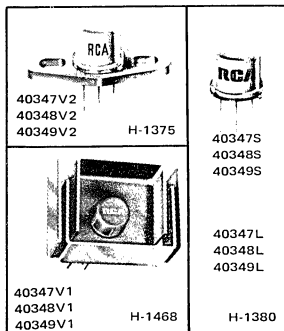




Power Transistors

40347 40347V1 40347V2
 40348 40348V1 40348V2
 40349 40349V1 40349V2



Hometaxial-Base Silicon N-P-N Medium- and High-Voltage Transistors

General-Purpose Transistors for Industrial and Commercial Equipment

Features:

- ▣ High second-breakdown resistance
- ▣ $V_{CE(sat)}$ typically less than 1 V at 1A for 40347 and 40348
- ▣ $V_{CEV(sus)}$ for 40349 = 160 volts min.
- ▣ Hermetically-sealed packages

These devices are available with either 1½-inch leads (TO-5 package) or ½-inch leads (TO-39 package). The longer-lead versions are specified by suffix "L" after the type number; the shorter-lead versions are specified by suffix "S" after the type number.

RCA-40347, 40348, and 40349 are hometaxial-base, silicon n-p-n transistors intended for a wide variety of low- and medium-power applications requiring medium- and high-voltage power transistors. These devices differ primarily in their breakdown-voltage ratings.

Types 40347V1, 40348V1, and 40349V1 are 40347, 40348, and 40349, respectively, with factory-attached heat radiators; they are intended for printed circuit-board applications.

Types 40347V2, 40348V2, and 40349V2, are 40347, 40348, and 40349, respectively, with factory-attached diamond-shaped mounting flanges.

Typical applications for these transistors include switching regulators, converters, inverters, relay controls, oscillators, pulse amplifiers, and audio amplifiers (in low-power driver and output stages). These transistors are especially suitable for use in low-cost ac/dc of amplifier circuits.

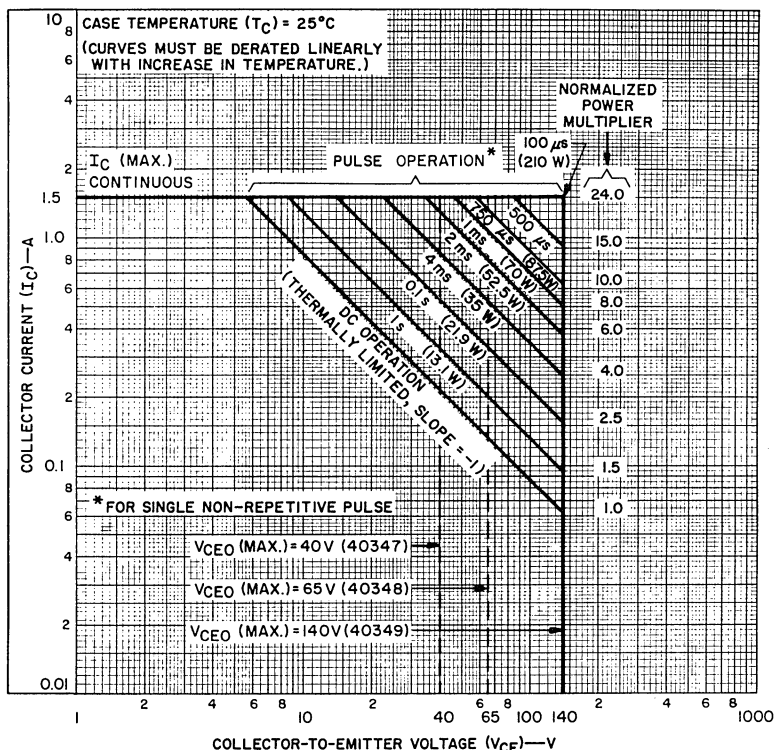
MAXIMUM RATINGS, Absolute-Maximum Values:

	40347 40347V1 40347V2	40348 40348V1 40348V2	40349 40349V1 40349V2	
COLLECTOR-TO-BASE VOLTAGE	V_{CBO} 60	90	160	V
COLLECTOR-TO-EMITTER VOLTAGE:				
With $-1.5 V (V_{BE})$ of reverse bias	V_{CEV} 60	90	160	V
With base open	V_{CEO} 40	65	140	V
EMITTER-TO-BASE VOLTAGE	V_{EBO} 7	7	7	V
CONTINUOUS COLLECTOR CURRENT	I_C 1.5	1.5	1.5	A
PEAK COLLECTOR CURRENT	I_{CM} 3.0	3.0	3.0	A
CONTINUOUS BASE CURRENT	I_B 0.5	0.5	0.5	A
TRANSISTOR DISSIPATION	P_T			
At case temperature up to 25°C	11.7 (40347V2)	11.7 (40348V2)	11.7 (40349V2)	W
At case temperature above 25°C	8.75 (40347)	8.75 (40348)	8.75 (40349)	W
At ambient temperature up to 25°C	1.0 (40347)	1.0 (40348)	1.0 (40349)	W
At ambient temperature above 25°C	4.4 (40347V1)	4.4 (40348V1)	4.4 (40349V1)	W
TEMPERATURE RANGE:				
Storage and Operating (Junction)	← -65 to 200 →			°C
LEAD TEMPERATURE (During soldering):				
At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.	← 230 →			°C

ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C unless otherwise specified

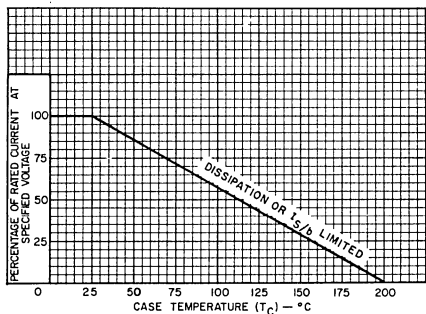
Characteristic	Symbol	TEST CONDITIONS				LIMITS						Units
		Voltage V dc		Current A dc		40347		40348		40349		
		V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.	
Collector-Cutoff Current With external base-to-emitter resistance (R_{BE}) = 1 k Ω	I_{CER}	30				—	1	—	—	—	—	μ A
		60				—	—	—	1	—	—	
90						—	—	—	—	—	2	
With R_{BE} = 1 k Ω and T_C = 150°C	I_{CER}	30				—	1	—	—	—	—	mA
		60				—	—	—	1	—	—	
		90				—	—	—	—	—	1	
Emitter-Cutoff Current	I_{EBO}		—7			—	10	—	10	—	10	μ A
DC Forward-Current Transfer Ratio	h_{FE}	4		0.15		—	—	—	—	30	125	V
		4		0.30		—	—	30	125	—	—	
		4		0.45		25	100	—	—	10	—	
		4		1.00		—	—	10	—	—	—	
Collector-to-Emitter Sustaining Voltage: (See Figs. 4, 6, and 8) With base-emitter junction reverse biased	V_{CEV} (sus)		—1.5	0.050		60	—	90	—	160 ^a	—	V
	V_{CEO} (sus)			0.050		40	—	65	—	140 ^a	—	V
Base-to-Emitter Voltage	V_{BE}	4		0.15		—	—	—	—	—	1.1	V
		4		0.30		—	—	—	1.3	—	—	
		4		0.45		—	1.5	—	—	—	—	
Collector-to-Emitter Saturation Voltage	V_{CE} (sat)			0.15	15 mA	—	—	—	—	—	0.5	V
				0.30	30 mA	—	—	—	0.75	—	—	
				0.45	45 mA	—	1	—	—	—	—	
Forward-Bias Second Break- down Collector Current (1-s non-repetitive pulse)	$I_{S/b}$	38				345	—	—	—	—	—	mA
		63				—	—	208	—	—	—	
		138				—	—	—	—	95	—	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$					20(max.)		20(max.)		20(max.)		°C/W
						40347		40348		40349		
						15(max.)		15(max.)		15(max.)		
						40347V2		40348V2		40349V2		
Thermal Resistance: Junction-to-Ambient	$R_{\theta JA}$					40(max.)		40(max.)		40(max.)		°C/W
						40347V1		40348V1		40349V1		

^a Pulsed; pulse duration = 300 μ s, duty factor \leq 2%.TERMINAL CONNECTIONS FOR TYPES
40347, 40348, & 40349Lead 1 - Emitter
Lead 2 - Base
Case, Lead 3 - CollectorTERMINAL CONNECTIONS FOR TYPES
40347V1, 40348V1, & 4049V1Lead 1 - Emitter
Lead 2 - Base
Heat Radiator, Lead 3 - CollectorTERMINAL CONNECTIONS FOR TYPES
40347V2, 40348V2, & 40349V2Lead 1 - Emitter
Lead 2 - Base
Flange, Lead 3 - Collector



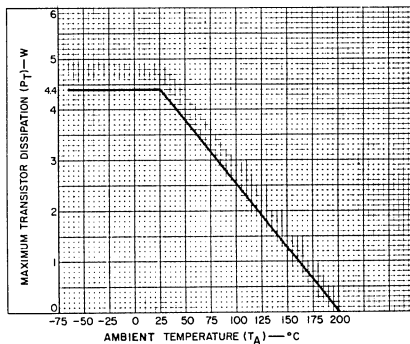
92SS-3586R1

Fig. 1 - Maximum operating areas for types 40347, 40348 and 40349.



92LS-1469R1

Fig. 2 - Dissipation derating curve for types 40347, 40348, and 40349.



92SS-3579R1

Fig. 3 - Dissipation derating curve for types 40347V1, 40348V1, and 40349V1.

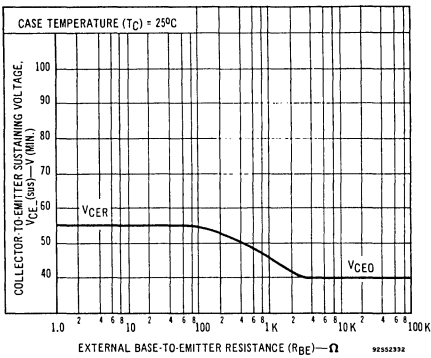


Fig. 4 — Sustaining voltage vs. base-to-emitter resistance for types 40347, 40347V1 and 40347V2.

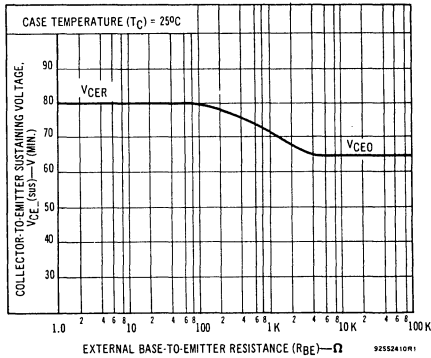


Fig. 6 — Sustaining voltage vs. base-to-emitter resistance for types 40348, 40348V1 and 40348V2.

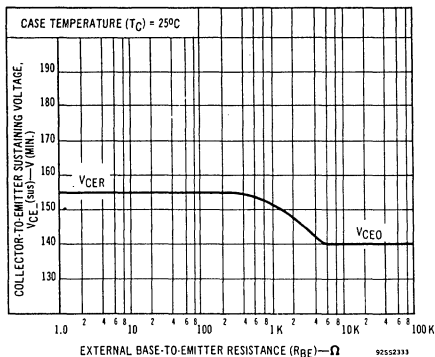


Fig. 8 — Sustaining voltage vs. base-to-emitter resistance for types 40349, 40349V1 and 40349V2.

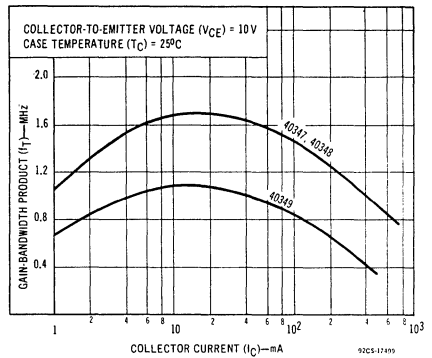


Fig. 5 — Typical gain-bandwidth product vs. collector current for types 40347, 40348 and 40349.

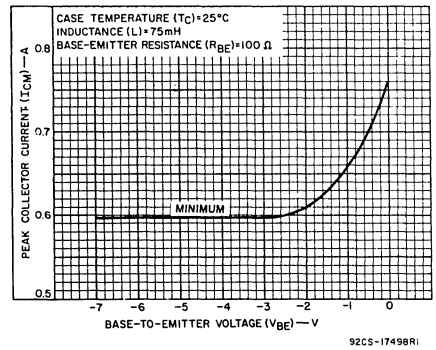


Fig. 7 — Reverse-bias second-breakdown characteristics for types 40347, 40348 and 40349.

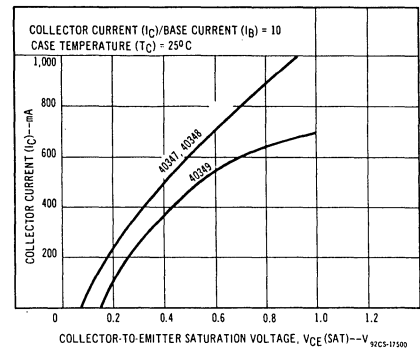


Fig. 9 — Typical saturation characteristic for types 40347, 40348 and 40349.

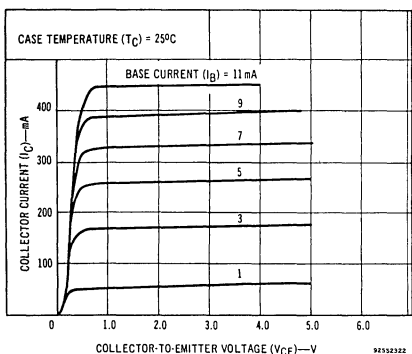


Fig. 10 - Typical output characteristics for type 40347.

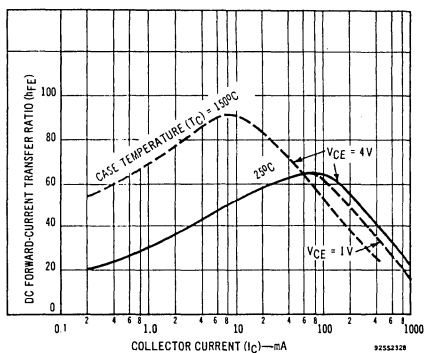


Fig. 11 - Typical dc beta characteristics for type 40347.

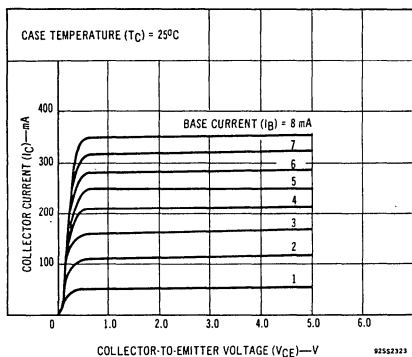


Fig. 12 - Typical output characteristics for type 40348.

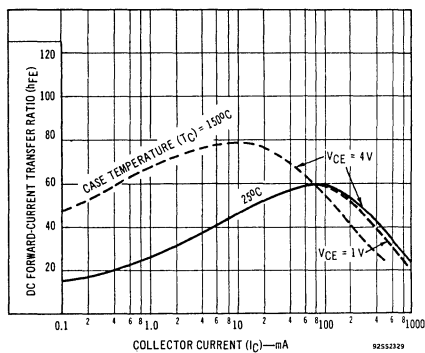


Fig. 13 - Typical dc beta characteristics for type 40348.

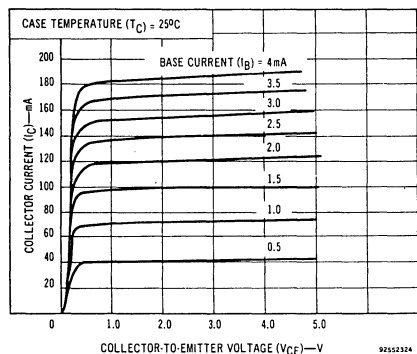


Fig. 14 - Typical output characteristics for type 40349.

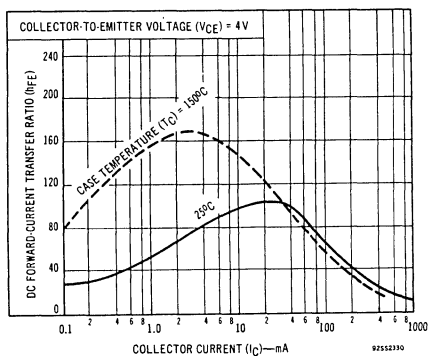


Fig. 15 - Typical dc beta characteristics for type 40349.

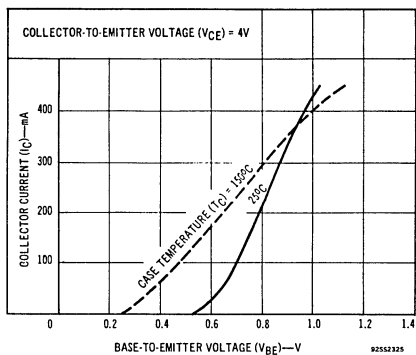


Fig. 16 - Typical transfer characteristics for type 40347.

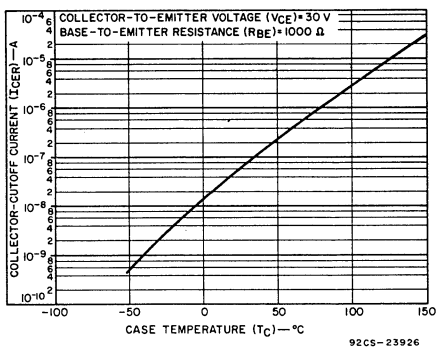


Fig. 17 - Collector-cutoff-current characteristic for type 40347.

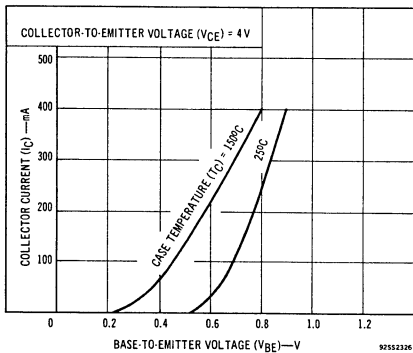


Fig. 18 - Typical transfer characteristics for type 40348.

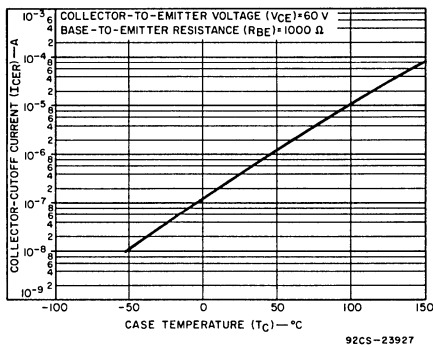


Fig. 19 - Collector-cutoff-current characteristic for type 40348.

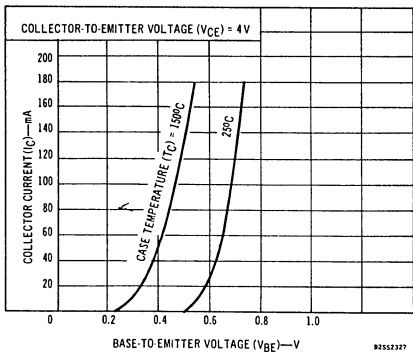


Fig. 20 - Typical transfer characteristics for type 40349.

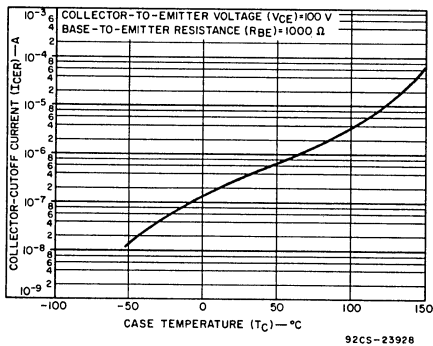


Fig. 21 - Collector-cutoff-current characteristic for type 40349.