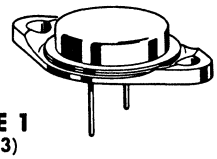
2N665 (GERMANIUM)



CASE 1
(TO-3)

PNP germanium power transistor for driver and power output amplifier and power switching applications in military and industrial equipment.

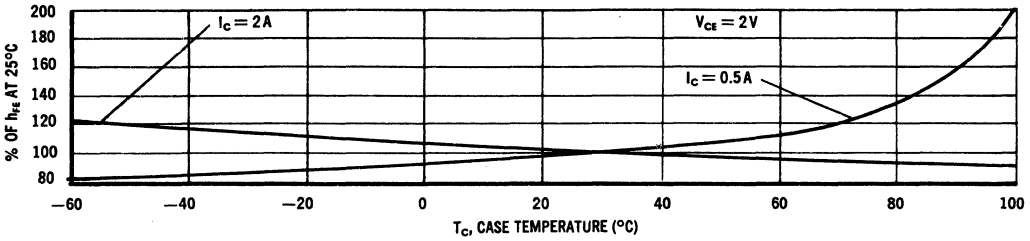
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CB}	80	Vdc
Emitter-Base Voltage	V_{EB}	40	Vdc
DC Collector Current	I_C	3.0	Amp
DC Emitter Current	I_E	5.0	Amp
Collector Junction Temperature	T_J	-65 to +95	°C
Collector Dissipation Derate above 25°C	P_D	35 0.5	Watts W/°C

ELECTRICAL CHARACTERISTICS

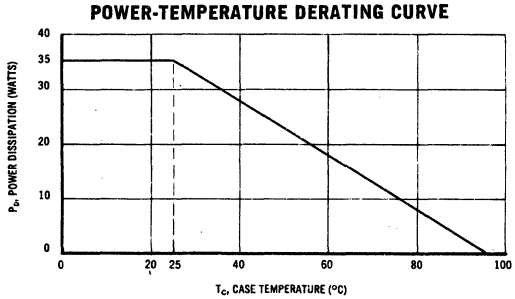
Characteristic	Symbol	Min	Max	Unit
Emitter Cutoff Current (V_{EBO} = -40 Vdc, I_C = 0)	I_{EBO}	—	2.0	mAdc
Collector Cutoff Current (V_{CBO} = -2 Vdc, I_E = 0) (V_{CBO} = -60 Vdc, I_E = 0) (V_{CBO} = -80 Vdc, I_E = 0)	I_{CBO}	— — —	0.05 2.0 10	mAdc
DC Current Gain (V_{CE} = -2 Vdc, I_C = -0.5 Adc) (V_{CE} = -2 Vdc, I_C = -2 Adc)	h_{FE}	40 20	80 —	—
Emitter-Base Voltage (V_{CE} = -2 Vdc, I_C = -2 Adc)	V_{EB}	—	1.5	Vdc
Floating Potential (V_{CB} = -80 Vdc, voltmeter input resistance = 10 megohms min, t ≈ 1 sec)	V_{EBF}	—	1.0	Vdc
Collector-Emitter Saturation Voltage (I_C = -3 Adc, I_B = -220 mAdc)	$V_{CE(sat)}$	—	-0.9	Vdc
Collector-Emitter Voltage (I_C = -300 mAdc, I_B = 0)	V_{CEO}	40	—	Vdc
Small-Signal Short-Circuit Forward-Current Transfer-Ratio Cutoff Frequency (V_{CE} = -14 Vdc, I_C = -2 Adc)	$f_{\alpha e}$	20	—	kHz
Emitter Cutoff Current (V_{EBO} = -30 Vdc, I_C = 0, T_C = +71°C min)	I_{EBO}	—	2.0	mAdc
Collector Cutoff Current (V_{CBO} = -30 Vdc, I_E = 0, T_C = +71°C min)	I_{CBO}	—	2.0	mAdc

h_{FE} versus TEMPERATURE

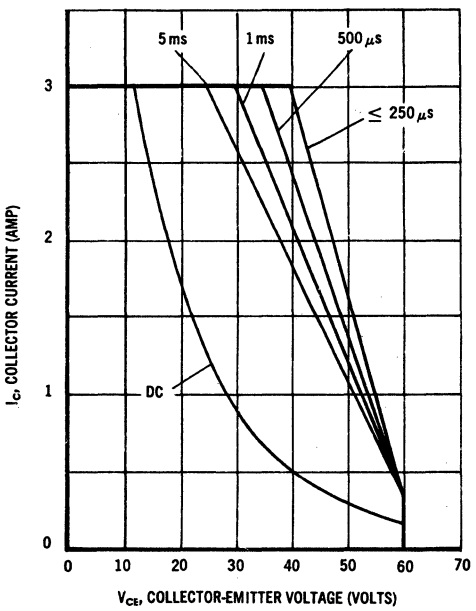


The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not go into secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a collector-emitter short. (Duty cycle of the excursions make no significant change in these safe areas.) To insure operation below the maximum T_J, the power-temperature derating curve must be observed for both steady state and pulse power conditions.

POWER-TEMPERATURE DERATING CURVE



SAFE OPERATING AREA



2N669 (GERMANIUM)

For Specifications, See 2N176 Data.