

RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

FEATURES

Power amplifier applications

Power dissipation

$$P_{CM} : 1 \text{ W} \quad (T_{amb}=25^{\circ}\text{C})$$

Collector current

$$I_{CM} : -1.5 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO} : -180 \text{ V}$$

Collector-emitter voltage

$$V_{CEO}$$

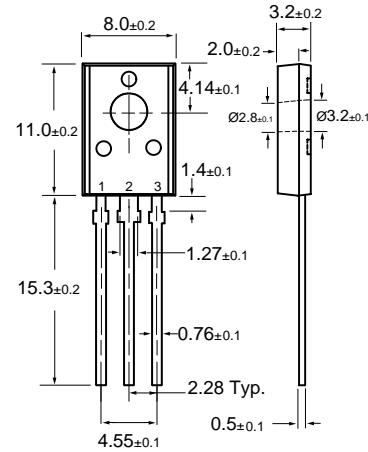
$$2SB649 : -120 \text{ V}$$

$$2SB649A : -160 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg} : -55^{\circ}\text{C} \text{ to } +150$$

TO-18



- 1: Emitter
- 2: Collector
- 3: Base

Dimensions in Millimeters

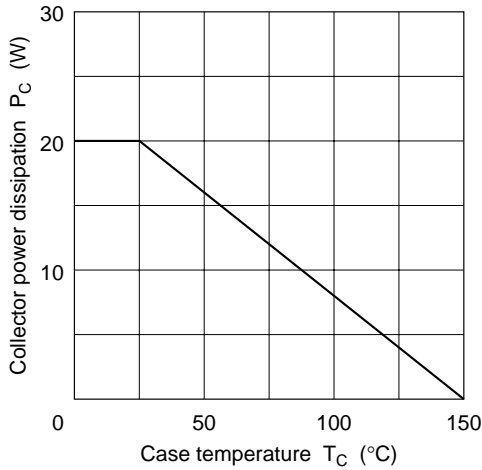
ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-1\text{mA}, I_E=0$	-180		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-10\text{mA}, I_B=0$	2SB649 -120 2SB649A -160		V
Collector-emitter breakdown voltage	$V_{(BR)EBO}$	$I_E=-1\text{mA}, I_C=0$	-5		V
Collector cut-off current	I_{CBO}	$V_{CB}=-160\text{V}, I_E=0$		-10	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0$		-10	μA
DC current gain	$h_{FE(1)}$ *	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$	2SB649 60 2SB649A 60	320 200	
	$h_{FE(2)}$ *	$V_{CE}=-5\text{V}, I_C=-500\text{mA}$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$ *	$I_C=-500\text{mA}, I_B=-50\text{mA}$		-1	V
Base-emitter voltage	V_{BE} *	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$		-1.5	V
Transition frequency	f_T	$V_{CE}=-5\text{V}, I_C=-150\text{mA}$	140		MHz
Collector output capacitance	C_{ob}	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$	27		pF

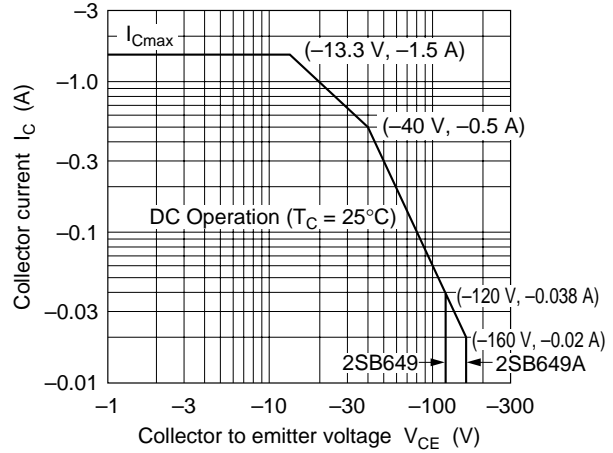
* The 2SB649 and 2SB649A are grouped by h_{FE1} as follows.

Rank	B	C	D
2SB649	60 - 120	100 - 200	160 - 320
2SB649A	60 - 120	100 - 200	----

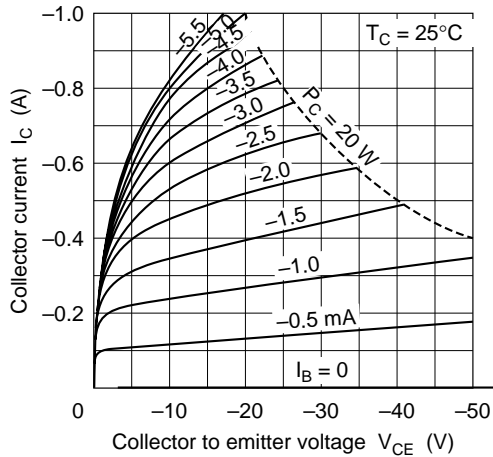
Maximum Collector Dissipation Curve



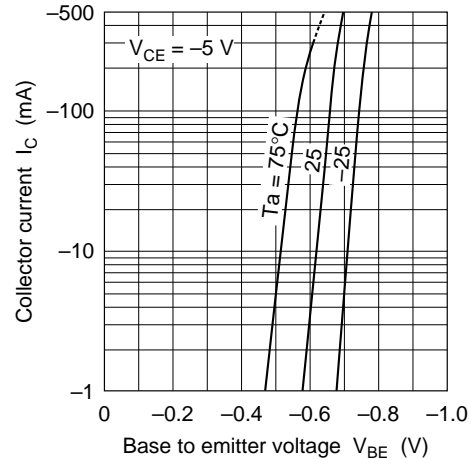
Area of Safe Operation



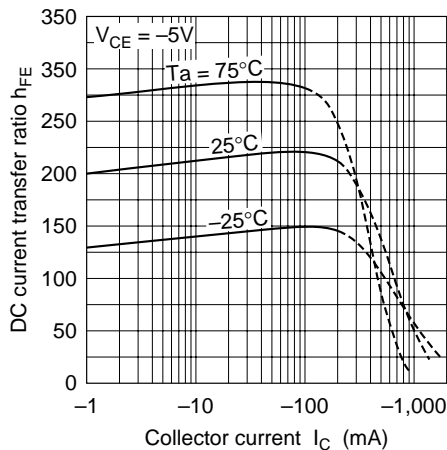
Typical Output Characteristics



Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current



Collector to Emitter Saturation Voltage vs. Collector Current

