

Complementary N-P-N/P-N-P Silicon Power Transistors

Rugged Devices, Broadly Applicable For Industrial and Commercial Use

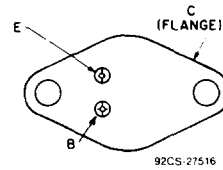
Features:

- High-dissipation capability
- Low saturation voltages
- Maximum safe-area-of-operation curves
- $f_T = 2 \text{ MHz}$
- High gain at high current

Applications:

- Series and shunt regulators
- High-fidelity amplifiers
- Power-switching circuits
- Solenoid drivers

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The RCA-MJ15001 and MJ15002 are ballasted epitaxial-base silicon transistors featuring high gain at high current.

The MJ15001 n-p-n transistor complements the MJ15002 p-n-p transistor. These types are supplied in the JEDEC TO-204AA packages.

MAXIMUM RATINGS, Absolute-Maximum Values:

	MJ15001	MJ15002	
V_{CE0}	140	-140	V
V_{CE0}	140	-140	V
V_{EB0}	5	-5	V
I_C	15	-15	A
I_B	5	-5	A
I_E	20	-20	A
P_T			
At $T_C \leq 25^\circ\text{C}$	200	200	W
At $T_C > 25^\circ\text{C}$	1.14		W/ $^\circ\text{C}$
T_{stg}, T_J	-65 to +200		$^\circ\text{C}$
T_L			
At distance $\leq 1/32$ in. (0.8 mm) from seating plane for 10 s max.	230		$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS, at Case Temperature
(T_C) = 25°C Unless Otherwise Specified

CHARACTERISTICS	TEST CONDITIONS				LIMITS				UNITS
	VOLTAGE V dc		CURRENT A dc		MJ15001		MJ15002		
	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	
I _{CEX}	140	1.5			-	1	-	-1	mA
T _C = 150°C	140	1.5			-	2	-	-2	
I _{CEO}	140			0	-	2.5	-	-2.5	mA
I _{EBO}		5	0		-	1	-	-1	mA
V _{CEO(sus)} ^a			2	0	140	-	-140	-	V
h _{FE} ^a	2		4		25	150	25	150	
V _{BE}	2		4		-	2	-	-2	V
V _{CE(sat)}			4	0.4	-	1	-	-1	V
f _T f = 0.5 MHz	10		0.5		2	-	2	-	MHz
I _{S/b} tp - 1s	40 100				5 0.5	-	-5 -0.5	-	A
C _{ob} V _{CB} = 10 V f = 1 MHz					-	1000	-	1000	pF
R _{θJC}					-	0.875	-	0.875	°C/W

^a CAUTION: Sustaining voltage, V_{CEO(sus)}, MUST NOT be measured on a curve tracer. See Figs. 11 & 12.

2
POWER TRANSISTORS

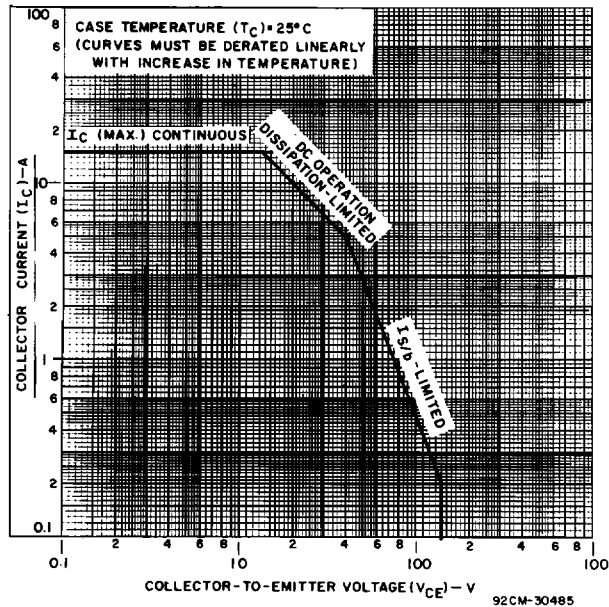


Fig. 1 - Maximum operating area for both types.

MJ15001, MJ15002

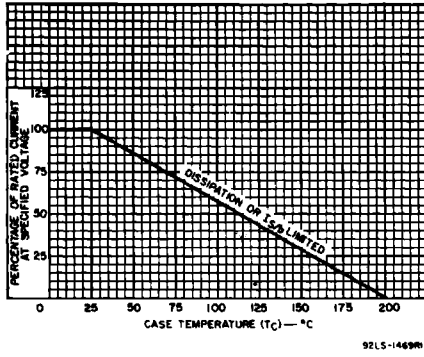


Fig. 2 - Current derating curve for both types.

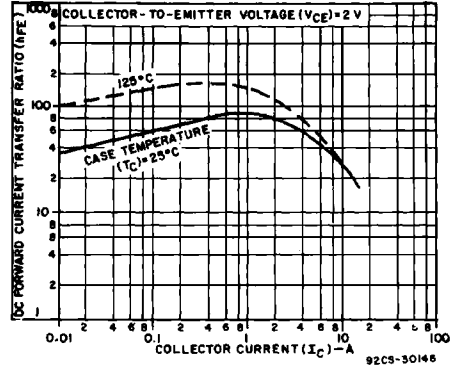


Fig. 3 - Typical dc beta characteristics as a function of collector current for MJ15001.

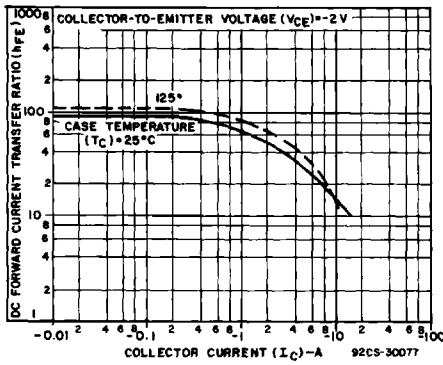


Fig. 4 - Typical dc beta characteristics as a function of collector current for MJ15002.

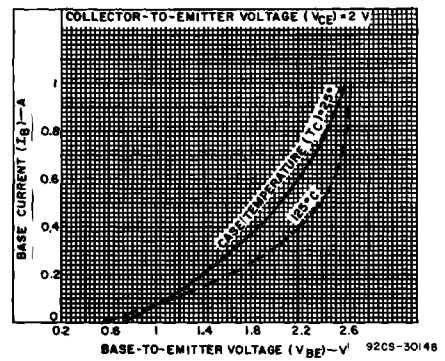


Fig. 5 - Typical input characteristics for MJ15001.

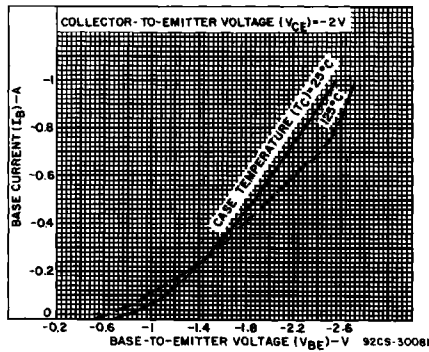


Fig. 6 - Typical input characteristics for MJ15002.

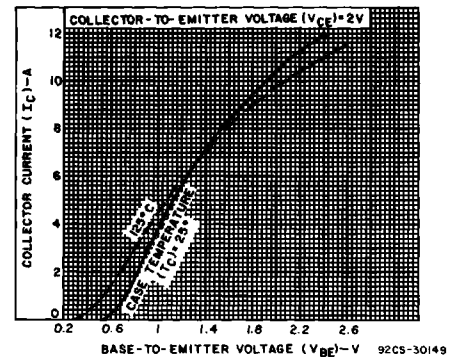


Fig. 7 - Typical transfer characteristics for MJ15001.

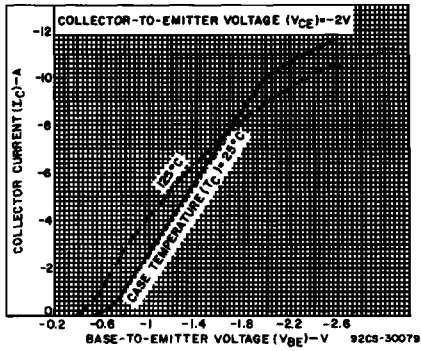


Fig. 8 - Typical transfer characteristics for MJ15002.

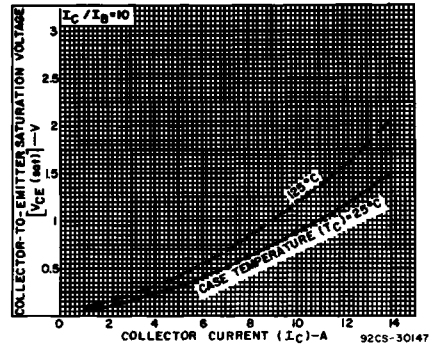


Fig. 9 - Typical saturation voltage characteristics for MJ15001.

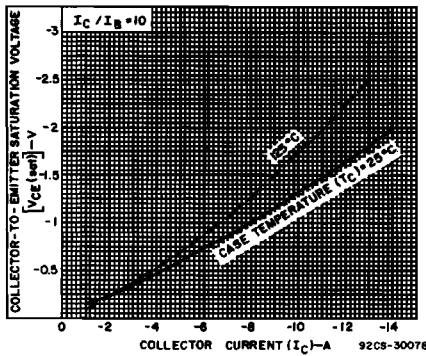


Fig. 10 - Typical saturation voltage characteristics for MJ15002.

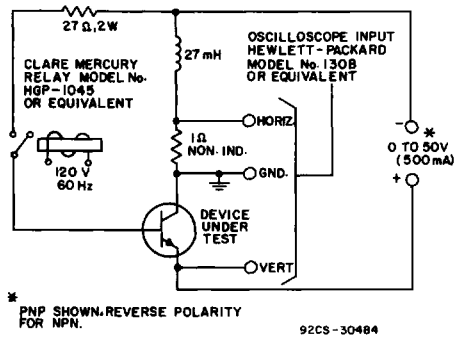
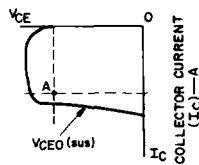


Fig. 11 - Circuit used to measure sustaining voltages $V_{CE0(sus)}$.

COLLECTOR-TO-EMITTER VOLTAGE (V_{CE})—V



NOTE: The sustaining Voltages $V_{CE0(sus)}$, is acceptable when the trace falls to the left and below point "A". (For values of current and voltage, see Electrical Characteristics.)

92CS-30484

Fig. 12 - Oscilloscope display for measurement of sustaining voltages. (Test circuit shown in Fig. 11).