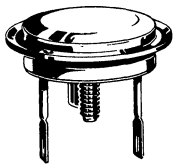
2N2075 thru 2N2082 (GERMANIUM)

2N2075A thru 2N2082A



PNP germanium power transistors for high-power applications in high-reliability equipment.

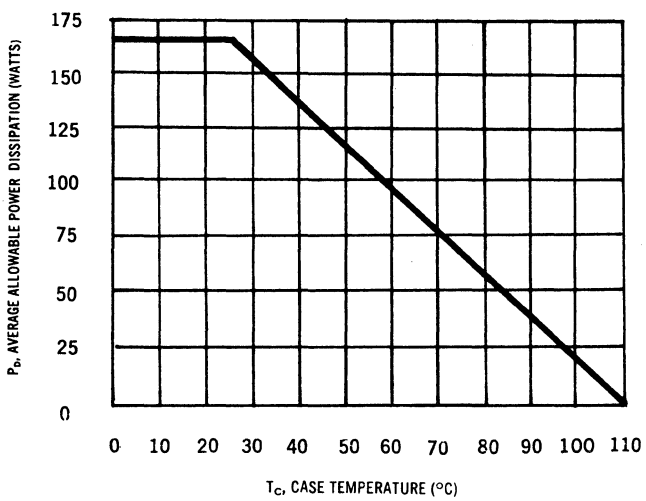
CASE 5
(TO-36)

MAXIMUM RATINGS

Rating	Symbol	2N2078 2N2082	2N2077 2N2081	2N2076 2N2080	2N2075 2N2079	Unit
Collector-Emitter Voltage	V_{CEO}	25	45	55	65	Vdc
Collector-Emitter Voltage	V_{CES}	40	50	70	80	Vdc
Collector-Base Voltage	V_{CB}	40	50	70	80	Vdc
Emitter-Base Voltage	V_{EB}	20	25	35	40	Vdc
Collector Current	I_C	15				Adc
Total Device Dissipation @ $T_C = 25°C$	P_D	170				Watts
Operating Junction Temperature Range	T_J	-65 to +110				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	0.5	°C/W



POWER-TEMPERATURE DERATING CURVE

The maximum average power is related to maximum junction temperature by the thermal resistance factor.

This curve has a value of 170 Watts at case temperatures of 25°C and is 0 Watts at 110°C with a linear relation between the two temperatures such that:

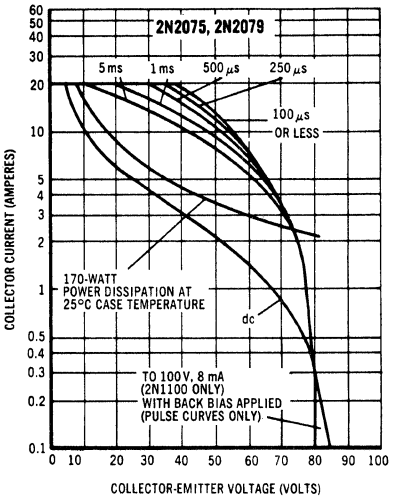
$$\text{allowable } P_D = \frac{110° - T_C}{0.5}$$

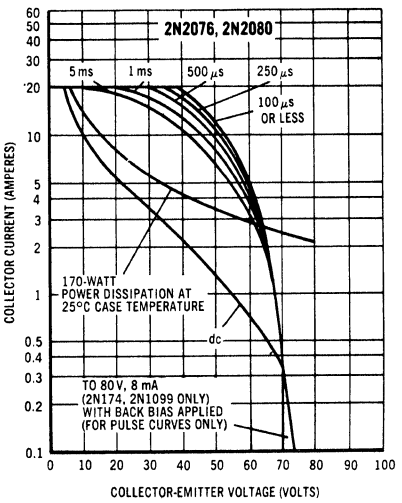
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

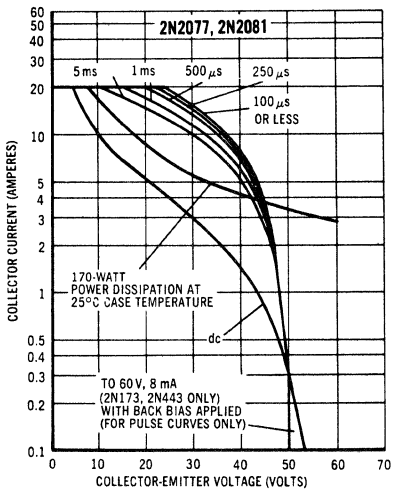
Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 1.0 Adc, I_B = 0)	2N2078, 2N2082	BV_{CEO}	25	-	Vdc
	2N2077, 2N2081		45	-	
	2N2076, 2N2080		55	-	
	2N2075, 2N2079		65	-	
Collector-Emitter Breakdown Voltage* (I_C = 300 mAdc, V_{BE} = 0)	2N2078, 2N2082	BV_{CES}	40	-	Vdc
	2N2077, 2N2081		50	-	
	2N2076, 2N2080		70	-	
	2N2075, 2N2079		80	-	
Floating Potential		V_{EBF}			Vdc
(V_{CB} = 40 Vdc, I_E = 0)	2N2078, 2N2082		-	1.0	
(V_{CB} = 50 Vdc, I_E = 0)	2N2077, 2N2081		-	1.0	
(V_{CB} = 70 Vdc, I_E = 0)	2N2076, 2N2080		-	1.0	
(V_{CB} = 80 Vdc, I_E = 0)	2N2075, 2N2079		-	1.0	
Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = 2.0 Vdc, I_E = 0)			-	0.2	
(V_{CB} = $V_{CB(max)}$, V_{EB} = 1.5 Vdc)			-	4.0	
(V_{CB} = $V_{CB(max)}$, I_E = 0, T_C = +71°C)			-	15	
Emitter Cutoff Current		I_{EBO}			mAdc
(V_{BE} = $V_{BE(max)}$, I_C = 0)			-	4.0	
(V_{BE} = $V_{BE(max)}$, I_C = 0, T_C = +71°C)			-	15	
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			-
(I_C = 1.2 Adc, V_{CE} = 2.0 Vdc)	2N2075 thru 2N2078		25	100	
	2N2079 thru 2N2082		40	160	
(I_C = 5.0 Adc, V_{CE} = 2.0 Vdc)	2N2075 thru 2N2078		20	40	
	2N2079 thru 2N2082		35	70	
(I_C = 5.0 Adc, V_{CE} = 2.0 Vdc, T_C = -55°C)	2N2075 thru 2N2078		15	-	
	2N2079 thru 2N2082		25	-	
(I_C = 12 Adc, V_{CE} = 2.0 Vdc)	2N2075 thru 2N2078		8	-	
	2N2079 thru 2N2082		12	-	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 13 Adc, I_B = 2.0 Adc)	2N2075 & 76, 2N2079 & 80		-	0.7	
	2N2077 & 78, 2N2081 & 82		-	0.9	
Base-Emitter On Voltage		$V_{BE(on)}$			Vdc
(I_C = 5.0 Adc, V_{CE} = 12 Vdc)			-	0.9	
DYNAMIC CHARACTERISTICS					
Common-Emitter Cutoff Frequency		$f_{\alpha e}$			kHz
(I_C = 5.0 Adc, V_{CE} = 6.0 Vdc)			5.0	-	
Rise Time		t_r	Typ		μs
(V_{CE} = 12 Vdc, $I_{C(on)}$ = 12 Adc, I_B = 2.0 Adc)	2N2075 thru 2N2078		9.0		
	2N2079 thru 2N2082		6.0		
Fall Time		t_f			μs
(V_{BE} = 6.0 Vdc, $I_{C(off)}$ = 0, R_{BE} = 10 ohms)	2N2075 thru 2N2078		12		
	2N2079 thru 2N2082		13		

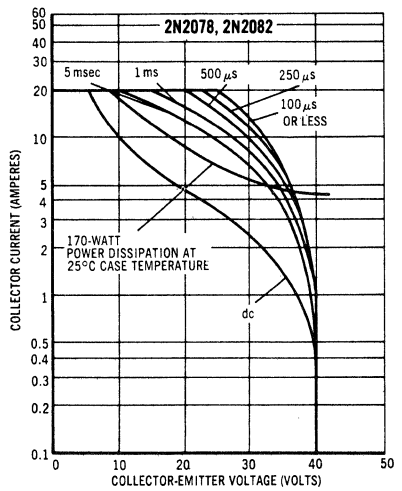
*To avoid excessive heating of collector junction, perform this test with a sweep method.

SAFE OPERATING AREAS





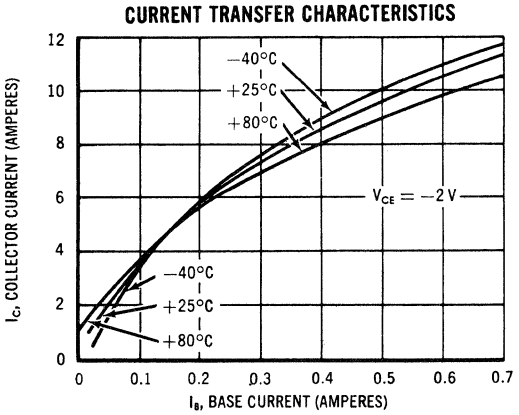




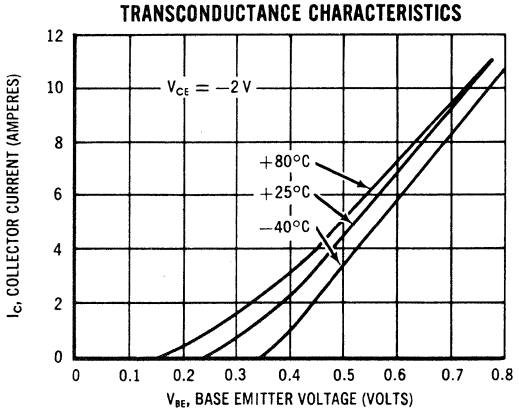
The Safe Operating Area Curves indicate I_C — V_{CE} limits below which the device will not go into secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a collector-emitter short. (Duty cycle of the excursions make no significant change 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.

2N2075-2N2078

CURRENT TRANSFER CHARACTERISTICS

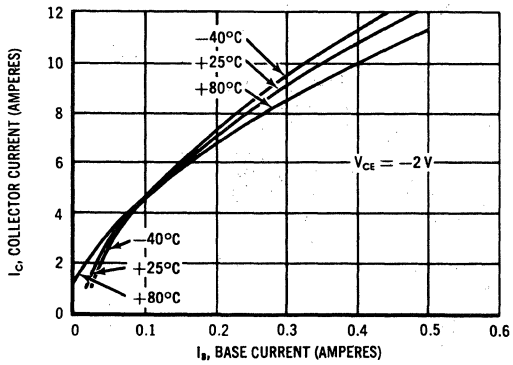


TRANSCONDUCTANCE CHARACTERISTICS

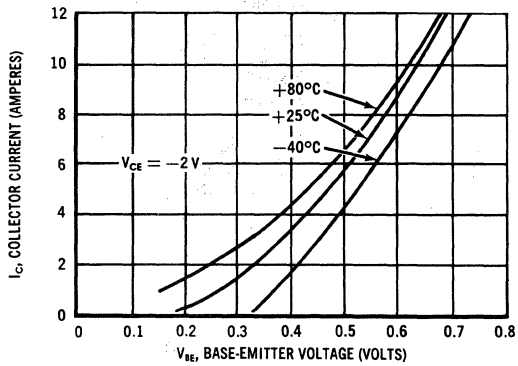


2N2079-2N2082

CURRENT TRANSFER CHARACTERISTICS



TRANSCONDUCTANCE CHARACTERISTICS



2N2096 (GERMANIUM)
2N2097
2N2099
2N2100

For Specifications, See 2N1204 Data.