

MJL3281A (NPN) MJL1302A (PNP)

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



ON Semiconductor®

<http://onsemi.com>

Complementary Bipolar Power Transistors

Features

- Exceptional Safe Operating Area
- NPN/PNP Gain Matching within 10% from 50 mA to 5 A
- Excellent Gain Linearity
- High BVCEO
- High Frequency
- Pb-Free Packages are Available*

Benefits

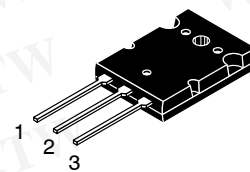
- Reliable Performance at Higher Powers
- Symmetrical Characteristics in Complementary Configurations
- Accurate Reproduction of Input Signal
- Greater Dynamic Range
- High Amplifier Bandwidth

Applications

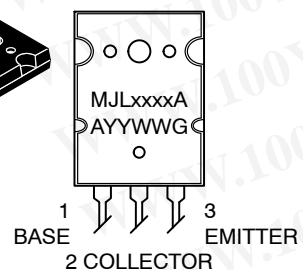
- High-End Consumer Audio Products
 - ◆ Home Amplifiers
 - ◆ Home Receivers
- Professional Audio Amplifiers
 - ◆ Theater and Stadium Sound Systems
 - ◆ Public Address Systems (PAs)

**15 AMPERES
 COMPLEMENTARY
 SILICON POWER
 TRANSISTORS
 260 VOLTS
 200 WATTS**

MARKING DIAGRAM



**TO-264
 CASE 340G
 STYLE 2**



xxxx = 3281 or 1302
 A = Location Code
 YY = Year
 WW = Work Week
 G = Pb-Free Package

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	260	Vdc
Collector-Base Voltage	V _{CBO}	260	Vdc
Emitter-Base Voltage	V _{EBO}	5.0	Vdc
Collector-Emitter Voltage - 1.5 V	V _{CEX}	260	Vdc
Collector Current - Continuous - Peak (Note 1)	I _C	15 25	Adc
Base Current - Continuous	I _B	1.5	Adc
Total Power Dissipation @ T _C = 25°C Derate Above 25°C	P _D	200 1.43	Watts W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	- 65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	0.625	°C/W

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. Pulse Test: Pulse Width = 5 ms, Duty Cycle < 10%.

ORDERING INFORMATION

Device	Package	Shipping
MJL3281A	TO-264	25 Units/Rail
MJL3281AG	TO-264 (Pb-Free)	25 Units/Rail
MJL1302A	TO-264	25 Units/Rail
MJL1302AG	TO-264 (Pb-Free)	25 Units/Rail

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

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (I _C = 100 mA _{dc} , I _B = 0)	V _{CEO(sus)}	260	-	V _{dc}
Collector Cutoff Current (V _{CB} = 260 V _{dc} , I _E = 0)	I _{CBO}	-	50	μA _{dc}
Emitter Cutoff Current (V _{EB} = 5 V _{dc} , I _C = 0)	I _{EBO}	-	5	μA _{dc}

SECOND BREAKDOWN

Second Breakdown Collector with Base Forward Biased (V _{CE} = 50 V _{dc} , t = 1 s (non-repetitive)) (V _{CE} = 100 V _{dc} , t = 1 s (non-repetitive))	I _{S/b}	4 1	- -	A _{dc}
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ON CHARACTERISTICS

DC Current Gain (I _C = 500 mA _{dc} , V _{CE} = 5 V _{dc}) (I _C = 1 A _{dc} , V _{CE} = 5 V _{dc}) (I _C = 3 A _{dc} , V _{CE} = 5 V _{dc}) (I _C = 5 A _{dc} , V _{CE} = 5 V _{dc}) (I _C = 8 A _{dc} , V _{CE} = 5 V _{dc})	h _{FE}	75 75 75 75 45	150 150 150 150 -	
Collector-Emitter Saturation Voltage (I _C = 10 A _{dc} , I _B = 1 A _{dc})	V _{CE(sat)}	-	3	V _{dc}

DYNAMIC CHARACTERISTICS

Current-Gain - Bandwidth Product (I _C = 1 A _{dc} , V _{CE} = 5 V _{dc} , f _{test} = 1 MHz)	f _T	30	-	MHz
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f _{test} = 1 MHz)	C _{ob}	-	600	pF

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TYPICAL CHARACTERISTICS

PNP MJL1302A

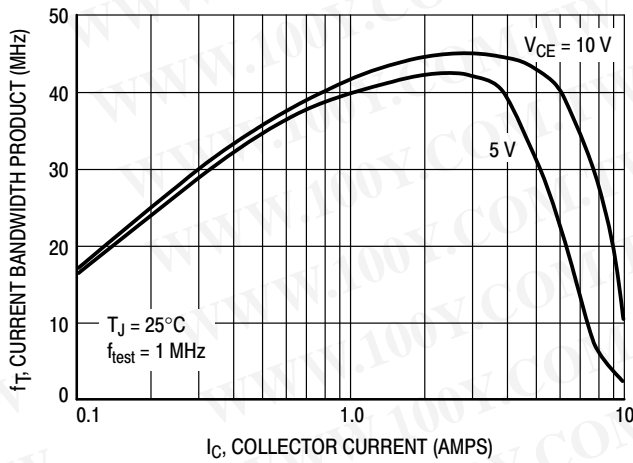


Figure 1. Typical Current Gain Bandwidth Product

NPN MJL3281A

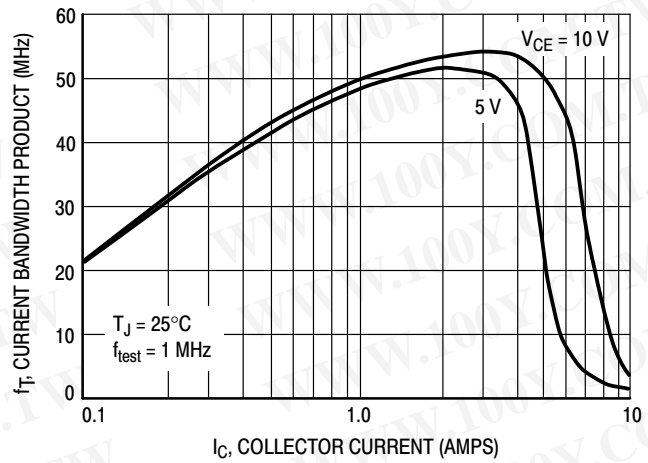


Figure 2. Typical Current Gain Bandwidth Product

PNP MJL1302A

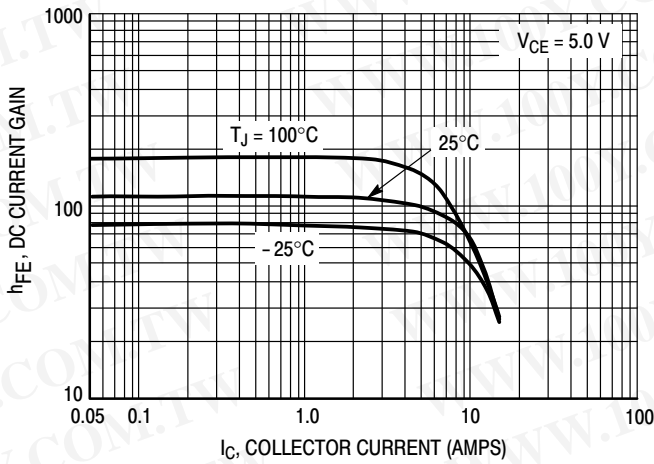


Figure 3. DC Current Gain

NPN MJL3281A

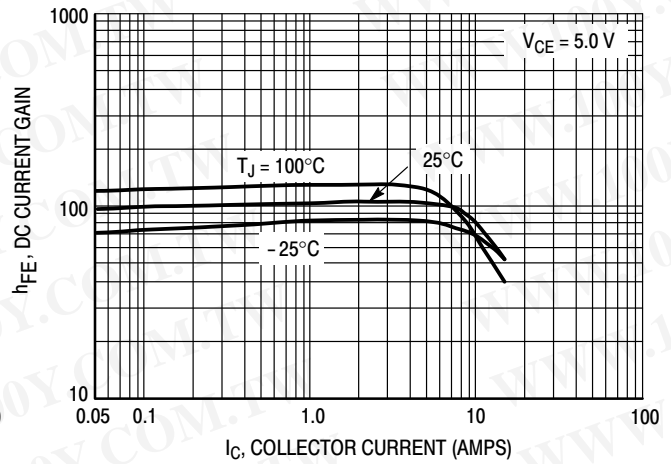


Figure 4. DC Current Gain

PNP MJL1302A

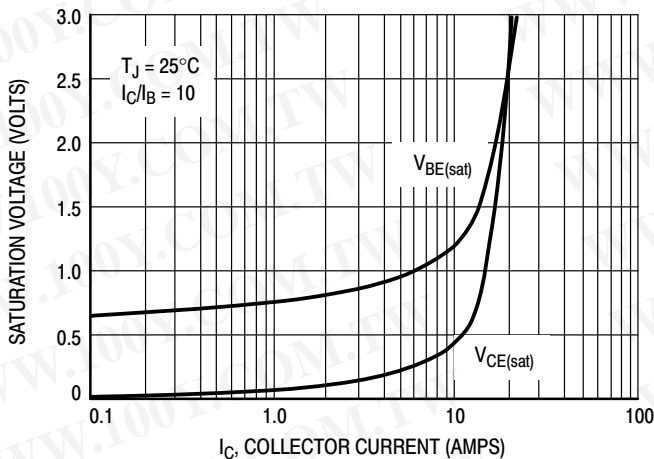


Figure 5. Typical Saturation Voltages

NPN MJL3281A

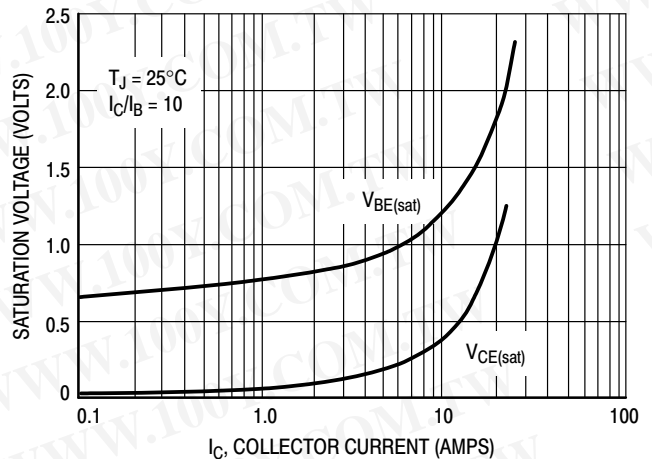


Figure 6. Typical Saturation Voltages

TYPICAL CHARACTERISTICS

PNP MJL1302A

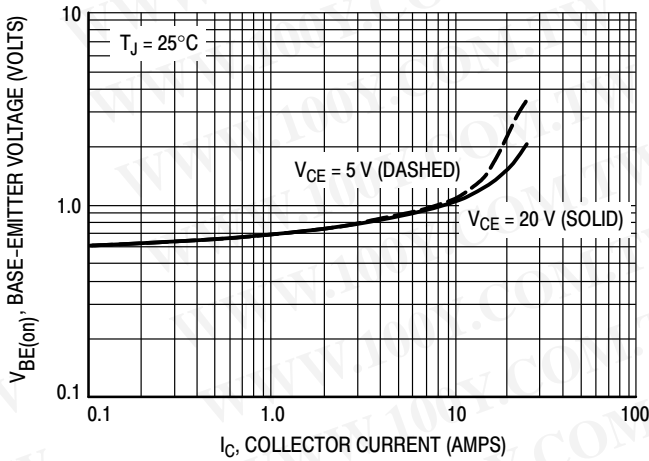


Figure 7. Typical Base-Emitter Voltage

NPN MJL3281A

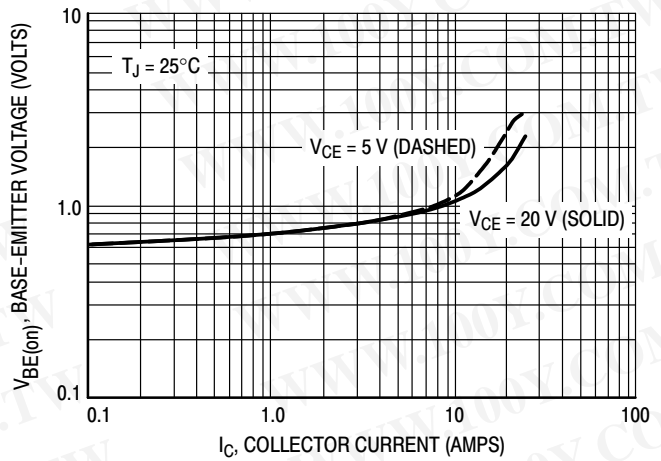


Figure 8. Typical Base-Emitter Voltage

PNP MJL1302A

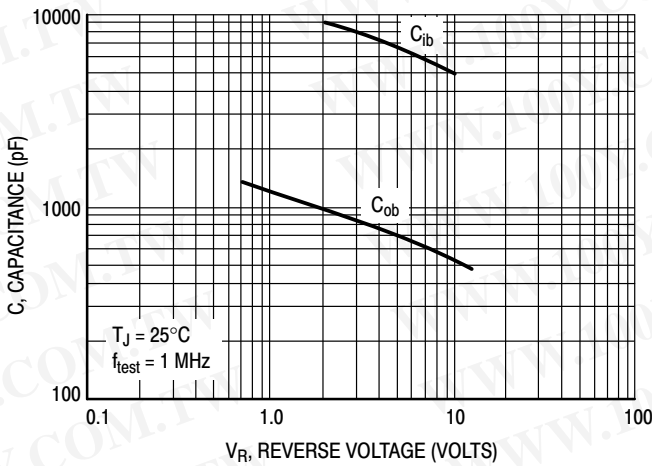


Figure 9. MJL1302A Typical Capacitance

NPN MJL3281A

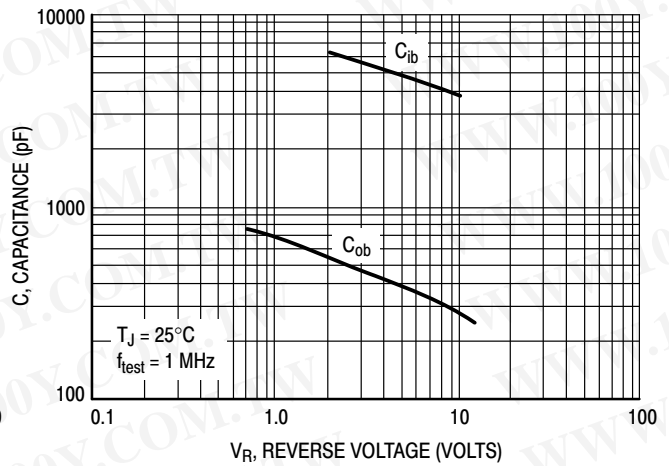


Figure 10. MJL3281A Typical Capacitance

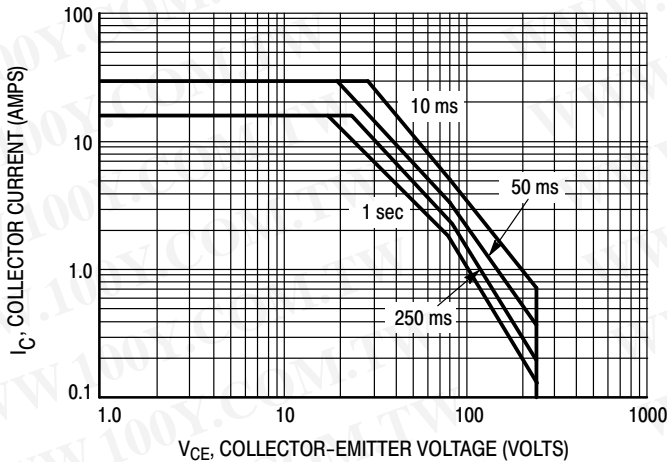


Figure 11. Active Region Safe Operating Area

There are two limitations on the power handling ability of a transistor; average junction temperature and secondary breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

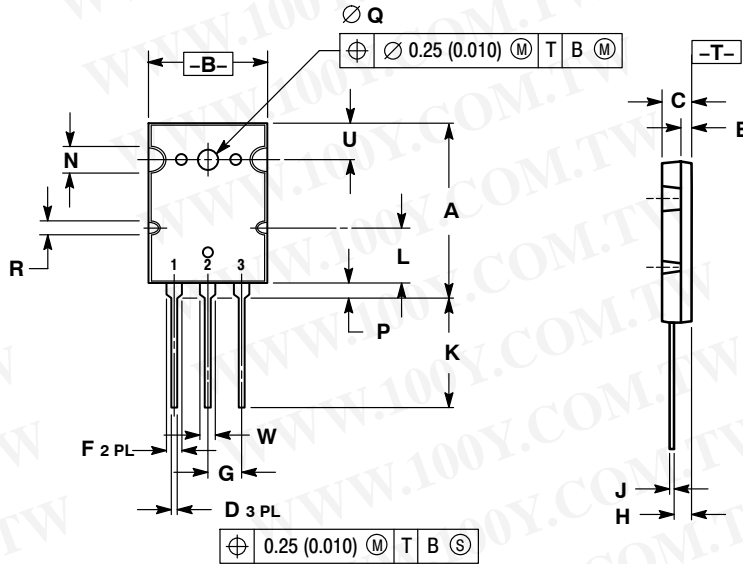
The data of Figure 11 is based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power than can be handled to values less than the limitations imposed by second breakdown.

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PACKAGE DIMENSIONS

TO-3PBL (TO-264)
CASE 340G-02
ISSUE J

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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	28.0	29.0	1.102	1.142
B	19.3	20.3	0.760	0.800
C	4.7	5.3	0.185	0.209
D	0.93	1.48	0.037	0.058
E	1.9	2.1	0.075	0.083
F	2.2	2.4	0.087	0.102
G	5.45 BSC		0.215 BSC	
H	2.6	3.0	0.102	0.118
J	0.43	0.78	0.017	0.031
K	17.6	18.8	0.693	0.740
L	11.2 REF		0.411 REF	
N	4.35 REF		0.172 REF	
P	2.2	2.6	0.087	0.102
Q	3.1	3.5	0.122	0.137
R	2.25 REF		0.089 REF	
U	6.3 REF		0.248 REF	
W	2.8	3.2	0.110	0.125

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

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