATING AREA

There are two limitations on the power handling ability of a transistor: average junction temperature and secondary breakdown. Safe operating area curves IC-VCE limits of the transistor that must be observed for reliable operation: eg., the transistor must not be subjected to greater dissipation than the curves indicate. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown.